lift Industry News

A UK-BASED MAGAZINE WITH A GLOBAL OUTLOOK FOR THE LIFT AND ESCALATOR INDUSTRY

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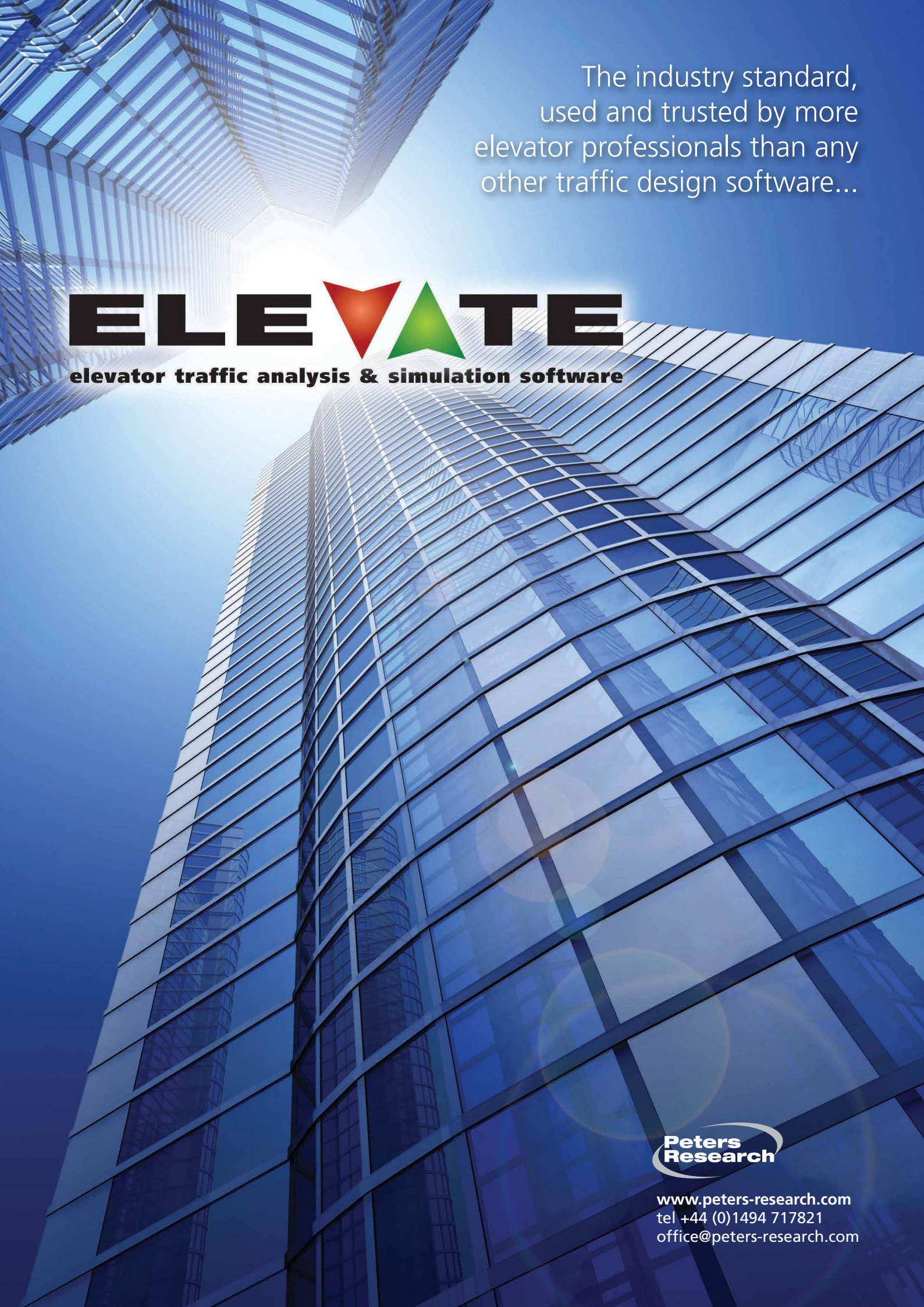
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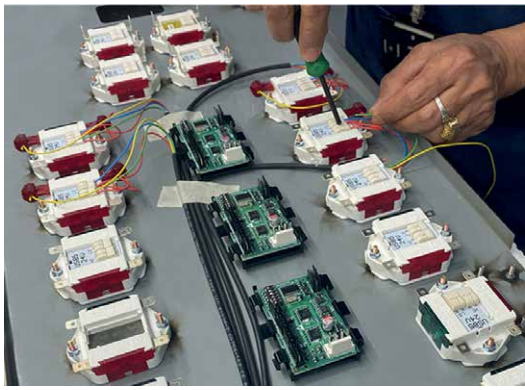
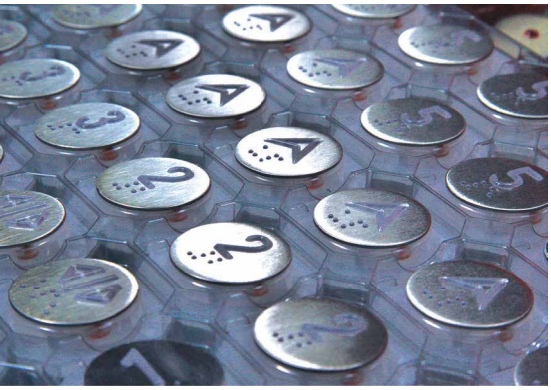

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YAN PHOENIX OVERVIEW

Our guest editor for this issue is Yan Phoenix, Founder and Technical Director of Digital Advanced Control. Since founding DAC in 2009 the company's goals remain the same: to continue to innovate and improve the lift manufacturing industry.

Welcome to the second edition of Lift Industry News

It's great to have been asked to be the guest editor for the second edition of Lift Industry News. The focus this issue is on two important events in our industry - LIFTEX and the Lift and Elevator Symposium (LES).

I've always been in control systems in the lift industry, since I was 18, starting with an apprenticeship and then spending the last 28 years in lift control systems. Here at DAC we have a passion for research and development, designing our high quality products inhouse. As a leading UK-based lift manufacturer, DAC will be exhibiting at LIFTEX, and I'm really looking forward to catching up with familiar faces, as well as meeting new industry colleagues.

With 110 UK and international exhibitors at LIFTEX showcasing the latest products and services, it really is the best place to see new innovation and make connections. Within that 48 hour period, you'll probably connect with more customers than you would within a year! It's going to be great to be back together and see what's new in the industry. You'll find us at stand B36, do come and say hello!

Oliver Greening, Director of LIFTEX and his team have worked hard to deliver what will be an incredible show. You can spend some time with Oliver as we look at his Life in a day on page 49. We also have one of the seminar speakers, Matt Davis from Avire giving his Elevator Pitch on page 94.

The 13th Lift and Escalator Symposium was held in late September, and we've got a brief round up, along with three of the outstanding papers presented this year featured in the Knowledge Bank on page 60.

Continuous learning is critical to the future, and I think we all have our part to play in pushing the industry forward. LEIA's distance learning courses have been designed by and for the lift industry, providing a wonderful opportunity to extend our knowledge of lift and escalator engineering. Dan Charlesworth, LEIA's Training & Safety Manager gives an update on page 25.

As we start to meet again, with LIFTEX and the LES, it's worth thinking about the headwinds we are still facing in the lift industry. Component shortages like we've never seen, inflationary pressures and skills shortages. Our supply rate for components, once at a maximum of a couple of weeks, now stands at six to nine months for semi-conductors in some cases, and our yearly price increases have shot up from 1-3% to 7-8%. The pressure on companies to manage this will no doubt limit growth, and together with the prevailing skills shortage, some may see a bleak future. However, with the specialist university courses, a heightened emphasis on STEM in schools and an increased government focus on apprenticeships, I think we can feel positively about seeing fresh talent and new growth within the lift industry. Face to face events will serve to ignite interest, and give us that boost of witnessing exciting innovation and new developments.

I look forward to catching up with many of you at LIFTEX.

I think we can feel positively about seeing fresh talent and new growth within the lift industry.

lift Industry News

CONTENTS

THIS QUARTER

THE INTERVIEW
Jackson - the largest independent lift, escalator and cradle maintenance company in the UK

The Knowledge Bank
Three of the papers from this year's LES

THE INTERVIEW
A family company that started as a 'one man and a van' operation in 1979 and has grown to nearly 600 members of staff working from eight offices spread across England, Wales and Scotland. We talk to Julia Jackson for a real insight into Jackson's success.

THE KNOWLEDGE BANK
The 13th Lift & Escalator Technologies Symposium brings together experts from the field of vertical transportation, offering opportunities for speakers to present peer reviewed papers on the subject of their research. Speakers include industry experts, academics and post graduate students.

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lift Industry News

CALENDAR

October 05 - 06 Weds to Thurs

EURO-LIFT
October 5-6

KIELCE, POLAND

November 03 - 05 Thurs to Sat

Global Lift & Escalator Expo
November 3-5

DHAKA, BANGLADESH

November 29 Tues

CIBSE Lifts Group Annual Seminar
November 29

LONDON, UK

October 12 - 13 Weds to Thurs

LIFTEX 2022
October 12-13

LONDON

November 07 - 08 Mon to Tues

SEELIFT Network (South-East Europe Lift Network)
November 7-8

ZAGREB, CROATIA

December 01 - 03 Thurs to Sat

Vietnam Expo – Elevator Industry
December 1-3

HO CHI MINH CITY, VIETNAM

October 18 - 20 Tues to Thurs

Global Lift & Escalator Africa
October 18-20

JOHANNESBURG, SOUTH AFRICA

November 09 - 12 Weds to Sat

CTBUH International Conference
November 9-12

CHICAGO, USA

December 01 - 03 Thurs to Sat

International Sourcing Exposition for Elevators and Escalators
December 1-3

MUMBAI, INDIA

October 19 - 21 Weds to Fri

Lift Expo Italia
October 19-21

MILAN, ITALY

November 16 - 19 Weds to Sat

World Elevator & Escalator Expo 2022
November 16-19

SHANGHAI, CHINA

December 12 - 13 Mon to Tues

International Elevator & Escalator Symposium
December 12-13

BARCELONA, SPAIN

2022/2023

February 21 - 23 Tues to Thurs

Elevator Escalator Expo
February 21-23

GANDHINAGAR, GUJARAT, INDIA

March 09 - 12 Thurs to Sun

Asansor Istanbul
March 9-12

ISTANBUL, TURKEY

May 23 - 25 Tues to Thurs

ExpoElevador
May 23-25

SÃO PAULO, BRAZIL

June 20 - 22 Tues to Thurs

Elevcon
June 20-22

PRAGUE, CZECH REPUBLIC

August 22 - 24 Tues to Thurs

Global Lift & Escalator Africa
August 22-24

JOHANNESBURG, SOUTH AFRICA

September 20 - 21 Weds to Thurs

Lift & Escalator Technologies Symposium
September 20-21

NORTHAMPTON, UK & ONLINE

October 17 - 20 Tues to Fri

Interlift
October 17-20

AUGSBURG, GERMANY

November 15 - 17 Weds to Fri

Global Elevator Exhibition
November 15-17

MILAN, ITALY

LIFTEX

LIFTEX is the unmissable showcase for the lift, escalator, manufacturing and specification industries. Run by the industry for the industry it features over 100 UK & international exhibitors showcasing the latest products and services. Don't miss the first opportunity to meet face-to-face, see key new products and services first-hand and in person post lockdown and Brexit. The exhibition is brought to you by LEIA (Lift and Escalator Industry Association), in consultation with an international network of authoritative trade advisory bodies.

www.liftexshow.com

LIFT EXPO ITALIA

Lift Expo Italia is a completely new and innovative exhibition, held in MiCo (Milano Convention Centre) a few steps from City Life, the brand new district of Milan. With more than 100 exhibitors from both Italy and overseas it will be a new networking opportunity at a time when businesses are resuming normal levels.

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https://liftexpoitalia.com/en/home

FURTHER ACADEMIC QUALIFICATIONS IN LIFT ENGINEERING WITH THE

University of Northampton

With support from the Lift and Escalator Industry Association (LEIA), the University of Northampton offers a range of training and qualifications tailored to provide specialist lift engineering education. Taught through distance learning, the programmes provide a broad offering, including a Higher National Certificate and Higher National Diploma in Lift and Escalator technology, as well as two further postgraduate courses:

- Masters (MSc) Lift Engineering
- Postgraduate Research (PGR) programme

MASTERS (MSC) LIFT ENGINEERING

The MSc is accredited by the Institution of Mechanical Engineers (IMechE) and provides a detailed academic study of lift engineering and related management issues, together with a higher-level academic qualification for those employed in lift engineering as well as allied industries.

The course consists of compulsory and elective modules, as well as an independent design project module and dissertation. With part time study, the course can be completed over three years.

Modules include:

- Lift Applications Engineering
- Codes and Standards
- Management of Construction Industry Contracts
- Case Study
- Dissertation
- Two designated (elective) modules

POSTGRADUATE RESEARCH (PGR) PROGRAMME

The PGR programme brings together multi-disciplinary research and knowledge transfer activities in lift technology and high-performance engineering and computing. The programme is highly rated by the Research Excellence Framework.

The research and innovation programme in lift technology addresses the current world-wide interest in the development of a safe, fast and cost-effective means of vertical transportation in the modern built environment. Opportunities are offered to undertake research degrees for the award of MPhil (Masters by research) and PhD (Doctorate) in Engineering with full and part time study options.

The research topics cover a broad range of areas and involve projects with scope to meet optimum design requirements for the lift engineering and allied industries:

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- Dynamic signal processing
- Control systems
- Modelling and computer simulation
- Drive control and energy consumption
- Structural analysis

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These in-depth and comprehensive qualifications are an excellent way to increase expertise in the lift industry, focusing on research, innovation and creating a deep knowledge of the sector. You can find out more by visiting ***https://www.northampton.ac.uk***/ and searching for the course you're interested in.

LIFT ENGINEERING @ NORTHAMPTON

University of Northampton

Academic qualifications:

- University Certificate in Lift and Escalator Technology
- Higher National Certificate (HNC) in Lift and Escalator Technology
- Higher National Diploma (HND) in Lift and Escalator Technology
- Masters (MSc) Lift Engineering

Postgraduate Research (PGR) programme:

undertake research degrees for the award of MPhil (Masters by research) and PhD (Doctorate)

- Systems engineering of lifts and escalators
- Ride quality, dynamics and vibration
- Intelligent fault detection and maintenance
- Control system
- Computer modelling, lift traffic analysis and simulation

Engineering Council accredited degree

This degree has been accredited by the Institution of Mechanical Engineers under licence from the UK regulator, the Engineering Council. Accreditation is a mark of assurance that the degree meets the standards set by the Engineering Council in the UK Standard for Professional Engineering Competence (UK-SPEC)

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POINT OF VIEW

Where Compliance Meets Application

Looking at lift capacities in the real world

"Show me," said the irate architect, "Where code states I need 13 passenger lifts when the consultant says 10 passenger lifts meet the required performance! That's an extra £25k per lift and means we lose interior space and have to pay the extra costs of building bigger shafts! The building becomes economically unviable!".

Not an uncommon conversation I suspect, I've had plenty over time, but what drove the point from the architect's perspective is that you only have to provide the minimum with no consideration of the wider needs of building users. My point in calling for 13 passenger deep aspect cars was the practicality of tenants moving large items of furniture, cycles, etc. up to their apartments. I also raised the point of the lifts being able to accommodate a stretcher, or a coffin, should the need arise. In response, the by now very irritated architect retorted that furniture could be carried up the stairs; it's a 12 floor residential building. I enquired whether they would be prepared to do that…

The remainder of this heated conversation cannot be repeated here; however, I was informed that the cost consultants said 10 passenger lifts were common in residential blocks. This, I was told, didn't present a problem. Obviously cost consultants don't move furniture or have to carry stretchers down stairs.

This discussion centred on a proposed new residential building, but it could equally apply to a hotel or retail development, for example.

MINIMUM REQUIREMENTS VS PRACTICAL NEEDS

The key point here is that while minimum car sizes are detailed in some standards, none of these address the practical needs of building users in terms of facilitating the movement of large items, or more importantly those of the emergency services to carry stretchers or coffins. While this may be called for in specifications from local authorities, hospitals, nursing homes and the like, I'm not aware of any such requirement within the EN suite of standards, forgive me if I'm wrong.

All standards and codes represent the minimum requirement, and in terms of compliance, this leads to the minimum becoming the maximum. So why do more than we need to?

With compliance being the key factor in design, practical aspects of how buildings are used are often lost; 'we comply' becomes the position taken, leaving the users with significant problems for the life of the building.

A CHANGE TO THE STANDARDS?

This raises the question; do the standards need to change? One could argue that it's not the role of those formulating the standards to dictate what is required, and that the design team should consider all possible needs and apply common sense when looking at the wider uses the lifts might be put to. Unfortunately, the reality is that in many instances design is driven more by compliance than common sense. This leaves those who raise concerns with little to support their arguments, from a compliance standpoint.

I would argue that with compliance as the key driver, standards need to take wider recognition of how the building is used and provide key points of reference for designers, taking account of the needs of both building users and the emergency services. This is not something that can be left solely to the design team, given the approach currently being taken.

While standards pay attention to safety and operational requirements, and are prescriptive with regards to some applications, the needs of the medical services are largely overlooked. Mention coffins and stretchers and you are often met with looks of incredulity. The means of evacuating those on stretchers, or accommodating a coffin, simply do not form part of the design-thinking where compliance is the driver and minimal cost the end goal.

LOOKING DEEPER INTO CURRENT STANDARDS

Current EN standards address the size of cars in terms of carrying capacity (EN81-1) or their ability to accommodate different types of wheelchairs (EN81-70), assigning car types according to interior size. Part M of the building regulations, which looks at accessibility in dwellings, details various types of lift according to user requirements, but this does not include use by the emergency services or address their potential needs.

EN81-72, the standard for fire fighting lifts, effectively calls for an assessment of the need for fire fighting lifts to carry a stretcher, but only if it is to be used for evacuation purposes. However, the minimum car size for a single opening fire fighting lift remains an eight passenger 630kg capacity with an 1100mm x 1400mm car interior. This is often what is provided in terms of compliance, but realistically the lift can accommodate two, perhaps three, fully equipped firefighters, with little or no room for ancillary equipment. Both BS 9991 and BS 9999, which cover fire design for residential and commercial buildings, are, from my reading, effectively silent on the question of car sizes and refer back to EN standards for guidance.

I understand the fire service is starting to question the suitability of eight passenger lifts and are beginning to lobby for larger capacity cars. I am also aware that similar concerns have been raised by the ambulance service who would like to see 1100mm x 2100mm car interiors provided to accommodate stretchers.

The role of the consultant in these circumstances can be difficult. Employed by the client to determine a compliant design they can, and often are, overruled when it comes to proposing something that goes beyond the minimum.

WEIGHING PRACTICALITY AGAINST COST

Precedent also plays a major part in the decision process. "Why do we need four 13 passenger lifts here when they have three 10 passenger lifts in a similar building across town?" I'm sure we are all aware of buildings, particularly residential ones, where the lifting arrangements have been determined by the client and not the VT consultant. The response should be that the building across town may not have it right; but once built it becomes the measure against which the new building is compared, especially when it comes to the number of lifts provided.

Those of an older generation will recall lifts in council blocks having low level coffin extensions with lockable doors. I never could quite understand why larger lifts weren't provided but at least the need had been considered and the facility provided. Often referred to as 'coffin lifts' they were installed in numerous blocks during the 1960s and 70s with many modernised to provide full sized cars.

There does appear to be a reluctance to call for larger lifts within the standards, based largely, I would think, on the economic argument that larger lifts mean bigger shafts which in turn impacts on building interior space. This is perhaps a move into territory those concerned feel is better avoided, but the fact is that if the building design starts from the base of providing larger lifts, the cost impact of larger shaft sizes is minimal compared to the total structural costs. There is also the question of the cost of the lifts, but again the increase in price is relatively small, especially when taken as part of the overall building costs. Buildings can be made commercially viable with larger lifts, it just requires a little application and thought at the beginning of the process.

This argument isn't quite the same if, for example, you try to increase the size of lifts in a building that has already been designed. This does entail a major rethink of the internal space arrangement and can be an expensive exercise which could tip the balance of financial viability.

So, where does this leave us?

SHAKING UP THE STANDARDS

Clearly the current standards are the benchmark for compliance, but these do not address the issues being raised. As we know, standards development is a continually evolving process and takes time, especially when there are many interests and competing forces. However, I would argue in the current climate they should seek to serve the wider needs of those who use lifts and take cognisance of the audience beyond the everyday user.

Key to this conversation is input from the emergency services most affected by the lack of suitable lifts. It's inconceivable their voice would be challenged in calling for minimal car sizes and this would add significant weight to the argument. While we are talking of the UK in this debate, the same issues must logically apply to the rest of Europe and beyond.

There is an opportunity to influence the draft EN81-76 for evacuation lifts and call for a minimum 1000kg deep aspect car with 1100mm x 2100mm internal car dimensions. However, the draft isn't specific as to where evacuation lifts are to be provided and I assume this will be left to local regulation. The London Plan does call for a fire fighting and separate evacuation lift to be provided in each core of a new building and although this approach is expected to be widely adopted in other major cities in the UK, it may well not be a universal requirement.

One route to resolving the matter could be that every new building with lift provision must have an evacuation lift. In these circumstances the revised EN81-76 should state that at least one evacuation lift in a building must be a 1000kg capacity lift with a deep aspect car and I would suggest a minimum of 1000mm wide doors, as opposed to the 900mm currently proposed. This would capture all new buildings and provide the facilities needed to evacuate people on stretchers, or those in coffins, with both dignity and safely.

The spin-off of this approach is that tenants will have the facility to move large items of furniture, cycles, powered mobility scooters, etc. making their life a lot easier. This seems to me an eminently sensible and logical approach.

CONSIDERING THE NEEDS OF BUILDING USERS

In the debate of compliance versus application, there can be little argument that we need to take a more pragmatic approach, even if this means taking a stand against the 'it complies' mantra. I would suggest the benefits for all concerned are obvious, and far outweigh the counter arguments. It is disappointing that we find ourselves having to be more prescriptive with standards to reconcile the compliance/application argument, but it appears to me there is little choice. The needs of users should outweigh the compliance argument.

As responsible contractors, designers, consultants and service providers we, as an industry, have the opportunity, and I would suggest the responsibility, to design buildings that make life easier for building users and safer for our emergency services. In the current climate we need the standards to support our efforts and this demands an understanding of what is needed, commitment to change, and a degree of courage on the part of those drafting the standards. Add to this the weight and support of the emergency services and I'm sure the necessary changes can be made.

Collectively we can make a difference, let's rise to the challenge!

BIOGRAPHY

Len Halsey spent a major part of his career with Otis, holding senior technical and managerial positions, before joining Canary Wharf Contractors in 1998. He was appointed Project Executive for Vertical Transportation Systems in 2002 responsible for VT design across the range of developments undertaken by Canary Wharf including, office, residential, retail and infrastructure projects. He retired from Canary Wharf Contractors in 2019 and is now retained by the company as a consultant. He is a member of CIBSE and a former chair of the CIBSE lift group.

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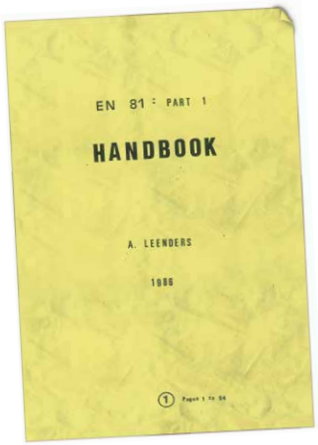


FROM THE ARCHIVES

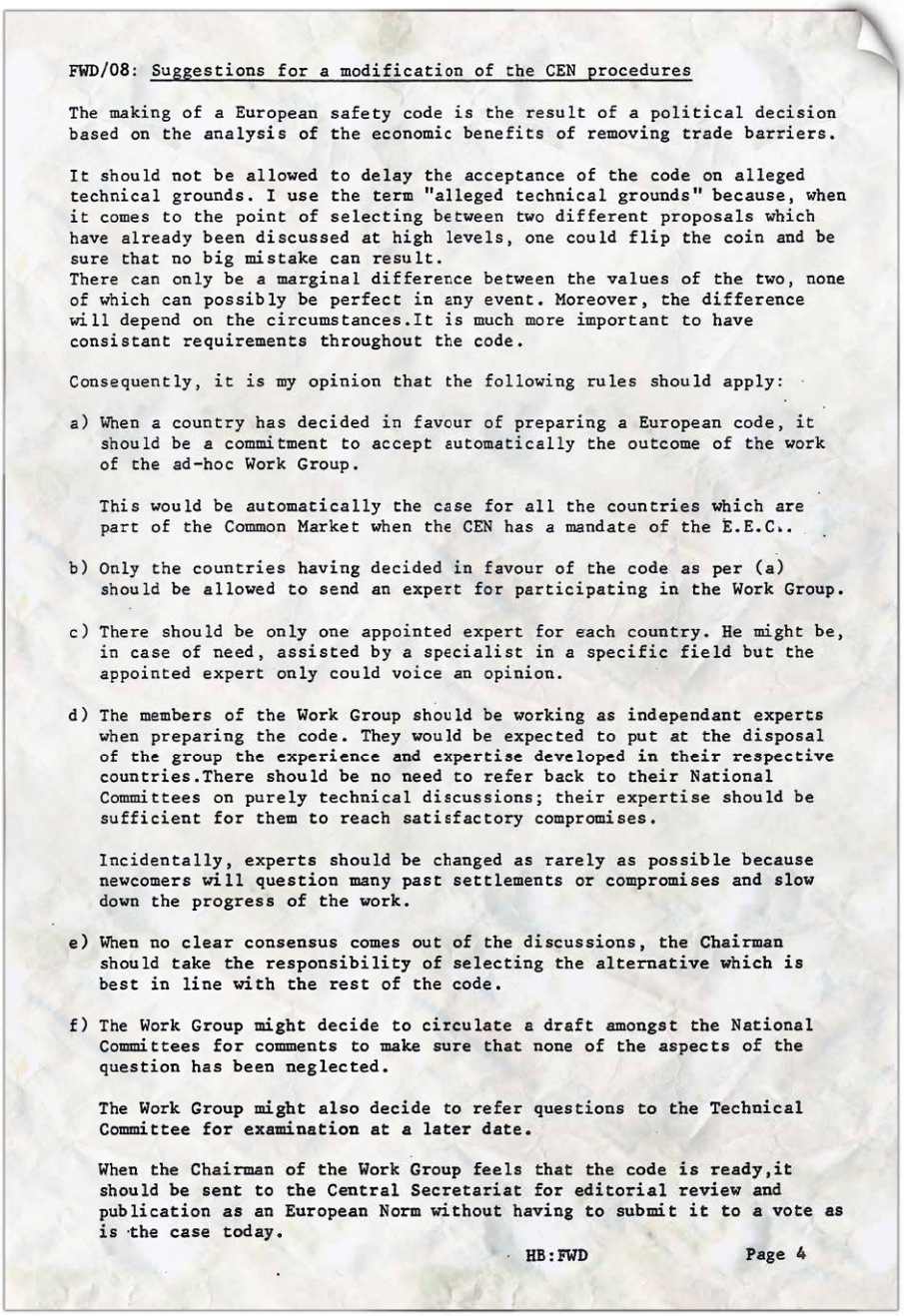
We asked Gina Barney to take a look back into her library and choose something from the archives of interest to our readers today.

In September 1989 I became aware of a four-volume commentary entitled Handbook and comments on EN81/Part 1 Safety Code with some reference to other leading Codes by Andre Leenders of Nice, France. After some correspondence Andre sent me a copy.

The material is an authoritative source of the rationale behind BS5655-1:1986/EN81-1:1985. It documents the reasons how some clauses in the standard were arrived at. The author sometimes did not agree and called his view "controversial".

The material was not copyrighted and I queried this and Andre replied: "As a rule, I authorise anybody to make copies of my book which is not protected by any 'Copyright' because I did not write it for profit. You might consequently quote a part of my book if you wish." Thirty-three years later I am taking up the offer for **Lift Industry News.**

The Leenders Handbook can be found at: ***https://www.cibse.org/get-involved/special-interest-groups/lifts-group***



FWD/08: Suggestions for a modification of the CEN procedures

The making of a European safety code is the result of a political decision based on the analysis of the economic benefits of removing trade barriers.

It should not be allowed to delay the acceptance of the code on alleged technical grounds. I use the term "alleged technical grounds" because, when it comes to the point of selecting between two different proposals which have already been discussed at high levels, one could flip the coin and be sure that no big mistake can result.
There can only be a marginal difference between the values of the two, none of which can possibly be perfect in any event. Moreover, the difference will depend on the circumstances.It is much more important to have consistant requirements throughout the code.

Consequently, it is my opinion that the following rules should apply:

a) When a country has decided in favour of preparing a European code, it should be a commitment to accept automatically the outcome of the work of the ad-hoc Work Group.

This would be automatically the case for all the countries which are part of the Common Market when the CEN has a mandate of the E.E.C..

b) Only the countries having decided in favour of the code as per (a) should be allowed to send an expert for participating in the Work Group.

c) There should be only one appointed expert for each country. He might be, in case of need, assisted by a specialist in a specific field but the appointed expert only could voice an opinion.

d) The members of the Work Group should be working as independant experts when preparing the code. They would be expected to put at the disposal of the group the experience and expertise developed in their respective countries.There should be no need to refer back to their National Committees on purely technical discussions; their expertise should be sufficient for them to reach satisfactory compromises.

Incidentally, experts should be changed as rarely as possible because newcomers will question many past settlements or compromises and slow down the progress of the work.

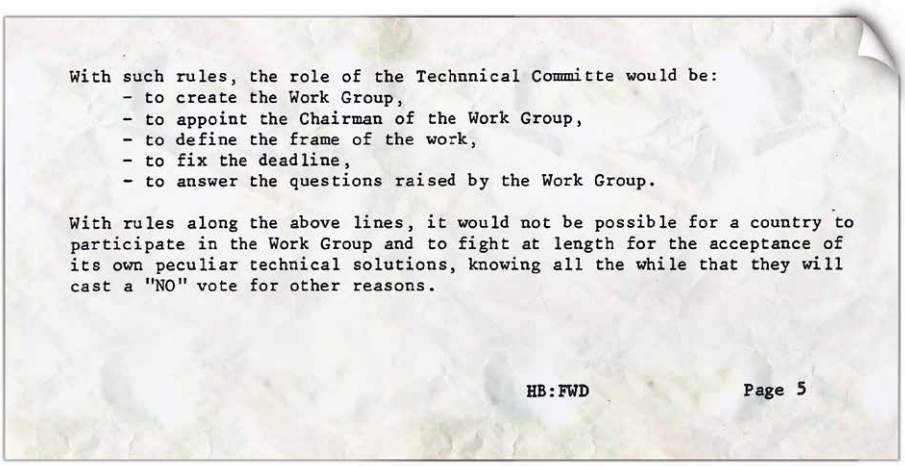
e) When no clear consensus comes out of the discussions, the Chairman should take the responsibility of selecting the alternative which is best in line with the rest of the code.

f) The Work Group might decide to circulate a draft amongst the National Committees for comments to make sure that none of the aspects of the question has been neglected.

The Work Group might also decide to refer questions to the Technical Committee for examination at a later date.

When the Chairman of the Work Group feels that the code is ready,it should be sent to the Central Secretariat for editorial review and publication as an European Norm without having to submit it to a vote as is the case today.

HB:FWD Page 4



With such rules, the role of the Technnical Committe would be:
- to create the Work Group,
- to appoint the Chairman of the Work Group,
- to define the frame of the work,
- to fix the deadline,
- to answer the questions raised by the Work Group.

With rules along the above lines, it would not be possible for a country to participate in the Work Group and to fight at length for the acceptance of its own peculiar technical solutions, knowing all the while that they will cast a "NO" vote for other reasons.

HB:FWD Page 5

Looking back over thirty six years – how are we doing?

A decision of the Common Market led to the need to remove trade barriers. This in turn led to the need for common standards and the resulting economic benefits.

Unfortunately, "alleged technical grounds" are still there. Germany has delayed the publication of EN81-41 "Vertical lifting platforms intended for use by persons with impaired mobility" for years over having full length aprons under the platform. In this case a pragmatic solution was set against perfection.

Item a): This has been achieved, at least on the surface. This may not always be so. The UK is still part of CEN even if the Lift Directive does not apply. Unfortunately, the Common Market that the UK signed up for was undermined by certain "continental" politicians seeking power. They gradually took away UK sovereignty until we said enough, hence BREXIT. At the moment the UK is in step, but this may not always be so!

Item b): It is assumed that all signed up CEN countries are in favour even if they are not, so send an "expert".

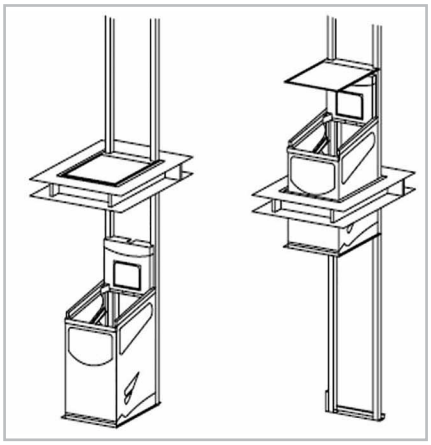
Item c): This is a good point. Many CEN committees have more that one appointed "expert" and this extends the debate and "hot air" to the power of two. Some of the "experts" are not experts but are place takers. My experience is that many of them are disruptive and challenge the experts, through their lack of understanding and waste time. One of my ISO committees recognises experts, the other continually seeks to undermine the expert.

Most delegates, who are National Standards Body (NSB) members recognise they have a limited expertise and welcome being accompanied by someone with superior knowledge.

This rule should be applied, except in exceptional circumstances.

Item d): The key words are "independent" and "expertise". Some "experts" are there to make sure their country, organisation, employer, etc. are not disadvantaged.

"At the moment the UK is in step, but this may not always be so!"



A case in my experience was when as Convenor for the revision of BS5900:2012 "Powered homelifts with partially enclosed carriers and no liftway enclosures – Specification" (the through the floor domestic lifting platform) an objection was raised to clause:

Annex E: (Normative)
Determination of fire resistance

E.1 Principle. The objective of this test is to specifically determine the minimum period of fire resistance of the seal between the underside of a home lift carrier when the home lift is up, the trapdoor when the home lift is down and the penetrated building floor. The test assumes that the fire is at the lower level and that it is the upper level which is being protected.

The reason was the objector's employer's product could not meet this requirement.

Note: *"experts should be changed rarely".*

Item e): This is not possible as CEN requires a consensus or abandonment of the project.

Item f): This suggestion has been expanded by a CEN procedure. The "pr"[1] draft is circulated to seek comments from all CEN NSBs, the comments are resolved and a FV[2] and a qualified majority vote taken. It passes or fails.

[1] provisional
[2] Final Vote

The comment: "With rules along these lines. It would not be possible for a country to participate in a Work Group and to fight for the acceptance of its own particular technical solutions, knowing all the while that they will cast a 'no' vote other reasons".

This does not happen. To reassure readers the BSI Lift Committee has the overarching ethic "You leave your employer or organisation at the door".

DR GINA BARNEY PhD, MSc, BSC, CEng, FIEE, HonFCIBSE

Gina Barney is well known to the world-wide lift industry, owing to her many activities in the field. She is Principal of Gina Barney Associates, Honorary English Editor of Elevatori, Member of the Chartered Institution of Building Services Engineers (CIBSE) Lifts Group Committee, Member of the British Standards Institution (BSI) MHE/4 Lift Committees, UK expert to two International Standards Organisation TC178/WG6 Traffic design and WG10 Energy efficiency of lifts and escalators.

Gina is the author of over 100 papers and is the author, co-author or editor of over 20 books (not all on lifts). Her main activities are technical writing of standards (she is a member of the Society of Authors). She has been Technical Editor of five editions of CIBSE Guide D Transportation systems in buildings 2000-2020. She is also a Member of the Academy of Experts and a Liveryman of the Worshipful Company of Engineers.

News from SAFed

SAFed is holding their inaugural member event on 24th November 2022 at the Manchester Marriott, Victoria and Albert Hotel.

The event combines technical presentations, Continuing Professional Development (CPD) activities and an evening reception including dinner and a speaker, bringing together experts to share knowledge and updates, as well as a chance to connect with industry colleagues. It promises to be an event not to be missed by the inspection industry.

What's happening?

The morning's technical presentations will allow delegates to get up to speed with the continuing effects of the EU-Exit through to 2023 and beyond. Experts from BEIS-OPSS, HSE and UKAS will be attending to share their wisdom and allow discussion.

The afternoon's CPD session will be hosted by sport psychologist and author, Simon Hartley, focusing on what you need to do your job, and do it well.

Topics will include leading through influence and building resilience. The session is appropriate for any member, from engineers, through to administration colleagues – all are welcome and will benefit, regardless of role.

The evening's reception will welcome retired Rugby League player Jamie Peacock MBE as after dinner speaker. He now delivers training as well as a mentoring programme to build leadership habits and drive high performance.

Why you should attend:

SAFed is your trade association – come and connect - find out more about who they are, what they do, and what they've been up to.

Gain more information – the presentations are vital sources, covering the effects of the EU-Exit and how working with trade associations can bring improvements.

Invest in you – CPD is essential for all, and the session will help you lead with influence and develop resilience.

Treat yourself – everyone deserves a night out, and the evening reception will be a great opportunity to connect with industry colleagues, enjoy a meal and after dinner speaker.

Join SAFed for their very first member event. Register before the 14th October by emailing ***conference@safed.co.uk***. SAFed members have priority, but a standby list is operating.

SAFed is a trade association, representing the UK independent inspection and certification industry. If you're interested in finding out more about SAFed membership, visit ***https://www.safed.co.uk/***.


Find us at:
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www.ileweb.com

BEHIND THE SCENES AT LEIA

Intro from Nick Mellor, MD of LEIA

Autumn is always busy with our Safety & Environment Seminar in September, followed by our Technical Seminar on Thursday 3rd November. These look at changes from the Buildings Safety Act and the Fire Safety (England) Regulations 2022, while our Technical Seminar will also update members on UKCA marking and changes in the UK Government's guidance.

We will be tackling some of these at LIFTEX seminars, looking at the management of lifts, including those for use by firefighters and lifts for evacuation of disabled people (and how these fit with the latest fire safety requirements).

We've also been updating our guidance on a number of fire related issues and recently published a Lift & Escalator Owner News on smoke resistant landing doors. This reflects our concerns with the specification of smoke resistant lift landing doors.

To meet building regulations guidance (such as approved Document B) and British Standards (such as BS 9991 and BS 9999) for the spread of fire via a lift well, building designers typically specify lift landing entrances to BS EN 81-58 with a minimum fire resistance and no smoke resistance as they would typically open into a fire protected lobby.

Consequently, there are no standards for lift doors for smoke resistance. We have seen cases where fire resistant lift landing doors have been specified with smoke resistance without a fire protected lobby in front of the lift landing doors. We are very concerned about the fire/building safety implications of this and would encourage everyone to read our guidance.

In other news, it has been good to reconvene in person at the recent Lift & Escalator Symposium, some fascinating topics were discussed and as always provided plenty of food for thought. LEIA is proud to support this event, which is run as a charity.

Membership and LIFTEX update from Oliver Greening, Senior Operations Manager

Since the last issue, we have been delighted to have welcomed five new LEIA members.

- From its head office and national call centre in Keighley, West Yorkshire, Ace Elevators offer a complete range of lift service and maintenance contracts, from a single lift to a full portfolio of lifts on multiple sites across the UK.
- Bourne Lifts offers a comprehensive range of new lifts, lift services and support to private and residential clients across Dorset, Hampshire and the South Coast.
- Calandine Lifts Ltd was established in 1989. With a head office in Gainsborough, it offers lift refurbishment and modernisation across the whole of the UK.
- Premier Lifts was established in 1988 and provides quality lift maintenance and servicing programmes for passenger and service lifts; stairlifts; disabled platforms and other types of lifts.
- Finally, Wigan-based Lancs & Cumbria Lifts (UK) Ltd offers an independent supply chain with a specialist knowledge in Traction, VVVF drive and Hydraulic lift control systems.

I can't quite believe that LIFTEX is now here – three years in the making. At one stage we weren't sure it would be able to go ahead. The event has been running for 34 years so we knew we needed to do everything we could to stage it once more (despite the pandemic!). We are pleased to say that LIFTEX 2022 sold out of exhibition space back in the summer, we are welcoming some exciting new exhibitors and have international representation from over 14 different

countries. Take a look at our full show preview on page 34 to see what's in store. We are really looking forward to seeing you all at LIFTEX 2022.

End point assessment update from Karen Slade, Head of End Point Assessment

After 18 months of preparation including gaining recognition from Ofqual (the qualification regulator in England) to offer end-point assessment (EPA), LEIA Assessment has carried out the first end-point assessments for the Lift and Escalator Electromechanic apprenticeship.

This apprenticeship is a three-year programme of training and development where apprentices learn how to work on lifts or escalators within their chosen area of specialism, installation or service / repair. Apprentices will also complete off-the-job training to widen their skill set, functional skills in Maths and English where this hasn't been attained previously and a relevant specialist NVQ.

Preparation for LEIA has included recruiting and training a team of industry experts to assess and quality assure against the employer derived Occupational Standard and Assessment Plan.

The team have developed assessments, in consultation with sector employers, to assess the apprentices' knowledge, skills and behaviours. These have been defined by the sector as a key set of requirements for a competent Electromechnic to have.

The assessments the apprentices are undertook are:

- 30 question knowledge test.
- 10 day project summarised into a 2000 word project and a 15 minute presentation followed by a small question set.
- 16 question structured dialogue.

All assessments were conducted remotely to provide minimal disruption to businesses during the assessment period. We are analysing data from these first assessments and will be delighted to share them with the sector once we have concluded our quality and standardisation procedure.

Distance learning and training update from Dan Charlesworth, Training & Safety Manager

Qualifications are becoming a hot topic as The Building Safety Act is highlighting the need to evidence competence for installation and maintenance workers.

If you're unsure how it affects you, then do take a look at the ***https://www.leia.co.uk/education-and-training/leia-competency-plan/*** on our website. Any contractors working with LEIA members are being asked to review the ***https://www.leia.co.uk/safety/safety-charter/*** and ensure practices are in-line. There are free to download toolbox talk presentations to highlight raising safety in the areas which have led to fatalities.

Since the introduction of CSCS (Construction Skills Certification Scheme) cards there have been some challenges with workers across many industries understanding the intentions and card type categories created to alleviate problems. LEIA supports the CSCS card scheme and works closely with them directly to ensure qualifications for our sector are linked to the correct cards (with the right roles and responsibilities on site). I would encourage everyone to apply directly through CSCS ***www.cscs.uk.com*** for any lift and escalator related card.

CSCS has recently announced that cards for apprentices are now free. The Industry's apprentice standard: Lift and Escalator Electromechanic ST0252 has been added to the list of qualifying programmes. Another reason to choose apprentice training to gain vocational qualifications in the industry. Construction Skills Certification Scheme ***https://www.cscs.uk.com/card-type/apprentice/***

lecs uk

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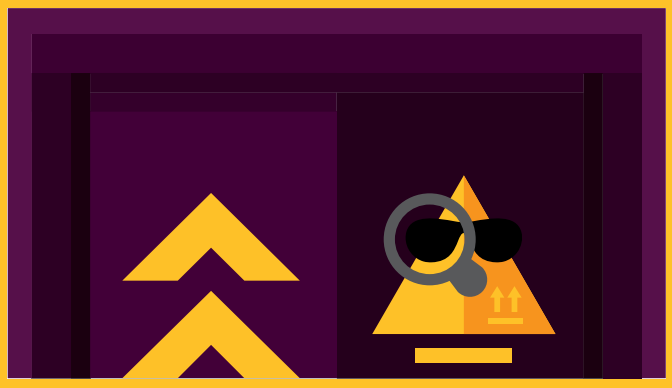


SAFETY FIRST

Our Industry Expert, Dave Cooper, keeps you up to date

FLOOD!

One of the most dreaded phone calls is the one that starts with "we've had a major leak in our building!" Of course it doesn't have to be a pipe leak – in my time I have seen everything from that to firefighters experiencing leaks at risers, erroneous loss of water from sprinkler systems, effluent backing up in drains, the water table being encroached, to a man in a hotel having had a few too many and opening a wet riser that wasn't locked off! I also recall a request from an architect to put stones and water in an observation lift pit with the intent of putting water and fish in there! Fortunately that idea didn't hang around too long!

The one thing you can say is that water and lifts generally don't go together. There are a few notable exceptions where the lifts were designed with water in mind such as sea life centres but the lift doesn't actually come into contact with water.

Obviously the response when effluent is involved is somewhat different and specialist clean up contractors are needed.

Worst case scenario is that you have a bottom drive machine room and that fills up as well but the immediate default position of lift contractors seems to be "you need a new one!" This need not necessarily be the case and careful investigation should be undertaken.

Just as if you were on a boat taking on water your immediate actions should be to stop the water, coming in, deal with the water then investigate your options.

There are, of course, times when you can't stop the water coming in and therefore damage limitation is difficult, but nevertheless if you are in an area where flooding is a periodic expected event such as a shopping centre adjacent to a river with an underground car park (Oxford springs to mind) then flood gates or barriers can be put in place, or even sandbags to mitigate the situation.

Where flooding in the pit occurs regularly, such as when the pit floor is close to the water table or there is a drain that can be overcome by demand it is recommended that a pump is installed operated by float switches that can also be switched on manually if needs be.

Also, pit flooding warning systems can be installed so as to give an early warning before the water starts appearing on the bottom floor landing.

That is all very well but in some locations where hurricanes can be expected it is likely that the weather will be accompanied by power cuts so all you can do is your best! Water, like electricity, takes the least path of resistance.

So what can you do to mitigate damage? Early recommended actions are:

IF WATER IS GATHERING IN THE PIT:

Park traction lifts mid shaft so the car and counterweight don't sit in the water. If the water is coming from a landing, park the lift car above the source of the water so the water doesn't gather on top of the lift.

Send hydraulic lifts up the shaft and stop mid travel and shut off the gate valve. This will prevent the lift sinking into the water in the pit (unless there is a ram seal leak but that should be slow) Stop mid travel so that the doors are closed and therefore the lift car wont sink away with the doors open.

Once parked, isolate the lift(s) electrically.

If there is a risk of water getting into the motor room (normally because the motor room is in the lower area of a building) try and create a bund at the access door(s) with sandbags or something able to divert the water elsewhere. You might want to do a quick risk assessment if you are in a hospital or similar as you might be diverting the water into areas containing life safety critical equipment and in that case the lifts become a secondary consideration.

IF WATER IS GETTING INTO THE MACHINE ROOM:

Isolate the lifts electrically which may be in an intake room and not in the motor room itself.

Try and stop water getting into the motor room (see above).

If a bottom drive traction lift and the water source is via the shaft after making sure the lifts are electrically isolated try and plug rope holes, vents, cable routes etc. You can use rags etc for this.

If you can strategically place buckets that would be great and will buy time.

If the source of the water has been isolated and there is no risk to your life you can use a brush to sweep water away from the motor room or you can continuously empty the buckets. If the area is prone to flooding there is no reason why you can't store mitigating equipment in or near the motor room as long as its not flammable.

AFTER EVERYTHING IS UNDER CONTROL:

It is unlikely that your lift(s) will be going back into service quickly so take protective measures.

If water has come down the shaft get your lift contractor to lightly lubricate moving components such as door lock rollers and axles (obviously avoiding electrical contacts).

Again, lubricate any rotating components that have been damaged.

Dress any suspension ropes that may have got wet with an approved dressing (speak to the rope manufacturers for advice).

Put heaters and dehumidifiers in the affected areas and leave to dry out but do not make the areas too hot. Lifts components are designed to operate between 5 and 40 degrees so a maximum of 30 degrees will suffice.

Take plenty of photographs and keep a chronology of events.

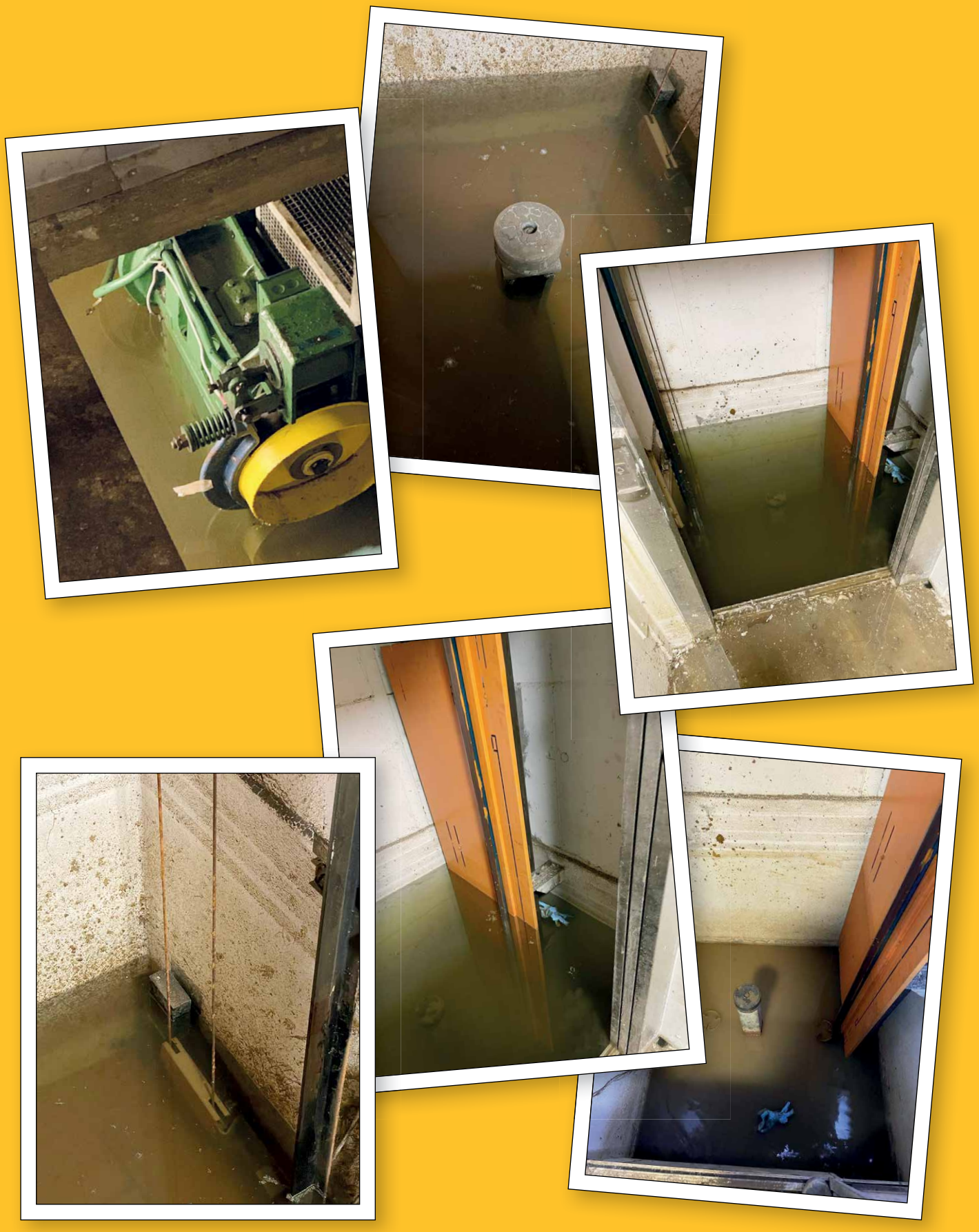
Make sure you advise any relevant insurers as they will want to know as soon as possible as, in my experience, they normally appoint a loss adjuster after a flood situation.

Once the flood is over, call in an independent professional to assess damage and get the lifts operational again. It is best not to simply rely on the word of the lift contractor who has a commercial interest in saying "you need a new one!"

BIOGRAPHY

EurIng Prof. David Cooper BSc (Hons), MSc, MPhil, CEng, FIET, FCIBSE, FSOE, FCGI,

David Cooper is the CEO of UK based lift consultants LECS (UK) Ltd. He has been in the lift & escalator industry since 1980 and is a well-known author and speaker. He holds a Master of Philosophy Degree following a 5-year research project into accidents on escalators, a Master of Science Degree in Lift Engineering as well as a Bachelor of Science Honours degree, Higher National Certificate and a Continuing Education Certificate in lift and escalator engineering. He is a co-author of "The Elevator & Escalator Micropedia" (1997) and "Elevator & Escalator Accident Investigation & Litigation". (2002 & 2005) as well as being a contributor to a number of other books including five editions of CIBSE Guide D. He is a regular columnist in trade journals worldwide including Elevation, Elevator World, Elevatori and Lift Industry News. He has presented at a number of industry seminars worldwide including in Thessaloniki, Munich, Shanghai, San Francisco, Melbourne, Zurich, Barcelona and Vienna as well as numerous presentations within the UK. He is also a Founding Trustee and Chairman of the UK's Lift Industry Charity which assists industry members and/or their families after an accident at work. In 2012 David was awarded the silver medal by CIBSE for services to the Institution. David also Chairs the Charity that runs the Lift Symposium and is an Honorary Visiting Professor at The University of Northampton. He also sits on the Board of CIBSE. In 2021 he was awarded the Sir Moir Lockhead Award by the SOE for 30 years dedication to safety in the lift & escalator industry.



THE INTERVIEW

Founded in 1979 by **George Jackson**, and still family-run, Jackson has become the largest independent lift company in the UK, with nearly 600 members of staff working from eight offices spread across England, Wales and Scotland. We chatted with Director, **Julia Jackson** about what makes the company so successful, and such a great place to work.

Q. With over 40 years behind the company, can you give me an idea of the vision for starting the company and where you are today?

A. The company started as a 'one man and a van' operation and it's grown beyond even my father's expectations. He's a very determined man whose main focus has been on providing lift maintenance and repairs. As the company grew, our customers asked us to provide bespoke lift replacement services, and the Installations company was formed to support this. Present day, our maintenance and repair services account for three-quarters of our business, with installations taking up the remaining quarter.

Q. What would you say is the key to Jackson's success?

A. It's absolutely the people that work for us. There's nothing they can't do, or fix! As a family business, we have a passion and drive to succeed and provide our customers with the best service we can. My father, at 76, still comes into work every day, he loves it. We are truly a family company; my uncle retired last year, my cousins work here, and there's me, and it makes such a difference having that family feel. Everyone knows me, I've worked here since I was 14, photocopying in my summer holidays and doing the sandwich run! There are people here who've known me since I was very small,

so we have that relationship and longevity with the staff. We have a flat management structure, we make sure it's easy to talk to the right person and get things done, without a load of bureaucracy. We trust our engineers, and they build really good relationships with our customers. I love my work, being in the business, and feel very passionate about looking after our staff so we can do a great job for our customers. I think that passion comes across when we work with them.

Q. Jackson is an independent company. What does that mean for your customers and staff?

A. Everyone is important. We have domestic customers, people in the City, care homes, hospitals. In my view, the individual customer is just as important as our big blue chip customers. How we work with those individual people can make such a positive impact on their day to day lives. As an engineering firm, we need talent across the layers of our organisation. It's vital for us to have engineers in management positions and on our Board of Directors – at least half our Directors are engineers. We need that knowledge and experience throughout the company, and the space to express opinions freely – and also tell me I'm wrong! I came from a very professional environment, spending seven years as a solicitor, and I love the fact we can talk naturally and honestly. I'd much rather have expertise than management speak!

Q. What's next for the company?

A. Stability. We've been through such a crazy few years. Our staff and customers have been amazing, supporting us through the pandemic, during which we were designated key workers, so we continued with the day job. Our staff did things they never expected they would have to do; we were in hospitals, domestic homes, care homes, quarantine hotels - in full PPE that had to change every 15 minutes, being escorted everywhere. Our staff were wonderful, willing to go anywhere, step up and do the job to the best of their ability. I'm proud of our teams, but I'm hoping for some stability and calm over the next year! Being able to do what we do best – fix lifts, but not in the extreme PPE required during the pandemic!

Q. Why is it important to you to be a member of LEIA?

A. My father was involved from the very beginning with the British Lift Association, before it merged with National Association of Lift Makers to form LEIA. He's been President of both associations numerous times. I've always been involved, from a contracts and legal side, and I'm on the LIFTEX steering committee. It's so important to raise technical and safety standards in the industry, raise awareness of the industry and lobby on behalf of the industry, and LEIA is instrumental in that. I think we should give back – we need to pay that forward, supporting lots of smaller companies, helping them on their journey with our experience. It's important that we give our time to that. It's always been fundamental to our organisation, and we're always there at LIFTEX!

Q. Tell me about your apprentices. How important is training up the next generation?

A. Our apprentices are amazing – there's nothing better than homegrown engineers. We run a big scheme and take as many as we can each year across the country, as well as our own staff who start as engineers' assistants and are going through the NVQ engineering qualification. Since 1979 we have trained 224 apprentices who have become qualified engineers, many of whom still work for us.

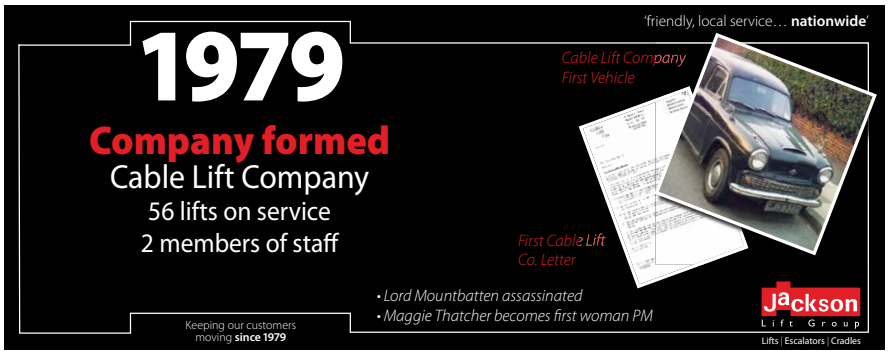
We currently have a skills shortage in the industry, and we all need to be training; I think the youngsters deserve and welcome that opportunity. We have managers who have started as apprentices,

so you can see the progression and development through the organisation. We never ask our apprentices to leave at the end of their apprenticeship, we always find a position for them. They are our future, so I'm really pleased with how our scheme is going. The diversity of applicants is improving, which is great, we could still do with more women, but I believe the balance is tipping back to choosing apprenticeships as equally as going to university and progressing through degrees.

Q. Jackson has a real heart for people – their own staff, but also reaching out into the community. Can you explain a bit about how you look outwards and the support you give?

A. We support the Air Ambulance as our chosen charity, and also St Mungo's, who work with those experiencing homelessness. They were amazing in the pandemic. We try and look at charities that have an impact nationwide, so we can see the effect in the communities close to our offices. We have golf days, Christmas jumper days, raffles and raise money where we can. We also have a long term commitment to support local grassroots junior football and especially girls' football. A lot of teams are those children of our staff, so it's wonderful to be able to support our colleagues in that way as well.

A huge thank you to Julia for taking the time to share an insight into Jackson with us.



To find out more about the company, visit their website - ***www.jacksonlifts.com*** – and you can find out more about apprenticeships at ***https://liftcareers.co.uk***

Jackson

Lifts | Escalators | Cradles

Keeping our customers moving since 1979

jacksonlifts.com

Maintenance | Repair | Modernisation | New Lifts

New Escalators | Disabled Access Equipment | Facade Access

LIFTEX 2022: THREE YEARS IN THE MAKING

LIFTEX is the only dedicated exhibition for the lift, escalator and access industry to be held in the UK, and it takes place only once every three years.

Now in its 34th year, LIFTEX is organised by the Lift and Escalator Industry Association (LEIA). The last event smashed all records. This year's show looks set to continue the trend, as Event Director Oliver Greening explains, "Despite the past few years of uncertainty, sales for the event have flown and we officially sold out of stand space back in the summer. We had to extend the floorplan to accommodate demand, which is an encouraging sign that the industry is ready to get together again."

This year's show features 110 UK and international exhibitors showcasing the latest products and services, including several joining LIFTEX for the first time, such as Otis, Schindler and TKE. International representation comes from 16 countries including Canada, Croatia, France, Germany, Italy, Poland, Spain, Sweden, Switzerland and the USA.

Visitors will find a breadth of industry representation including contractors, service companies, component suppliers and organisations from support services.

"LIFTEX is a great opportunity to get together and celebrate the creativity and innovation right across our industry. People can meet up with existing suppliers or find new ones with exciting new products and solutions. It's a great showcase of our industry to the many customers of ours who will be attending."

Alastair Stannah, Managing Director at Stannah and LEIA President


LEIA Advice Centre
Terry Lifts
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WHAT'S ON IN THE SEMINAR THEATRE?

Don't miss the ever-popular seminar programme featuring a line-up of stellar speakers. Delivering thought-provoking talks and presentations, they will deliver topics including modernisation, evacuation and safety – as well as the latest news on standards and regulations.

The Impact of Digital Telephone Lines on Lift Alarms

An estimated two-thirds of all lift alarms in the UK are connected to telephone landlines. The 'digital switch', the replacement of copper landlines with fibre, represents a seismic shift in the telecoms infrastructure of the UK. This change will have a fundamental impact on the operation and resilience of lift alarm systems.

The presentation will cover the risks of proposed fibre solutions, key questions lift owners need to be asking, the rapidly increasing pace of the fibre roll out and the available solutions which can ensure lift alarms remain available at all times.

MATTHEW DAVIES
Head of Strategic Marketing - Europe, Avire | LEIA representative, European Lift Association TELCO Working Group

Evacuation Lifts, Fire and Disabled Residents

There are several types of lifts that have been provided over the years for use by firefighters or for the evacuation of disabled people. Knowing the lift type is critical for the fire risk assessment of a building. The presentation will touch on the different types of lifts, highlighting evacuation lifts before looking at some of the changes we are likely to see in evacuation lifts and then offering a model for the management of lifts including lifts for the use of firefighters and lifts for the evacuation of disabled people.

NICK MELLOR
Managing Director, LEIA

Lifts for use of the Fire & Rescue Service

This presentation will focus on the importance of lifts used by the Fire and Rescue Service, the considerations when using them and the effect when they are not available

MATTHEW CANHAM
Fire Safety Engineer, National Fire Chiefs Council Protection Policy and Reform Unit (PPRU) Building Safety Programme (BSP)

UKCA: Product compliance and marking post Brexit

New UK legislation for lifts and machines was speedily introduced post Brexit, these introduced new requirements and varying transition times for the approval, certification and marking of components and complete products. Many questions have arisen with the introduction of the new legislation, this presentation gives an overview of the current position and guidance in respect of both new and existing product requirements.

PAUL CLIFTON
Chairman, LEIA Quality & Technical Committee

The London Plan & Evacuation Lifts

Last year saw the publication of the new London Plan, a Spatial Development Strategy for Greater London, which sets out a framework for how London will develop over the next 20-25 years. The Plan is part of the statutory development strategy for London, meaning that the policies in the Plan should inform decisions on planning applications; as such, it is a significant document that is influencing the design of buildings in London. The Plan has implications for the lift industry with specific requirements for firefighters' lifts, particularly evacuation lifts. This session explores these requirements both from a technical perspective and, perhaps as importantly, from a scope of works and stakeholder responsibility perspective.

ADAM J SCOTT
CIBSE Lifts Group | Chair and Codes & Standards Representative

LIFTEX 2022:

A&A Electrical Distributors Ltd	**C34**
A&S Lifts	**Z22**
Access BDD	**Z14**
Advanced Handling Limited	**F2**
ALGI HYDRAULICS	**A38**
Alimak	**C70**
Alliance Platform Lifts / Nova Elevators	**Z26**
Atwell International	**C44**
BEW LIFT DIVISION	**D76**
Borel Lift d.o.o.	**B14**
BRUGG LIFTING	**C86**
Bullet Lift Services Limited	**C10**
Clockwork IT Ltd	**C72**
CMAlifts	**A64**
COBIANCHI	**F80**
CP AUTOMATION LTD	**D70**
CTV Lifts	**F30**
Digital Advanced Control Ltd	**B36**
Double Parking Systems Ltd	**A56**
Drucegrove	**A50**
Earlswood Lift Gates and Shutters	**B44**
Eastwood Park Training	**G70**
Edmolift Group	**Z28**
ELECTROTECH	**A28**
Elevated Engineering Services Ltd	**Y28**
Elevator World	**G10**
Emmegi Heat Exchangers UK Ltd	**B50**

Encoders UK	**G12**
Engineering Systems & Projects	**B68**
ESM Software Ltd	**G14**
ETL UK	**D2**
Evans Turner	**F36**
FIELDBOSS	**Z24**
G-TEX STAINLESS	**F22**
Garan Elevator Load Weighing	**F20**
Gartec Limited	**C14**
GLE	**D10**
Global1Partners Ltd	**D30**
GMV S.P.A.	**Y14**
HISSMEKANO AB	**G26**
Hydroware (UK) Limited	**F70**
IMEM LIFTS	**D10**
IMI Ltd	**B64**
International Lift Equipment	**D20**
J&L Elevator Components Ltd	**B24**
Jackson Lift Group	**C20**
KAPOK 88	**B10**
Kollmorgen UK	**F40**
KONE Global Spares	**Z2**
LEIA	**Z30**
Lester Control Systems Limited	**B30**
Lift & Controller Products Ltd	**Z38**
Lift Industry News	**Y2**
LIFT SERVICE S.A.	**Y22**

WHO'S EXHIBITING?

2022 liftex INTERNATIONAL 12–13 OCTOBER ExCeL LONDON

Lift-Net	**G80**
Lodige Industries	**Y12**
Magnet Schultz Ltd	**G72**
Modusystem	**D1**
Montanari Group	**C82**
Murray Lift Group Ltd	**B20**
NBSL ITALIA SRL	Y38
NDC Elevator Drives	**D40**
OXONOX	**A62**
Omnia Vinyl Ltd	**A26**
Onder Lift	**A58**
OTIS	**D88**
Phoenix Lifting Systems Ltd	**A22**
Power Control Ltd	**G38**
PR Lift Equipment	**D72**
PRISMA S.p.A	**Y38**
PRNS Building Services	**G82**
PURETRONICS	**A60**
RALOE UK	**F24**
Re Ropes Ltd	**C84**
Rimex Metals (UK) Ltd	**F34**
Robert Gerrard Liftplan	**A10**
SafeLine Group	**C30**
Safety Assessment Federation Ltd	**G36**
Sassi Lift Systems Ltd	**B22**
Schindler Ltd	**D82**
Schneider Lift Controls - LiSA	**B46**
Shorts Lifts	**B60**
Stepless by Guldmann	**G40**
SUMASA	**B52**
Surfex Lifts	**A54**
Syntium Lifts	**C80**
Taylor Lifts Ltd	**C76**
TEP Technica Ltd	**Z10**
Terry Lifts	**Z12**
Thames Valley Controls	**B42**
THE LIFT BOX S.L.	**A48**
TKE	**C40**
Oil Store	**G30**
TRANSDEK UK LTD	**G28**
TÜV SÜD	**Z11**
UKANB - L	**G22**
University of Northampton	**G20**
Universal Lift Solutions	**D80**
Universal Lifting Hire Services Ltd	**C12**
University of Northampton	**G20**
Up Dinamic SRL	**F8**
VEGA SRL	**F82**
WECO Elevator Products	**Y40**
WINDCREST LIFTBITS LTD	**Y10**
WITTUR Ltd	**C90**
Wyltor Trade (UK)	**F10**
ZAGRO AG	**A14**
ZIEHL-ABEGG UK	**C74**

Correct at the time of publication.

2022 liftex INTERNATIONAL
12–13 OCTOBER ExCeL LONDON

LIFTEX 2022: ON THE SHOWFLOOR

What can you expect to see from exhibitors?

HERE'S A SNAPSHOT

A&A Electrical Distributors Limited will be showcasing demos of its new fast, efficient and user-friendly e-comm site, along with many of its new innovative and environmentally friendly products at stand **C34**.

Access BDD (Z14) will show its most versatile vertical lift yet! The Altura Platinum lift one combines innovation and luxury and can be configurated to fit any setting.

ALGI Alfred Giehl GmbH & Co.KG on stand **A38** will present the online configurator for hydraulic elevators from simple passenger elevators to XXL freight elevators in the industrial sector.

Atwell International (C44) will have a selection of its safety products, along with two big reveals of its new control box and sensor wheels, on its stand.

On the **A & S Lifts stand (Z22)** you will see its display access control systems via smartphone called 'Nearkey.' It will also show remote monitoring and remote-control systems and its own line of displays.

On stand **C10**, **Bullet Lift Services Limited** will be promoting its services including lift maintenance, repair, installation, refurbishments, consultancy and lift training and qualifications.

CP Automation Ltd (stand D70) will be showcasing its range of Magnetek products and using this opportunity to introduce complementary peripheral products from the CPA product portfolio. These include UPS solutions for automatic rescue, energy saving regeneration solutions, wireless radios as replacements for wired pendants, measurement and testing equipment and power quality solutions.

Double Parking Systems Ltd (stand A56) will exhibit its Mechanical Parking Systems, KLAUSE Multiparking parking systems, installation, servicing and repairs.

Since 1983 **Drucegrove (stand A50)** has been at the forefront of design & quality manufacture, its equipment is shipped worldwide and is renowned for reliability & build quality. Visitors can see various sized TFT information screens, suitable for lift car and landing use.

Edmolift Group (stand Z28) will be demonstrating the adaptability and versatility of the scissor lift table. Truly the overlooked hero of the lift world, the scissor lift platform is ideal for so many diverse applications and built environments. On display for the first time will be two identical lift models dressed for two very different requirements, a goods elevator and bespoke disabled access platform.

Emmegi Heat Exchangers UK Ltd (stand B50) specialise solely on hydraulic oil cooling solutions and will exhibit its latest range of coolers for lift applications.

On **stand Z24, FIELDBOSS** will be exhibiting the latest release of its elevator contractor management software, FIELDBOSS 5.0! This release includes tons of new and updated features including full integration with Microsoft Dynamics 365 Business Central.

On the **Gartec stand (C14)** you will find its most popular lift models, the incredibly versatile and dependable PublicLift Access, formally known as the Aritco 7000, and the award-winning Aritco HomeLift.

Global1Partners Ltd (D30) will showcase partner brands of FERMATOR Doors & SICOR Machines. For those interested in saving up to 70% of your lift energy, discover the unique Green Gem.

GMV SpA (stand Y14) will be showing NRGS POWER UNIT WITH 3100 2CH A3 VALVE "DRY" air motors. Also on show will be: DLV valve: double lock to prevent uncontrolled movement of the cabin with open doors, 3100 EL 2: electronic valve with closed loop, 3100 2CH A3: electronic valve with closed loop and double internal safety lock. Plus, a new product, the battery-powered HOME LIFT (HL ZW).

HISSMEKANO AB (stand G26) was founded in 1938 as a supplier of lift replacement parts and components to serve various industries in the Nordic region and beyond.It will be promoting a variety of service solutions, upgrade packages, replacement parts and components.

Hydroware (F70) will be showcasing its revolutionary H2 controller with its 10-inch touch display. With the launch of the HydroElite H2, and the introduction of the TractionElite H2, it aims to make lift installation and maintenance easier than ever before.

Join **ILE Group (stand D20)** as it unveils the latest addition to its suite of solutions: a brand-new lift system that saves time and space in any property. Designed and manufactured in the UK, this is one of the most exciting products to hit the market for 2023 - and a powerful complement to the ILE product range.

The **Jackson team (C20)** are looking forward to meeting people we haven't seen for some time. Showcasing its lift, escalator maintenance and installation services available and its proven ability to maintain any lift or escalator system throughout the UK.

SEMINAR TIMETABLE
WEDNESDAY, 12 OCTOBER 2022

11.30-11:35
Seminar Introduction

11:35-11:50
Revision of EN 81-20 and EN 81 family designated standards
Dave Searle

11:55-12:10
Evacuation Lifts, Fire and Disabled Residents
Nick Mellor

12:15-12:30
The Impact of Digital Telephone Lines on Lift Alarms
Matthew Davies

12:35-13:00
Panel Q&A
All

Meet the **THE LIFT BOX S.L.** on stand **A48** to discuss the level of support and high level of service it is able to offer to the UK and Irish markets. It will have people from all areas of the company ready to be quizzed on anything in regard to design, delivery, costs and support.

On **G72 Magnet Schultz** will display a range of electric lock products suitable for a variety of applications including its latest development, the Type Approved Lift Lock (TALL). Visitors can also see its disabled lift lock. Variants of the EBL-I unit designed for goods hoists and goods & passenger hoists will also be on the stand.

Modusystem (stand D1) will be promoting its new platform, Modu-view.lite. It's designed to change the way the industry works; save time, offer online support to help fill the technical skills gap and make the step towards predictive maintenance. Its new update system for the Modu-tool will also be on show.

On the **Montanari Group** stand **(C82)**, visitors will see the launch of a brand-new traction machine and discover some of the latest innovations: the ATEX gearbox series, its MGV34XL gearless, escalator solutions and the new release of MontanariAPP with IOT functionalities.

Omnia Vinyl Limited (stand A26) will feature 3M DI-NOC - an architectural vinyl designed to realistically recreate the look and texture of natural, more expensive materials to wrap interior surfaces. The wider range includes 1000+ patterns. The vinyl meets or exceeds the fire performance requirements stated in Lift standards EN 81-20 & EN 81-50.

On **stand D88, Otis** will be showcasing the Gen360, the lift completely reimagined, with enhanced features in design, safety, and passenger experience. The Gen360 also offers online tools for improved support and incorporates sensors to facilitate servicing. Visitors will be able to experience eView, its in-car screen plus its IoT solution, Otis ONE.

OXONOX (stand A62) will be launching two new products. The OXONOX AirLift dilutes any harmful viruses and bacteria in the air, effectively watering down contamination to levels significantly below transmissibility. The OXONOX AirStair sterilises escalator handrails, all day, every day, by directing plasma onto the handrail, killing germs instantly. High-energy bioactive plasma particles permeate and penetrate surfaces for complete coverage, reaching places that disinfectants or UV cannot.

Power Control Ltd (stand G38) will be showcasing its range of uninterruptible power supplies (UPS) including the EN50171 compliant Legrand Trimod MCS ideal for backing up firefighting and emergency evacuation lifts during a mains power failure, and single phase C60 800 - 1000VA and C400 3kVA for releasing the breaks and powering the lift comms system.

Puretronics (A60) will showcase the range of overload devices. The overload device is an integral part of the elevator to enhance the safety of the lift and also to some extent, responsible for a smooth ride for the passenger.

Celebrating its 50th Anniversary on **stand B22, Sassi Lift Systems** will be exhibiting the latest machines from Sassi for modernisation of both conventional and MRL Lifts. See the prototype of Sassi's latest Gearless Machine with belt drive technology!

Visit **Schindler** on **stand D82** and experience its state-of-the-art mobility solutions that will help you save energy and also turn points-of-wait into highly effective communications platforms. With its culture of innovation, it's instrumental in building a more sustainable future.

Transdek UK (G28) will be promoting its market-leading range of mezzanine lifts, illustrating the safest and most efficient way to move goods between floors.

TK Elevator (C40) has been independent since its separation from thyssenkrupp in August 2020, and re-branded as of February 2021. It will showcase what the new TK Elevator stands for and will also present some key topics around its products, innovations and third-party support capabilities as a customer service-focused organisation.

See a range of Lift Industry Specific Hire Equipment from **Universal Lifting Hire Services Limited (C12)**. It will be launching its new False Car system for the easy installation of guides.

Returning to LIFTEX after a short break, **Wittur Ltd (C90)** will be promoting key products from its range plus some special attractions.

ZIEHL-ABEGG UK (C74) will be showing its largest-ever gearless elevator motor along with a matching frequency inverter, accompanied by various other elevator machines and electronic solutions.

SEMINAR TIMETABLE
THURSDAY,
13 OCTOBER 2022

11.30-11:35
Seminar Introduction

11:35-11:50
Lifts for use of the Fire & Rescue Service
Matthew Canham

11:55-12:10
UKCA: Product compliance and marking post Brexit
Paul Clifton

12:15-12:30
The London Plan & Evacuation Lifts
Adam J Scott

12:35-13:00
Panel Q&A
All

SPEAKER SPOTLIGHT

60 SECONDS WITH

Nick Mellor, MD of LEIA

Tell us about your background, how did you get into the industry?

I did have a life before lifts as I previously worked for GEC Avionics in R&D and for Mars Confectionery on industrial control systems. Getting into lifts 30 years ago was more by luck than judgement but it is such an interesting industry that I stayed ever since. Moving to LEIA was another lucky break.

What is new in this area which will be covered in the LIFTEX seminars?

There is more focus on identifying the types of lifts for firefighters or evacuation lifts installed in buildings as part of a fire risk assessment. We see an increasing interest in how lifts can be used for the evacuation of disabled residents. New regulations require responsible persons to make monthly routine checks of their lifts for firefighters' use and evacuation lifts.

Is there any guidance available to Facilities Managers and building owners to help them understand what their responsibilities are?

There are a number of guidance documents: from HSE Approved Codes of Practice; various British Standards to industry guidance such that are published by LEIA on its website ***https://www.leia.co.uk/publications/leia-newsletter/***.

Why is it important for LIFTEX to attract FMs / building owners and address these issues?

FMs have many demands on them - managing their lift and escalator assets being just one. We have a role in providing FMs with a concise view of key issues to enable them to manage their lifting equipment more safely and effectively.

At LIFTEX, you will be talking about evacuation lifts, fire and disabled residents. What are the critical things that building owners and managers should be aware of in relation to this?

Over the years there have been several types of lifts that have been provided for us by firefighters or for the evacuation of disabled people. Knowing the type of lift within a building is critical for the fire assessment of that building. My presentation will look at the different types of lifts, highlighting evacuation lifts. I will offer a model for the management of lifts, including lifts for the use of firefighters and lifts for the evacuation of disabled people and how these fit with the latest fire safety requirements on responsible persons.

What is your message for LIFTEX visitors in your seminar?

The Buildings Safety Act is one of a number of pieces of legislation which will have far-reaching implications for the design and management of lifts in buildings. Changes are expected to come into force early next year with the Fire Safety (England) Regulations 2022 which, together with the Regulatory Reform (Fire Safety) Order, define the management and maintenance of lifts for use by firefighters and evacuation lifts. These have implications for FMs and workplace managers, not only when it comes to the selection of new lifts, but the management and maintenance of existing lifts. Make sure you're up to date on the latest regulations and guidance and understand changes you need to make.

Nick Mellor will host 'Evacuation lifts, fire and disabled residents' on Wednesday 12th October.

SPEAKER SPOTLIGHT

60 SECONDS WITH

Paul Clifton, Chairman, LEIA Quality & Technical Committee

Can you tell us about your background? How did you get into the industry?

I got into the lift industry by chance. I had secured an apprenticeship with the British Oxygen Company, but they subsequently terminated all apprenticeships. I was therefore left looking for a new opportunity when I heard about an apprenticeship for a lift company (Stannah) setting up a new factory in the Andover area. I have been working in the lift industry for almost 50 years having started as an apprentice back in 1973. Most of this time has been spent in product design and codes and standards.

What does your role involve as Chairman of the LEIA Technical Committee?

I have been a member of the technical committee for 32 years, the last two as chairman. I see my role as chairman is to ensure that any current or pending issues and challenges facing its members are firstly understood and then to facilitate discussion to gain consensus leading to the creation of guidance to members.

Your session will focus on UKCA marking, what are the implications post-Brexit?

Brexit involved the UK moving away from European legislation and the introduction of new UK-specific legislation. This meant companies had to convert from European-based notified bodies to newly formed UK-approved bodies. This all sounded straight forward but the lack of UK-approved bodies and uncertainty of transferring existing CE-marked equipment from European manufacturers created uncertainty and confusion.

What should manufacturers be aware of?

Most manufacturers will be aware of the new laws, however new emerging guidance from the government is aimed at easing the immediate burden on industry.

What are some of the questions that have arisen as part of the UK legislation?

The main questions are around an understanding of the varying transition times for the approval, certification, and marking of components, the lack of UK testing and certification capacity, on both new lifts and spares for existing lifts, and the certification requirements for spares provided and fitted to existing lifts.

What will your seminar cover and what is the key message?

My presentation will give an overview of the new legislation and current government guidance. The key message is that the government want to assist the industry by taking a pragmatic approach during the transition period and I will present some of the recent easements introduced.

Paul Clifton will host 'UKCA: Product compliance and marking post Brexit' on Thursday 13 October 2022.

10 TO GET THE MOST FROM YOUR VISIT TO WAYS LIFTEX

With 110 exhibitors on display, a visit to LIFTEX can be overwhelming. Where do you start? Who do you meet first? How do you maximise your time; and how do you fit in those free educational sessions?

EVENT DIRECTOR OLIVER GREENING OFFERS HIS TOP 10 TIPS:

1. Pre-register - LIFTEX is certain to be the place to be and do business for anyone involved in the lift, escalator, and access industries.

2. Book travel and accommodation well in advance. Our partner EventExpress can help you secure preferential rates.

3. Follow us on social media for up-to-date information. We post throughout the show and can remind you of educational sessions starting imminently or interesting things happening around the event you may have missed. Find us on Twitter, LinkedIn or Instagram and use the hashtag #LIFTEXSHOW.

4. Take a look at the floorplan and exhibitor list before you arrive and make a shortlist of those companies you want to meet. Many of our exhibitors are on social media so it is also a good idea to contact them in advance and even schedule an appointment at the show as the stands can get extremely busy.

5. If you're not sure which companies you need to meet, look at our exhibitor list and filter by the category you're interested in. This will help you to shortlist companies, from alarm systems to stairlifts.

6. Check out the free seminar sessions and timings and plan meetings around the sessions you want to attend.

7. Arrive at **free** seminar sessions 10 minutes early – as they are seated on a first come, first served basis, so it's always good to get there early as it's often standing room only!

8. Come and say hello to the team on the **LEIA stand** Z30 and find out how they can help your business. They have lots of free guidance and information on hand – including copies of the Liam Loves children's safety campaign literature.

9. Bring your colleagues! LIFTEX only takes place once every three years so your next opportunity will be 2025.

10. Last, but not least, don't forget to grab some **lunch**. This is a common problem with many visitors and exhibitors fuelled purely by sweets from the stands alone. There are lots of good eateries at ExCeL on the main concourse.

HOW TO GET THERE

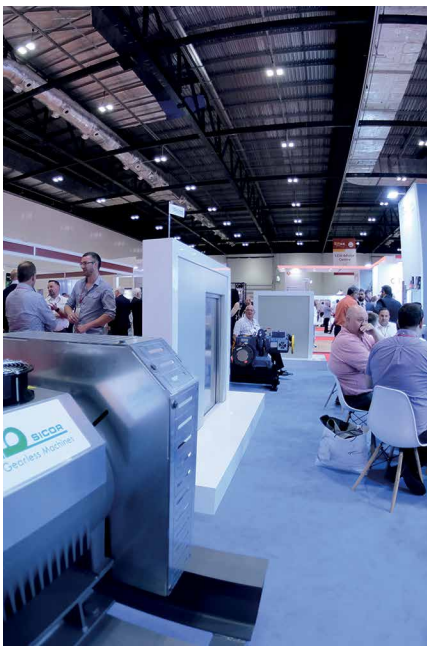
ExCeL London
Royal Victoria Dock
1 Western Gateway
London
E16 1XL

ENTRANCE TO LIFTEX 2022 IS VIA:
Halls N6-N8

OPENING TIMES

WEDNESDAY 12 OCTOBER 2022
9.30am – 5.30pm

THURSDAY 13 OCTOBER 2022
9.30am – 5.00pm



GETTING THERE

Getting to ExCeL London couldn't be easier!

There are multiple ways of travelling to ExCeL, London: Elizabeth line *https://www.excel.london/visitor/getting-here/the-elizabeth-line* (Custom House station)

Underground and DLR *https://www.excel.london/visitor/getting-here/underground-dlr* (ExCeL can be accessed via two DLR stations: Custom House and Prince Regent)

Cable car or Uber Boat *https://www.excel.london/visitor/getting-here/river-and-cable-car*.

Plus, there is parking for 3,700 cars and an international airport 5-minutes away.

Visit the ExCeL website for full travel info. *https://www.excel.london/*

Register to attend for FREE, visit LIFTEXSHOW.COM

LIFTEX International is organised and brought to you by

2022 liftex INTERNATIONAL

12–13 OCTOBER ExCeL LONDON

LIFTEX is the only dedicated exhibition for the lift, escalator & access industry in the UK

Top 5 reasons to attend

New products and services showcased by 100+ UK & International exhibitors

Free seminars delivered by leading experts on the implications of the Building Safety Bill, Net Zero, connectivity, evacuation, safety and modernisation etc

Know how to optimise your infrastructure and plan for future requirements

Stay up to date with safety and training

Come together to see old and new colleagues and friends

Follow us on Twitter LinkedIn & Instagram

Official Media Partners: lift Industry News EW Elevator World UK

A LIFE IN THE DAY

As Senior Operations Manager for LEIA and LIFTEX Director, Oliver Greening has a wide and varied job. We chatted to him about his role, how he got into the lift industry, and discovered why this year's LIFTEX is the place to be.

For the last 12 years I've been working with a range of membership organisations, and now LEIA.

OLIVER ACKNOWLEDGES THE LIFT INDUSTRY ISN'T ALWAYS AN OBVIOUS CAREER PATH, HAVING COME TO IT HIMSELF WITH A BACKGROUND IN SPACE AND ENVIRONMENTAL MANAGEMENT.

"I'm not unique, there are many in the industry who have come to it indirectly. I think it's a challenge of our industry to raise the profile to make it a more obvious career choice.

"My first role out of university (with a geography degree), was in satellite remote sensing using technology to observe the Earth, looking at environmental change, that kind of thing. From there I went into a specialist consultancy focusing on space and satellites. I spent ten years there, working with government departments and European institutions such as the European Space Agency on projects.

Within that consultancy role I started to broaden my horizons and I moved from that into the trade association world, the Aerospace and Defence and Security trade association. For the last 12 years I've been in that sphere, working with a range of membership organisations, and now LEIA."

"It's been such a long time since the last LIFTEX. It's only once every three years, but a lot has happened since the last event!

HAVING BEEN AT LEIA FOR OVER FIVE YEARS, OLIVER OVERSEES MARKETING, COMMUNICATION, MEMBERSHIP, PARTNERSHIPS, OPERATIONS AND OF COURSE THE TRI-ANNUAL LIFTEX EVENT. HOWEVER, PRIORITISING MEMBERS IS AT HEART OF EVERYTHING HE DOES.

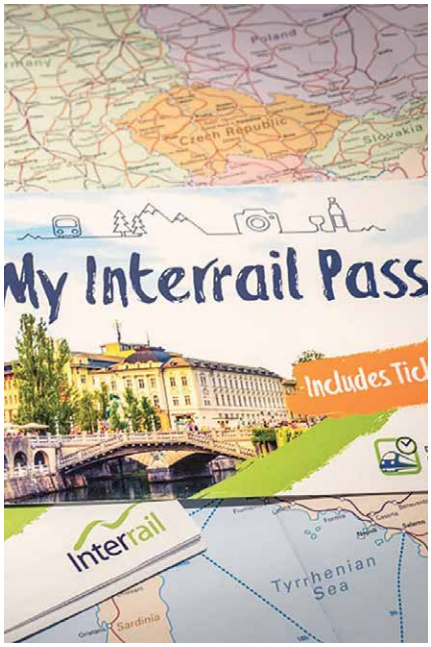
"Communication is always top of my list, understanding queries and making sure our members are happy and getting what they need. Each day I spend time following up with individuals, ensuring they have access to the right support and services. I'm also always working on pushing us forward, I've got ongoing digital transformation projects in the background, for example the implementation of a new CRM system. There's such a breadth of work happening in any one day! Dealing with challenges facing the industry, devoting time to the committees I facilitate and managing suppliers to deliver projects, for example liftcareers.co.uk. I also chair the European Lift Association's Communication Committee as, even post-Brexit, it's essential that we engage with Europe and align with the European industry."

PERHAPS THE BIGGEST TASK THIS YEAR HOWEVER HAS BEEN BRINGING BACK LIFTEX, POST-COVID AND POST-BREXIT. HE EXPLAINS WHY IT'S A WELCOME RETURN.

"It's been such a long time since the last LIFTEX. It's only once every three years, but a lot has happened since the last event! We've been getting a real sense that the industry is just looking forward to meeting up again.

"We have contractors, component suppliers, maintenance and service companies from the UK and overseas exhibiting with us, including three of the biggest global brands in our industry attending for the first time - Otis, Schindler and TK Elevator. We had a very successful event in 2019 and it's going to be fantastic for the show to have the participation of some iconic brands. It's also turning out to be our biggest yet, 10-15% bigger than last time; we sold 60% of the floor space within a few weeks of launching, so there's plenty to be excited about.

"I know there are going to be a lot of new products and services on offer, as well as our seminar programme, covering the key developments in the industry to stay up to date with regulatory and environmental changes. Unlike other shows, we manage to stay in one hall, so you can see everything in one day and get a good flavour of what the industry is about in one visit. I know that some of our exhibitors have gone big this year, so I'm looking forward to seeing some eye-catching stands. We've been building up to this for a year and working hard behind the scenes, so we can't wait to get on-site and start the show now."



THERE'S PLENTY OF INNOVATION AND INDUSTRY DEVELOPMENTS ON THE HORIZON WITHIN THE SEMINARS AT LIFTEX, AS OLIVER GAVE US A SNEAK PEEK.

"Our seminar programme will highlight areas that are rising in importance, such as the digital switch – that's happening now, and means a lot of equipment will become obsolete. There are solutions out there, but there's a need to upgrade sooner rather than later. Also, post Grenfell we're seeing implications with the Building Safety Act which is a big piece of legislation that we have to unpick and see what it means for our industry. It includes a lot of separate regulations that are new, or changes that will have an impact on the industry and we'll be briefing people and steering them through. It's not a short, sharp shock, it's a long-term journey. There are many challenges ahead, and it's important that we meet them in the best way possible. I visited the Battersea Power Station development recently and had a sneak peek at the chimney lift that's about to be signed off – an exceptional piece of engineering! Getting a glimpse and a first-hand experience of how the industry is responding to those challenges is inspirational."

SO HOW ABOUT OUTSIDE WORK? OLIVER ALSO GAVE US A LITTLE INSIGHT INTO HIS LIFE BEYOND LEIA WHAT EXCITES HIM MOST

"I've got two teenage boys, one doing GCSEs and one doing A-Levels, so my focus in on supporting and steering them through a challenging year! This summer we went interrailing around Europe as a family – 10 countries in 22 days!

"Nothing stays the same, there is a constant change to life, and I think my career reflects that. There's always something new to see or understand, or respond to, whether that's work or the bigger picture – environment, politics, technology – it's constantly evolving which is very exciting. I'm conscious of staying ahead of the curve with tech – you have to, or you'll get left behind!

"I'm blinkered with LIFTEX at the moment, but beyond that there are many internal projects to get stuck into, exciting developments with our own website, the evolution of liftcareers.co.uk and a potential office move. Of course, the ultimate focus remains about providing support and services to our members – that's why we exist. It never drops out of my mind; everything we do is ultimately for our members."

Thank you to Oliver for sharing with us.

You can find out more about LIFTEX *https://www.liftexshow.com/*.

MAKE SURE YOUR LIFTS ARE READY FOR THE DIGITAL SWITCH

By Matt Davies

Over the last few years Openreach, the UK's telephone line infrastructure provider, has been rolling out fibre telephone lines as part of their 'fibre first' programme. The legacy, copper telephone line-based, public switch telephone network (PSTN) has served the UK well for many years but is no longer able to keep pace with our ever-increasing demand for data over voice services. The UK government estimates that the deployment of fibre phone lines will provide a £59bn boost to productivity and bring a million people back into the workforce by the end of 2025.

However, telephone lines service several applications other than internet connections and telephone handsets, notably: lift alarms.

Lifts are an essential part of the operation of any multi-storey building. Both in terms of how people and goods flow through your building and ensuring your building is accessible to everyone regardless of their abilities. Every day, thousands of passengers travel in lifts without giving it a second thought. How many lift journeys have you taken today or this week?

Whether we realise it or not, the lift alarm (or the knowledge that the lift alarm is there should we need it) is a key part of why most people are so comfortable using a lift. However, should the worst happen, and the lift becomes stuck, the peace of mind the lift alarm gives us becomes a genuine necessity to summon help. This availability of the lift alarm functionality is driven by a combination of the alarm equipment itself and the resilience/reliability of the communication link to the outside world.

What is more surprising, are the figures injury lawyers are quoting for claims related to being trapped in a lift and suffering a ‘psychological injury’.

Lift alarm equipment includes a backup battery in case of a power failure and places regular test calls to prove that the equipment is in working order. The monitoring and recording of these test calls then become your audit trial to show that the lift alarm was compliant with the relevant safety standards and in working order.

Traditionally lift alarms were connected to copper phone lines. The copper network was inherently resilient as the copper lines carried their own power and battery backups existing in the network to ensure the telephone line was always available. Short of the cables in the street being damaged by roadworks, or a lightning strike, copper lines were there when you needed them.

The deployment of fibre lines changes this picture dramatically. Fibre cannot carry power so relies on the mains power of the building. The Optical Network Termination (ONT) and fibre router devices which are replacing telephone sockets both depend on the mains power to function. This has led to Communication Providers (CPs) warning customers that fibre lines cannot be relied upon in the event of a power failure.

Unfortunately, power failures are also a key cause of lift trappings. This then raises the very real possibility of a lift becoming stuck, trapping a passenger, and the lift alarm equipment being rendered useless due to a simultaneous failure of the telephone line!

Being trapped in a lift is a stressful situation, but a prolonged trapping over many hours can be a truly horrendous experience. An attendee at a recent event shared with me their story of being trapped in a lift from Friday night until Monday morning! The building was closed over the weekend and the lift alarm was unable to dial out meaning they could not signal for help.

Type ‘lift compensation claim’ into Google and you may be surprised by how many hits you get back. What is more surprising, are the figures injury lawyers are quoting for claims related to being trapped in a lift and suffering a ‘psychological injury’. In 2016 a Dublin woman, who suffered from claustrophobia, was awarded £23,000 by the courts after being trapped in a lift for only four and a half minutes.

Whilst that is an extreme example the risk of compensation claims and the resulting bad press and potential reputational damage to an organisation is very real.

It's estimated that over 80% of all lift alarms in the UK are connected to telephone landlines today. Understanding what type of lines your lifts are connected to is now of critical importance.

Many people think they will have to specifically request fibre telephone lines be installed, but that's not strictly true. Openreach announced in 2020 the beginning of their 'Stop Sell' programme. This means that when an exchange area reaches the point where 75% of the lines are fibre, no 'new' copper services will be provided. Reading a little deeper you find that the programme also includes no changes to existing copper lines either. This means that, for example, if you were to change your communication provider you would be switched from a copper line to a fibre service. Equally, if a tenant leaves a building and a new tenant moves in the 'working line take over' from one tenant to the next will generate the same result: line moved to fibre.

It's therefore entirely likely that lifts have been switched from copper to fibre lines (***https://www.avire-global.com/en-gb/digital-switch-uk/***) without lift owners necessarily understanding that the change has taken place.

SO, WHAT CAN BE DONE TO ENSURE LIFT ALARMS HAVE A RESILIENT COMMUNICATION LINK?

Some communication providers have an optional battery backup available for their fibre routers which can also serve the ONT. Whilst this is an option, you'll need to think about where that battery backup is located and how it will be monitored and maintained to ensure it's in working order when it's needed.

The alternative is to move away from fixed lines altogether and switch to a GSM gateway (***https://www.avire-global.com/en-gb/products/smart-elevators/dcp/***) connection for the lift alarm. This approach has several benefits:

The gateway can be installed by your existing lift maintenance provider

The on-board battery backup can be monitored remotely and can pro-actively issue alerts when the battery needs replacing

Roaming SIM cards ensure maximum signal strength and are typically cheaper than fixed lines

All the lift alarm's test call data and information on gateway battery health, signal strength etc. can all be reported to one platform providing a full audit trail

Speak to your lift maintenance provider as a matter of urgency to understand the type of lift alarm you have installed on your lifts and whether those alarms are connected to telephone lines or GSM gateways.

If your lift alarms are connected to telephone lines check if those lines have been switched over to fibre. If the lines are fibre, then consider switching to GSM.

ABOUT THE AUTHOR: MATT DAVIES, HEAD OF STRATEGIC MARKETING AT AVIRE

Matt is responsible for growing and maintaining AVIRE's market knowledge including industry regulations, codes, and trends, and providing the business with insight for strategic decisions. A key part of Matt's role is gathering customer insight to provide a steady stream of innovative ideas based on customers' pain points and needs.

Prior to joining the lift industry over seven years ago, Matt spent ten years working in the semiconductor industry, specialising in solid-state lighting and working with traditional lighting manufacturers to make the move to SSL technology.

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THE LIFT & ESCALATOR SYMPOSIUM IS BACK IN FORCE!

As the Autumn 2022 edition of Lift Industry News goes to press, final preparations are being made for the 13th Symposium on Lift & Escalator Technologies. Papers have been reviewed and proofread, the agenda has been finalised, and speakers are putting the final touches to their slides.

http://www.liftsymposium.org

It is such a joy to be meeting in person again after two years of holding the Symposium online. Online meetings are very efficient, but I think we all now understand that meeting in person is also important. Nevertheless, we have also offered an option to attend online this year; for many reasons, some people cannot travel, and it is good to be able to include them.

With 115 delegates from 16 countries registered, The Lift & Escalator Symposium is back in force. Unfortunately, our regular venue, Highgate House, closed during the pandemic, but that has given us the opportunity to try a larger venue, The Hilton Hotel, Northampton.

This year we have 25 papers over two days, making it a packed and fast-moving programme. The organising committee discussed extending the conference to a third day or reducing the number of papers. But the feeling was that shorter, more focused presentations supported by specifics in the written papers would be preferred by our delegates; we try to discourage line-by-line expositions on mathematical formulae which fill time but tend to lose the room!

The Symposium is run by a Charitable Trust which is purposed "to advance education in lift and escalator and related technologies."

The Organising Committee are very grateful to the speakers and scientific committee who give freely of their time to enable such worthwhile and memorable events.

The pandemic was a difficult time for everyone. For the Symposium we relied on individuals, supporting organisations and sponsors to mitigate the losses incurred through the need to cancel events. It was so encouraging to know that the Symposium's supporters consider the event "too important to fail" and demonstrated this by making donations to the Trust. Thank you to everyone who supported us.

Personally, I am really looking forward to learning new things, developing new and old friendships, and sharing our own company research at this and future Symposiums. I am looking forward to meeting you there, this and in future years.

BIOGRAPHY

Richard Peters has a degree in Electrical Engineering and a Doctorate for research in Vertical Transportation. He is a director of Peters Research Ltd and a Visiting Professor at the University of Northampton. He has been awarded Fellowship of the Institution of Engineering and Technology and of the Chartered Institution of Building Services Engineers. Dr Peters is the author of Elevate, elevator traffic analysis and simulation software. He is a Trustee of the Lift & Escalator Symposium Trust.

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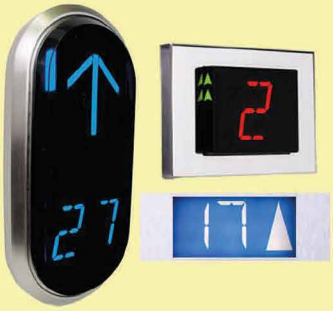

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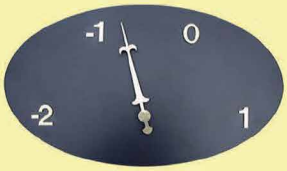

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LIFT & ESCALATOR SYMPOSIUM

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EXPLORING IOT APPLICATIONS FOR VERTICAL TRANSPORTATION (VT) TO TACKLE CHALLENGES IN A MODERN WORLD

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Keywords: IoT, Lift Maintenance, Covid-19, Air Quality, Net-Zero, Energy Consumption, Lift Monitoring.

Abstract: This paper investigates and proposes applications for emerging, off-the-shelf technologies for vertical transportation (VT) equipment, with a view to tackling some of the changes in social, economic, and environmental requirements of key stakeholders for buildings.

Covid-19 has presented opportunities for IoT technologies to be used within VT systems, to measure air quality and maintain the peace of mind of tenants returning to the office. Sensors have been used to measure a range of in-car, air quality metrics, the analysis of which will be used to recognise how devices can provide stakeholders with accessible, transparent information of the environment in their lifts.
With a drive for energy efficiency, and clients striving to meet their net-zero targets, IoT devices can also be used to monitor energy usage of VT equipment and make strategic decisions to save energy and reduce carbon emissions. This paper also looks to understand if, and how we can measure power used by VT systems with these devices.

This, coupled with understanding the changing habits of the average office worker, can be used to think out of the box regarding efficient operation of buildings. The author's previous research investigated the use of IoT technology to monitor the condition of lifts. Analysis of breakdown data and interviews with key stakeholders were used to demonstrate how this technology could be used for earlier fault diagnosis.

Since the original study, the industry has moved forwards with off-the-shelf and third party IoT systems being trialled by clients and independent suppliers, to support maintenance and repair strategies. Previously, this was only possible with major lift maintenance companies.

INTRODUCTION

The expression 'Internet of Things' or 'IoT' is by no means a new concept, with the first known 'Smart Device' being created in 1982, where students of Carnegie Mellon University, Pittsburgh, Pennsylvania installed micro switches on a Coca-Cola machine to check the stock levels and temperature of the refrigerated drinks [1]. However, the use of devices to connect VT systems to the internet and collect vast amounts of data is still relatively new, with devices being rolled out by the major lift companies over the past 5-7 years.

In 2019, the author of this paper conducted extensive research into the emergence of this technology. It was found that, the introduction of Transmission Control Protocol/Internet Protocol (TCP/IP) v6 [2], along with the advancement of; smaller, cheaper, and more powerful chipsets has assisted with the integration of IoT into households and various industries [3]. Heating, ventilation, and air conditioning systems are also using radio frequency identification (RFID) and TCP/IP to connect wirelessly to a network and provide vast amounts of data without human intervention. [4].

Kone, Otis, WeMaintain, Thyssen and Schindler have established 'self-developed' systems in the UK and across the world with the aim of producing targeted maintenance regimes to improve reliability, callout response times, transparency, and overall service. The roll out of these systems in the UK which has encouraged Clients to push for new, data driven methods of maintenance. [5,6,7,8,9]

In 2022 we have seen the emergence of independent, third-party systems being introduced into the market. This equipment is supporting the adoption of IoT technology by the independent lift maintenance providers, with the goal to utilise key data points and provide options for data driven maintenance regimes. It is understood that the key suppliers providing these systems in the

UK are Safeline, Thames Valley Controllers, and Kollmorgen with start-up companies in Europe such as Uptime entering the market also.

IoT technology is becoming widely adopted for assisting with maintenance related items, however, the author of this paper has explored different ways in which technology can be used to assist with specific issues relating to:

- Post Covid 19 requirements dictated by tenants' behaviour.
- Ambitious targets for reducing energy usage, carbon emissions and embodied carbon in design. and,
- Environmental issues seen through prior callout

2. DEVICES

There are various companies that provide off-the-shelf IoT gateway and sensor devices which can be used in a range of applications.

When applying these devices, to monitor lift equipment, it is common to encounter the following issues: signal between gateway devices and sensors within lift shafts, signal in motor rooms to allow the gateway devices to connect to the internet and the output of data into user friendly dashboards.

The systems that have been used for the experiments relating to this study are summarised below:;

2.1 MY WIRELESS TAG

An American company offering various sensors. This system was used throughout the author's previous study which assisted in understanding what low-cost options were available on the market.

Figures 1a-e My Wireless Tag sensors and gateway device

Whilst this low-cost option proved that off-the-shelf systems are available and can be utilised to assist with earlier diagnosis of callouts, there are various limitations with regards to signal strength, connectivity, dashboard user interface and sensor functionality [10] that have been considered throughout this study.

2.2. INFOGRID

InfoGrid are a venture capitalist funded company who were founded in 2018 and provide various sensors and their own dashboard to present the data in a user-friendly interface.

The devices connect to a sealed gateway unit that has a pre-paid roaming sim card that connects to the strongest data signal available. This removes the issue relating to the complexities of connecting devices to the internet.

Figures 2a-g InfoGrid sensors and gateway device

The available sensors can monitor the following:

- People Counting
- Air Quality
- Temperature
- Door Open/Close
- Moisture/Humidity

These devices are automatically set up to connect direct to the InfoGrid gateway devices which can be located nearby. The devices are simple to set up and provide pre-set graphics to display the data.

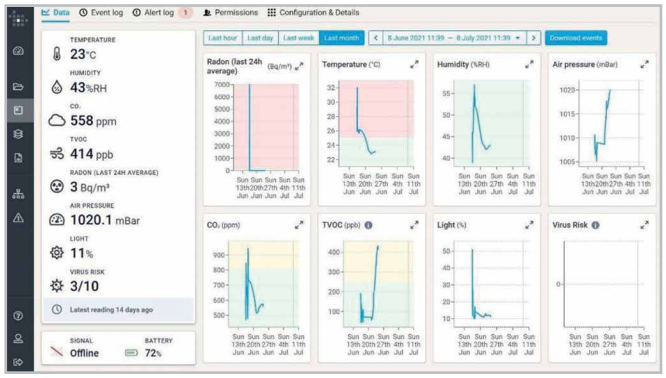


Figure 3 InfoGrid air quality dashboard example

The dashboard provided had some limitations with the functionality, however, the graphics displayed allow the user to customise the view in a way that suits them. A separate gateway device was also required when using the air quality monitoring which increases costs, power, and space requirements.

The people counting device required a 230v power supply and would be located at each landing entrance. Power supplies are not typically provided within close range to lift entrances which made this solution not suitable for lift applications.

There were also constraints with regards to the connectivity of the gateway device when adapting this for a lift shaft. It was estimated that one gateway device would be required at every other floor which would make the system very costly.

The InfoGrid solution was trialled and presented issues that could not be resolved without further significant investment both from the building owner and the author.

2.3. ALLIOT

Further research into alternative devices that can all be connected via the same gateway led the author to ALLIoT, a company that specialises in providing systems that use low power, long range, wide area network protocols (LoRaWAN technology).

ALLIoT provide a range of different systems and offer consultations to select devices that are most suitable to the application you require. Their services include the gateway devices, sensors, user interfaces (Dashboards) and the data storage all in one package.

Sensors that were available and suitable include:;

- Air Quality (Temperature, Humidity & Carbon Dioxide)
- Movement in and out
- Light (measured in LUX)
- 3-Phase energy monitoring
- Water sensor

Figures 4a-f ALLIoT sensors and gateway device

The consultation when designing the system allows for devices to be chosen dependent on the application, it also allowed selection of devices from different manufacturers that all operate on the LoRaWAN network which can connect through the same gateway device.

There were options to use a battery-operated passive infrared (PIR) sensor to measure people movement in and out. This system was suitable as it did not require any infrastructure to use, however, limitations with battery life were a concern.

For the above reasons, the LoRaWAN system was utilised for experiments in this study.

3. OUTCOME

Experiments were undertaken on an 8-Person passenger lift within a commercial building in London.

There are 3 types of dashboards that were available to visualise the data gathered:

- Opensource - Creating dashboard with our own in-house software engineers.
- Pre-Built Public Dashboards - This is recommended for trials due to pricing and functionality.
- Bespoke Platform – Fully tailored to the users' requirements.

The devices were strategically placed around the lift and visualisations of the data were available on the Kheiron dashboard system, a pre-built public dashboard.

If required, the dashboards are interchangeable with all LoRaWAN sensors, so if a dashboard is not the right fit and we swap all data can be transferred.

Figure 5 ALLIoT air quality dashboard example

3.1. SIGNAL

To remove the connectivity issues that had been experienced before, the system purchased included an antenna extension and a field test device which ensured signal was available when placing the sensors in discreet areas of the lift system.

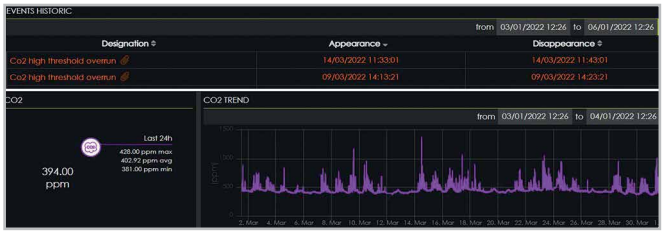
Figures 6a&b ALLIoT field test device and antenna extension

3.2. AIR QUALITY

This device was located within the lift car and shows live data and can assist clients by providing information to tenants regarding the air quality within a lift car following the Covid-19 pandemic.

It was found that there is no standardised measurement for indoor CO2 levels that could be attributed as a 'safe environment', however, many indoor air quality (IAQ) professionals have adopted a value of 1000 parts per million (ppm) CO2 as a guideline for acceptable indoor air quality [11]. With this in mind, a high threshold of 1000ppm was set using the Kheiron dashboard settings.

The results show that, on average the lift had C02 measurements between 400-450ppm within the lift car. Over the three-month period between 1st March and 1st June 2022, there were six instances where the C02 levels were measured above the threshold, these were sporadic with regards to the time of day and did not follow any pattern. The values all returned to normal levels when the device took the next measurement (10 minutes later). If the CO2 levels had been persistently above the threshold, a manual or even automatic process could be implemented where the lift doors are opened, or a call placed in to force an air change and reduce any risks of virus spread.



Figures 7a&b Carbon dioxide measurements and above threshold notifications

This information is valuable to the building management companies and business owners, who can show the live data to their tenants and employees to reassure them

that using the lift is safe, assisting with workers returning to offices.

This supports the statistic that 58% of employees reported feeling more comfortable if their employers used data to improve the healthiness of their buildings. [12]

Measurements for temperature and humidity can also be taken from the same sensor and thresholds set to mitigate risks involved with virus spread along with improving overall passenger comfort.

3.3. PIR SENSOR

In the UK, lift systems in commercial buildings are typically designed to guidance set out by the British Council of Offices (BCO) with the most recent guidance published in 2019 [13].

Table 1 BCO Guidance for lift performance in commercial buildings

Scenario	Handling Capacity (% of Population/ 5 Minutes)	Average Waiting Times(s)	Average Time to Destination(s)
Up-Peak	12%	≤25 ≤30 <25	≤90 ≤80 <110
Two-Way	13%	≤40	~

This sets the standard for lift performance; however, the Covid-19 Pandemic has changed the way in which the average office workers comes to work and employers are becoming increasingly flexible with working from home, staggering start times in the typical office and even trialling a national 4-day week pilot.

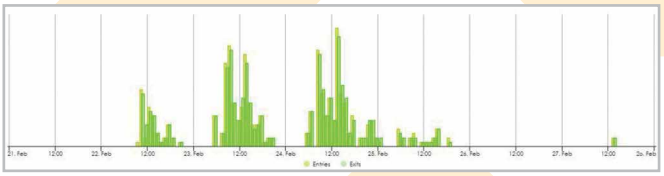


Figure 8 PIR sensor graphs showing people movement over a 1-week period

Table 2 Raw data provided by PIR sensor

Date Time	Entries	Exits
24 / 02 / 2022 07:00	0.00	0.00
24 / 02 / 2022 08:00	22.00	21.00
24 / 02 / 2022 09:00	12.00	13.00
24 / 02 / 2022 10:00	7.00	7.00
24 / 02 / 2022 11:00	11.00	11.00
24 / 02/ 2022 12:00	6.00	6.00
24 / 02 / 2022 13:00	27.00	25.00
24 / 02 / 2022 14:00	12.00	14.00
24 / 02 / 2022 15:00	10.00	11.00
24 / 02 / 2022 16:00	3.00	3.00
24 / 02 / 2022 17:00	7.00	6.00
24 / 02 / 2022 18:00	0.00	0.00

The PIR sensor device is set up to collect data and send back to the server a summary of the number of people entering and exiting the lift over a period of 1 hour. As the BCO recommendations are based on a peak 5-minute period, we can configure the device to take measurements in 5-minute intervals by adjusting the frequency of measurements. Devices can be put on each landing entrance which will help with creating an accurate passenger movement template in a specific building and also produce average waiting times and times to destinations.

This information coupled with surveys of the perception of lift performance from tenants can help understand if office users are willing to accept higher waiting times than the average of 25-30s. In turn, this could have a significant impact on how buildings are developed in the future. With potentially fewer lifts being required, developers and design teams will benefit from lower embodied and operational carbon from the VT system.

Existing buildings can also benefit from lower operational carbon if the data is used to pinpoint downtimes in the lift usage and then isolate an appropriate number of lifts. This could also be used in tall buildings to produce energy by making use of Lift Energy Storage Technology (LEST) achievable by automatic transport of bags of sand throughout the building. [14].

3.4. ENERGY MONITORING

The requirement for measuring and reducing operational carbon is becoming prevalent in an era where the world is setting stringent Net Zero targets. In order to assist in achieving these targets, IoT sensors can be applied to measure the real time energy usage of lift systems.

Figure 9 ALLIoT Energy Meter Dashboard Example

The sensor used was originally measuring power consumption every 15 minutes which was not providing a truly accurate picture of the lift energy usage. The software was updated on the device to measure every 1 minute to improve the accuracy of the measurements. This provided more accuracy but has a significant impact on the battery life of the sensor and also relies on the lift using energy when the measurement takes place.

Other methods of measuring real time energy usage were investigated and established that Eastron meters could be used to provide a constant energy reading rather than a sample taken at certain intervals. Eastron meters can connect to the LoRaWAN network and are also powered by the supply itself, removing the need for batteries.

Figure 10 LoRaWAN Eastron meter

Overall, these sensors will provide accurate measurements that can be used to strategically isolate lifts where necessary.

3.5. LIGHT SENSOR

This sensor was applied to the lift system to identify when the shaft lights have been left on. The dashboard provides an indication when the shaft lights are on or off.

Figure 11 ALLIoT Light sensor dashboard example

With many maintenance regimes being monthly, shaft lighting left on could go unnoticed for some time. This system could notify when this has been left which can prompt someone to attend and turn them off, saving a considerable amount of energy as many lifts do not use energy efficient bulbs/LEDs in the shaft.

3.6. WATER SENSOR

The water sensor used within this study was placed in the lift pit and aimed to tackle environmental issues relating to flooded lift pits. Flooded lift pits were highlighted as number 12 in the top reasons for callouts in a study undertaken over a 13-month period that analysed 829 total calls across 114 lifts. This issue accounted for 2% of all calls (18 callouts). [10]

Figure 12 ALLIoT water sensor dashboard example

The UK has an average callout rate of over 4 calls per anum due to equipment failure [15]. With this in mind, ingress of fluid in lift shafts can be seen as a significant environmental issue. Various tests are typically required to identify the type of liquid found and to identify the source. An IoT system can be used to assist and highlight where the issues lie to remedy and proactively pump/clean the pits before it requires isolation.

Further development can interface devices with a sump pump to automatically remove the liquid. [16]

4. FURTHER WORKS

Further works that the author would like to investigate to enhance the findings of this study are detailed below:

- Trial the LoRaWAN devices on other lift types.
- Update the PIR sensor software to improve the information and compare data with current recommendations for lift performance.
- Test Eastron meters to receive accurate energy readings of VT Systems and pair with other devices to produce strategies where lifts can be isolated to save energy or utilised for energy production in periods of downtime.
- Investigate automatic pit pumping devices that provide notifications to allow visibility of reoccurring problems.

5. CONCLUSION

Lift suppliers are providing IoT systems to assist with maintenance related items and decrease the number of visits required, reduce the number of callouts, and provide transparency of the service provided to Clients.

Independent suppliers are just starting their IoT journeys with trials on third-party devices. This is being led by client requirements for targeted maintenance regimes.

There is a gap in the market for the use of these devices to assist with: the design of VT systems, the comfort of passengers in a post covid world, the reduction of embodied and operational carbon emissions to meet global net zero targets and environmental issues regarding pit flooding.

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BIOGRAPHICAL DETAILS

Paul started his career in D2E as a Graduate Engineer. He has been with D2E for 8 years' and has experience largely in commercial and leisure sector, working on multiple portfolios across the UK and providing project assurance for lift replacement and modernisation projects.

In 2020, Paul moved from the Portfolio Team into the Design Team and has since worked on various key developments within D2E, predominantly in London.

Paul has achieved Masters in Lift Engineering at the University of Northampton and works towards his Chartered Engineer status (CEng) with Chartered Institution of Building Services Engineers (CIBSE).

LIFT & ESCALATOR SYMPOSIUM

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RATED LOAD AND MAXIMUM AVAILABLE CAR AREA

A PROPOSAL TO REVISE EN81-20, TABLE 6

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Abstract: In the USA during the 1920s, concerns were expressed that large lifts were being overloaded owing to the lift attendants in the cars pushing passengers into their cars. On group systems this was aggravated by the human despatchers forcing passengers into the cars. The result was the density of the passenger load increased as the cars got bigger. Non-domestic buildings were designed in the USA for a uniformly distributed load of 60 pound per square foot (psf) on open areas of building floors and this was used for lift car floors. To ensure passenger safety the load bearing was increased to 100psf for lifts carrying 10,000lb (A17.1:1925), and in 1937 to 127.5psf (A17.1:1937) for lifts carrying 37,500lb. This resulted in a nonlinear relationship between passenger load and the available car area on which they stand. This can be seen in Table 6 of BS EN81-20:2020/BS ISO8100-1:2019.

NOTE 1: Whenever EN81-20 is referred to in this paper it means: BS EN81-20:2020/BS ISO8100-1:2019

Societal changes, where individuals do not tolerate the discomfort of other individuals intruding into their personal space; and technological advances in load weighing, demands a reconsideration of the space a passenger occupies and its corresponding rated load. A proposal to revise the relevant standards is presented.

The concept of a Body Area Index is introduced to allow for a wide range of body weights across the world.

NOTE 2: Imperial measures are referred to and these may be converted as one pound (lb) = 0.454 kg and one square foot (sf) = 0.093 m^2.

1. BASIC TRAFFIC DESIGN

When lift traffic designers size a lift installation to meet a specific passenger demand (say, 12% of the likely building population), at a defined performance level (say, providing an interval of 25 seconds), the lift traffic designer specifies the number of lifts, their rated speed, door times, etc. AND the average number of passengers *(P)* to be transported on each trip.

Passengers do not conveniently arrive in batches of *P* passengers, but randomly. The lift traffic designer accommodates this statistical variation by estimating the maximum number of passengers *(Pmax)* to be transported to be:

$$P_{max} = \frac{P}{0.8} \quad \ldots (1)$$

This is the maximum number of passengers to be accommodated. But what is the rated load?

NOTE 3: Equation (1) contains the denominator 0.8, that means that *P* is taken as 80% of Pmax. The 80% estimation is a common statistical adjustment

Inside each lift car there is a rating plate, which states the rated load (*Q*) in kg. It often also states the maximum number of passengers that can be safely transported according to the formula in clause 5.4.2.3.1a), BS EN81-20:2020 [1] or BS ISO 8100-1:2019 [2]:

$$P_{max} = \frac{Q}{75} \quad \ldots (2)$$

and the result rounded down to the nearest whole number.

NOTE 4: In Equation (2) the denominator figure of 75 assumes that the average passenger weight is 75kg.

The rated load (kg) is $75P_{max}$. For example, P_{max} is 17 persons, then the rated load is 1275kg.

2. THE RATIONALE IN THE CHOICE OF THE 75KG PER PASSENGER

The rationale for the choice of 75kg is hidden in American standards as far back as 1925.

A graph was published (shown here as **Figure 1**) in the US ANSI A17.1: 1925 *Safety code for elevators.* [3]

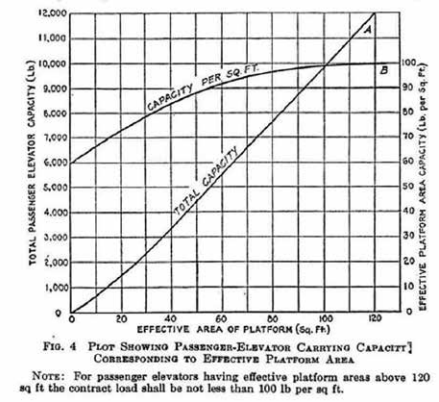

FIG. 4 PLOT SHOWING PASSENGER-ELEVATOR CARRYING CAPACITY CORRESPONDING TO EFFECTIVE PLATFORM AREA

NOTE: For passenger elevators having effective platform areas above 120 sq ft the contract load shall be not less than 100 lb per sq ft.

Figure 1: Figure 4 from A17.1:1925

Curve A on this graph shows the rated passenger capacity (load) in pounds (lb) [left y-axis] for a range of effective car platform areas in square feet (ft^2) [x-axis]. Curve B shows load (lb) per ft^2 (psf) [right y-axis]. Note this is nonlinear. The same graph is published in the A17.1:1931.

In July 1935, the UK Building Industries National Council published a *Code of Practice for Electric Passenger & Goods Lifts and Escalators* [4]. In it they stated:

c) A plate shall be affixed to each lift car in a conspicuous position and shall bear at least the following particulars: -

(i) The contract load of (goods) lift in cwts. and/ or lbs.

(ii) The maximum capacity of (passenger) lift in passengers, calculated at 150 lbs. per passenger.

There was no supporting graph and no indication of the car platform area. But it implies the assumption an average passenger weighs 150lb. A17.1:1937 [5] provides the graph of 1925 and assumes a passenger weighs 150lb (Rule 217c) supporting the British view.

In May 1943, the UK Building Industries National Council revised their 1935 COP [6] to include a graph, shown here as **Figure 2**. This graph is clearly based on the US ANSI A17.1: 1925 (Figure 1) but rationalised to suggest a $50ft^2$/5000lb pairing rather than the $50ft^2$/4400lb. The ANSI A17.1:1945 [7] adopted this rationalisation.

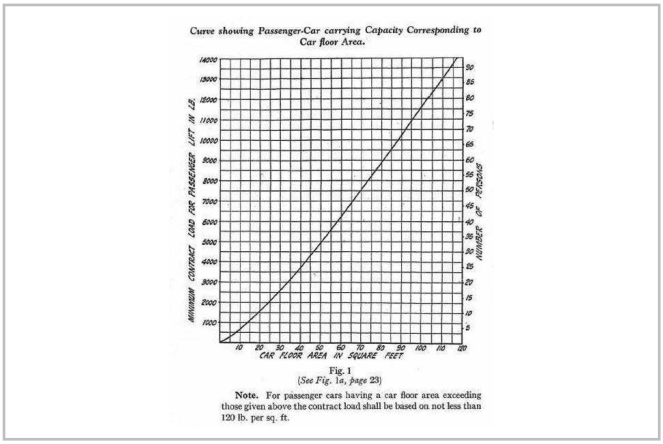

Fig. 1
[See Fig. 1a, page 23]

Note. For passenger cars having a car floor area exceeding those given above the contract load shall be based on not less than 120 lb. per sq. ft.

Figure 2 Extract for 1943 Code of Practice

Why is the curve not linear? This is due to Curve B of Figure 1, which shows the lift car floor loading increases from 60psf to 100psf. Why is this?

It was the custom in the 1920s/1930s for lifts to have an attendant to drive the lift. Where there was a lift group, often there was a (human) despatcher on the landing forcing passengers into the cars. These two persons had the function to squeeze as many people as possible in a lift before it was despatched. This led to the observation that the density of passengers increased as the cars got larger. Curve B was the solution. It shows the car floor loading increases from 60psf to 100psf (and later higher to 127.5psf). That is more passengers per square foot!

Another factor was there were no reliable load weighing devices to stop lifts starting up in an overload condition.

This imposed nonlinearity coped with possible overloading at that time as there is a limit to how many people can be squeezed into a small space.

Versions of this graph were included in BS2655, Part 1:1958 [8] and 1970 [9].

By 1955 A17.1 had equations to represent the curves in Figure 2, see PD ISO/TR11071-2:2006, Table 11 [10].

The curve had a discontinuity at available car areas *(Ac)* above $5m^2$/$50ft^2$. This was a pragmatic point as very few passenger lifts had rated loads greater than 2500kg/5000lb. Lifts up to this point followed a quadratic equation (3).

Up to 5m^2 use Equation (3):

$Q=35.05Ac^2+325.7Ac$ . . . (3)

After the discontinuity point, A17.1 continued with a different quadratic equation (4A), but CEN used a linear equation (4B).

A17.1 used

$Q = 2.454Ac^2 + 610.3Ac - 620.1$ . . . (4A)

CEN standards uses a linear equation.

$Q = 625(Ac - 1)$ . . . (4B)

NOTE 5: In Equations (3), (4A) and (4B) the variable Ac is in m^2.

Curves are difficult to read and the BS 5655-1:1986/EN81-1:1985 [11] standards used these equations and produced Table 1.1 for a number of rated load values. Table 6 in both EN81-20:2020 and ISO 8100-1:2019 are identical to Table 1.1. **Table 1** below shows an extract of common rated loads from EN81-20:2020 plus the ISO recommended rated load of 1800kg, which is missing from Table 6.

Table 1: Extracts from Table 6, EN81-20:2020

Rated load (Q) (kg)	Maximum available car area (*Ac*) (m^2)
450	1.30
630	1.66
800	2.00
1000	2.40
1275	2.95
1600	3.56
1800	3.88
2000	4.20
2500	5.00 (c)
(c) Increases by 0.16m2 for each extra 100kg	

3. CURRENT SPACE PER PASSENGER

Consider Table 2.

The third column has been added to **Table 1** to show the rated number of passengers (rounded down), weighing 75kg each according to Equation (2). This is the number the in-car rating plate displays. The fourth column has been added to show the space that each passenger is allocated to occupy. Notice the diminishing space per passenger.

Table 2: Space per passenger according to EN81-20:2020, Table 6

Rated load (Q) (kg)	Maximum available car area (*Ac*) (m^2)	Rated passengers area (P_{max})	Space per passenger (m^2)
450	1.30	6	0.22
630	1.66	8	0.21
800	2.00	10	0.20
1000	2.40	13	0.18
1275	2.95	17	0.17
1600	3.56	21	0.17
1800	3.88	24	0.16
2000	4.20	26	0.16
2500	5.00 (c)	33	0.15
NOTE 6: Passenger figures are rounded down.			

The passengers in a 450kg car have a personal space of 0.22m^2 (1.30/6), but the passengers in a 2500kg car have a personal space of 0.15m^2 (5.00/33). As passengers board a large lift car they eventually begin to intrude into other passengers' personal space (shown dashed in Figure 3). Eventually there is no space left and intimate body to body contact occurs (shown solid line in Figure 3). It reaches the crush situations that are seen on subway systems, such as the London Underground. Lift passengers do not tolerate this and are uncomfortable and refuse to board.

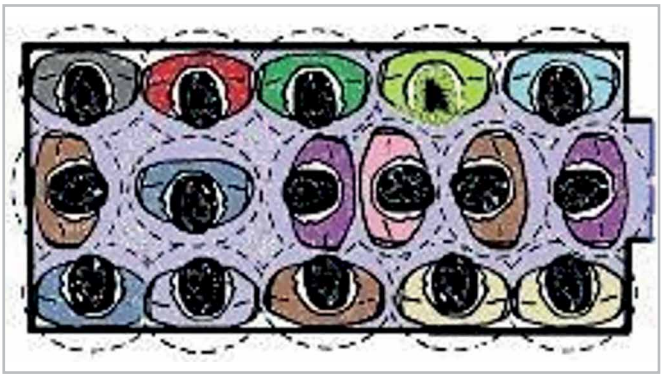

Figure 3 Room for one more?

NOTE 7: Illustrates a 1275kg car with 16 passengers – the in-car rating plate indicated 17 passengers. The average body ellipse is assumed to be 0.21m^2 at 75kg/passenger.

This confirms there is not enough room in the car for the average sized passengers.

Observations made by this author and others since 1990 noted that lift cars do not fill to the number of passengers indicated on the in-car rating plate and conclude it cannot be relied upon for traffic design. This is because passengers do not like the discomfort of their personal space being violated. There are exceptions where passengers have a strong motivation to sacrifice comfort: a group of passengers travelling together may "squash in"; passengers with an urgent need to travel; a student prank.

Leenders in his analysis of EN81-1:1985/BS5655-1:1986 [12] writing in 1986 says

"Laboratory experiences conducted in the States half a century ago indicated people could squeeze themselves into a car up to 32% overload and that 42% could even be reached but I suspect that it needed some exterior help as in the Japanese subway".

An expert writing in PD ISO/TR11071-2:1996 [10] opines:

8.2.1 While the entire subject of capacity and loading has historically been treated in safety codes as one and the same, it might be more meaningful in the future writing of safety codes to cover {1} loading as a separate issue from {2} capacity. One {2} refers more appropriately to the traffic-handling capability, whereas the other {1} refers to the maximum carrying capacity, which has a direct bearing on safety.

The conclusion is passengers need more space.

4. PROPOSED SPACE PER PASSENGER

Using work by Fruin [13] and others, this author suggested in CIBSE Guide D:1993 [14] that the "standing area" for a person weighing 75kg should be 0.21m2. This is the area of Fruin's body ellipse of 600mm by 450mm and scales up from the original assumption of a person weighing 150lb standing on two square feet.

The average passenger area of 0.21m^2 is now quoted and used extensively, see ISO 8100-32:2020 [17].

Applying this space requirement, the car area for a 33-person car should be 6.93m^2. A range of necessary available car areas are shown in Table 3.

Table 3: Proposed revision of EN81-20, Table 6 for traction and hydraulic lifts

Rated load Mass (Q) (kg)	Maximum available car area (Ac) (m^2)	Maximum number of passengers (P_{max})	Average number of passengers (P)
450	1.26	6.0	4.8
630	1.76	8.4	6.7
800	2.24	10.7	8.6
1000	2.80	13.3	10.6
1275	3.57	17.0	13.6
1600	4.48	21.3	17.0
1800	5.04	24.0	19.2
2000	5.60	26.7	21.4
2500	7.00	33.3	26.6
3000	8.40	40.0	32.0
4000	11.20	53.3	42.6
5000	14.00	66.7	53.4
10000	28.00	133.3	106.6
15000	42.00	200.0	160.0
20000	56.00	266.7	213.4
Beyond 20000 kg, add 0.21 m^2 for each extra 75 kg/0.28 m^2 for each extra 100 kg. For intermediate areas, the rated load can be determined by 360 × *Ac*. All passengers have an average weight of 75kg Numbers of passengers are average values and are decimal			

NOTE 8: A wider range of values can be found in Table (5).

NOTE 9: The maximum number of passengers is shown as a decimal value and for practical purposes would be rounded down

What is being suggested here is that the maximum area available for a specific rated load should be increased to accommodate the size of passengers, not what they weigh. The nonlinearity of available car area/rated load ratio is removed. The lift traffic designer has a realistic value for maximum car occupancy.

A similar concept was made available for hydraulic lifts, see Table 7 of EN81-20:2020. The argument supporting this concession can be found in PD ISO/TR11071-2:1996.

5. SAFETY

Passenger safety is paramount.

EN81-20:2020 Table 6 increases the live loading from 350kg/m^2 for small cars (eg: rated load 450kg) to 500kg/m^2 for large cars (eg: rated load 2500kg). This is illogical for lifts – it should be linear.

In **Table 3** the rated load is the prime parameter, and the lift components shall be designed for the stated rated load. With modern load weighing devices (not available in the 1920s/1930s) a lift will not start if it is overloaded, by for example, the presence of too many passengers or heavy goods. This safety provision is supported by the other (and less obvious) safety requirements in EN81-20 that the braking and traction components shall withstand excess loads of 125% rated load. In practice, a lift only ever carries the rated, and 125% rated loads, when under test.

Table 4: Proposal to revise Table 6, EN81-20 – a larger range of values

Rated load Mass (Q) (kg)	Maximum available car area (Ac) (m^2)	Maximum number of passengers (P_{max})	Average number of passengers (P)	Rated load Mass (Q) (kg)	Maximum available car area (Ac) (m^2)	Maximum number of passengers (P_{max})	Average number of passengers (P)
100 (a)	0.37	1.8	1.0	1350	3.78	18.0	14.4
180 (b)	0.58	2.8	2.0	1425	3.99	19.0	15.2
225	0.63	3.0	-	1500	4.20	20.0	16.0
300	0.84	4.0	-	1600	4.48	21.3	17.0
375	1.05	5.0	-	1800	5.04	24.0	19.2
400	1.12	5.3	-	2000	5.60	26.7	21.4
450	1.26	6.0	4.8	2500	7.00	33.3	26.6
525	1.47	7.0	5.6	3000	8.40	40.0	32.0
600	1.68	8.0	6.4	3500	9.80	46.7	37.4
630	1.76	8.4	6.7	4000	11.20	53.3	42.6
675	1.89	9.0	7.2	4500	12.60	60.0	48.0
750	2.10	10.0	8.0	5000	14.00	66.7	53.4
800	2.24	10.7	8.6	6000	16.80	80.0	64.0
825	2.31	11.0	8.8	7000	19.60	93.3	74.6
900	2.52	12.0	9.6	8000	22.40	106.7	85.4
975	2.73	13.0	10.4	9000	25.20	120.0	96.0
1000	2.80	13.3	10.6	10000	28.00	133.3	106.6
1050	2.94	14.0	11.2	15000	42.00	200.0	160.0
1125	3.15	15.0	12.0	20000	56.00	266.7	213.4
1275	3.57	17.0	13.6	30000 (c)	84.00	400.0	320.0

a Minimum for 1 person lift (unchanged).
b Minimum for 2 persons lift (unchanged).
c Beyond 30000 kg, add 0.21 m^2 for each extra 75 kg/0.28 m^2 for each extra 100 kg.
For intermediate loads, the area is determined by linear interpolation.
All passengers have an average weight of 75kg
Numbers of passengers are average values and are decimal

6. A PROPOSAL FOR CHANGE

For a range of rated loads, Table 2 shows the maximum number of passengers permitted based on 75kg per passenger and the maximum available car area required based on 0.21m2 per passenger is shown in Table 3. The commonly available rated loads are shown.

For consistency and clarity EN81-20 hydraulic lifts should also follow Table 3 and EN81-20, Table 7 can then be deleted. Alternatively, as hydraulic lifts have other safety measures to avoid overload the concession of the extra floor area could still be included if desired.

As passenger numbers are now shown in Table 3, then EN81-20, Table 8 can also be deleted.

In simple terms the rated load is given in Table 3 as 360 multiplied by the available car area on the basis of live load intensity of 360kg/m2.

A consequence of this proposal to transport more people in the larger lift cars, is energy can be saved and embodied carbon reduced as lifts will be selected with a lower rated load due to the larger available car area for passengers.

7. EXAMPLE 1

A lift with an available car area of 3.47m^2 is to be modernised.

A traffic designer determines the average number of passengers to be carried as 13.6. From Table 3 a lift with a rated load of 1275kg would be selected. The available car area is 3.57m^2.

What will the new rated load be and how many passengers can be transported?

With an area of 3.47m^2 then interpolating Table 3 the lift should have a rated load of 1240kg. It can then transport a maximum of 16.5 passengers and on average 13.2 passengers. This is smaller than required. As traffic design is not an exact science, in practice a lift with a rated of 1275kg would be selected.

8. IN SUMMARY

The car loading to effective (available) car platform area ratio started in the 1920s as a linear value at 60lb/ft^2, but as overloading was feared the ratio became nonlinear and was increased for larger cars to 127.5lb/ft^2 by the 1980s. It has remained so ever since as EN81-20, Table 6.

For a range of rated loads, Table 2 (extracted from Table 6) shows the maximum number of passengers permitted based on 75kg per passenger, but with reducing available car areas as the rated load increases.

EN 81-20, Table 6 shall be revised to reflect the reality of the 2020s bringing the elegance of the 1920s into the 2020s.

For a range of rated loads, Table 3 shows the car area required based on the maximum number of passengers permitted assuming an area of 0.21m^2 per passenger (360kg/m^2) and the corresponding rated load value (360*Ac*).

Traffic designers can specify a rated load with the confidence that the required number of passengers can be accommodated.

It may be some time before the standards reflect this proposal. However it can be implemented NOW using the current standards quite safely. A Design Examination Certificate would need to be obtained from an Approved/ Notified Body for a deviation from a designated/ harmonised standard citing the risk assessment evidence in this paper

The weight of nations [15] should be considered when selecting a lift's rated load in various countries and regions of the world, see Addendum.

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BIOGRAPHICAL DETAILS

Dr Gina Barney PhD, MSc, BSc, CEng, FIEE, HonFCIBSE, MAE, Principal of Gina Barney Associates, an independent vertical transportation consultancy, entered the lift industry two months after the 1935 COP and has been helping the lift industry ever since.

She and her research team at Manchester University developed the well-known Round Trip Time equation [18], made available an interactive Lift Simulation Design Suite of programs (PC-LSD and specified Adaptive Call Allocation (ACA). She later became involved in ISO work on energy efficient lift and escalator systems.

She is a member of BSI's lift committee MHE/4 and represents the UK on ISO/TC178/WG6/SG5 on traffic design and ISO/TC178/WG10 on energy efficiency. For more on Gina search "Dr Gina Barney."

ADDENDUM: DO ALL PASSENGERS WEIGH 75 kg?

The previous discussion has calculated the number of passengers in a lift by weight by assuming an average passenger weighs 75kg. This is according to EN81 standards and has now been adopted in ISO8100 standards. Do Europeans weigh on average 75kg? Do passengers all over the world all have an average weight of 75kg?

The absurdity of this statement is obvious.

There are nearly 200 countries in the world. Figure 4 shows the average body weights of adults for 177 countries. This figure is derived from seminal work by Walpole et al, *The weight of nations* (15). **Table 5** gives a selected range

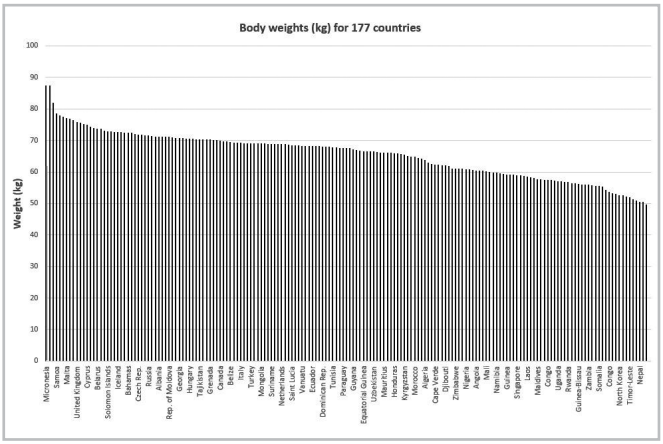

Figure 4 The weight of nations

Source: Walpole et al: The weight of nations: an estimation of adult human biomass. BMC Public Health 2012 12:439. [15]

The adult weight ranges from Bangladesh (50 kg) to Micronesia (87 kg), a 1.74 ratio. The world average is 62kg.

As a 75kg person occupies a space of 0.21m^2 then values for other occupied spaces can be linearly scaled to this body weight, in a similar manner to the BMI (Body Mass Index).

This is termed Body Area Index (BAI). A complete list of these can be found in CIBSE Guide D:2020, Table A2.1 [16] and range from 0.14m^2 to 0.24m^2. The world average is 0.17m^2 based on a world average body weight of 62kg. See Figure 5 for a full range of BAI values.

Table 5 Example range of BAI values.

Country/region	kg	BAI	Country/region	kg	BAI
Tonga	87	0.24	France	67	0.19
North America	82	0.23	China	61	0.17
Australia	77	0.22	Pakistan	59	0.17
Oceania	76	0.21	Singapore	59	0.17
United Kingdom	76	0.21	Africa	59	0.17
Germany	73	0.20	Asia	56	0.16
Russia	71	0.20	India	53	0.15
Switzerland	71	0.20	Vietnam	51	0.14
Europe	71	0.20	Bangladesh	50	0.14
WORLD AVERAGE	62	0.17			

This means a traffic designer who requires, say, an average passenger number of 13.6 persons giving a maximum passenger number of 17 persons would need a bigger lift in Tonga than one in Bangladesh.

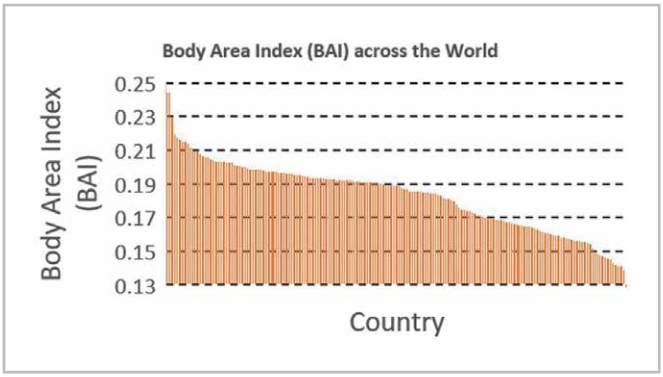

Figure 5: Body Area Index for 177 countries

EXAMPLE 2

Select a lift with a suitable rated load to accommodate a maximum of 17 passengers (a) using EN 81-20, Table 6, shown here as **Table 1**; and (b) using the proposed revision to EN81-20, Table 6 shown here are Table 3.

Table 6: Comparison of questions (a) and (b).

Country	Space required per passenger (m^2)	Total space required (m^2)	Nearest suitable lift rated load/car area (kg (m^2))	
			(a)	(b)
Tonga	0.24	4.08	2000 (4.20)	1600 (4.48)
UK	0.21	3.57	1600 (3.56)	1275 (3.57)
China	0.17	2.89	1275 (2.95)	1000 (2.80)*
Bangladesh	0.14	2.38	1000 (2.40)	1000 (2.24)*
NOTE 9: These lifts are a few percent smaller than required. An advanced traffic designer would consider other factors and probably specify the next larger available rated load as this will accommodate larger non-domestic residents and visitors.				

Except for the smallest lift in Bangladesh the rated loads are now smaller.

WARNING: Where lifts are installed in countries with BAIs less than 0.21 the lifts may need to be larger if a large number of overseas visitors are expected, eg: an airport.

LIFT & ESCALATOR SYMPOSIUM

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CHALLENGES TO DRAFTING A STANDARD FOR THE EVACUATION OF DISABLED PEOPLE USING LIFTS

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Keywords: Lifts, elevators, evacuation, codes, standards, capacity assessment, minimum lift car dimension.

Abstract: A standard for the design of a lift to be used for the evacuation of those who cannot easily use the stairs (an evacuation lift) ideally needs to respect different strategies for the evacuation of a building. In the case of evacuation due to fire the building design needs to protect the evacuation lift for at least the duration of the evacuation. Building design and management aspects vary according to the type of building and are subject to national building regulations which vary across different territories (they are not harmonized at a European level). This might partly explain a lack of convergence of evacuation lift solutions during a period where the use of lifts for evacuation has been widely discussed. In looking at evacuation lift provision and capacity, key considerations are: how many people might need or wish to use lifts for evacuation; and how can those most at need be prioritised? These challenges are discussed with reference to the development of a draft European Norm prEN 81-76 for evacuation lifts and in the context of undertaking a capacity assessment for the number of evacuation lifts which might be needed. This paper is written from a UK context.

1. INTRODUCTION

Building Regulations in many territories including the UK have set requirements for accessibility for all including disabled people. While setting the general requirements to consider the means of escape in case of fire, many have lagged in setting such clear requirements for the evacuation of disabled people. Especially in residential buildings, building design is often on the basis that occupants will "stay put" in the event of fire, based on effective compartmentation. There is considerable debate in the UK about the provision of means of escape for disabled people, for example, if compartmentation fails. Any changes in regulations or guidance in this area pose considerable challenges, especially for existing buildings.

Building regulation guidance and British Standards have for many years recognized the possibility of using lifts for the evacuation of disabled people [1, 2]. The evacuation lift described in these standards has been based on an evacuation assistant taking control of the lift car by operating an evacuation lift switch and then using the car controls to drive to floors where people await evacuation. This use of an evacuation lift, as part of a managed evacuation, presents challenges when applied to buildings such as residential buildings and (small) multi-tenant buildings where there would not usually be a team which could quickly mobilize and who could take charge of an evacuation.

A number of authors have recognized the potential benefits of using lifts for the evacuation of disabled people. Hewitt [3] reviewed the need for carry-down procedures to evacuate people not able to use stairs unaided and concluded that such procedures presented building management with very significant problems and presented evidence of the cost-effectiveness of using evacuation lifts. O'Loughlin, Wiles and Ryan [4] have advanced alternative concepts for evacuation lifts.

Work has been underway at CEN, the European standardisation body, on the development of a standard describing new lifts used for the evacuation of disabled people and a draft for public comment was recently published [5].

A standard for the design of a lift to be used for the evacuation of disabled people and those with difficulty in using stairs needs to respect different strategies for the management of evacuation of a building. In the case of evacuation due to fire, the building design needs to protect the evacuation lift for at least the duration of the evacuation.

Since both the *management* of the lift during an evacuation and the *design of the building* are developed between a number of different specialisms and experts, it is clear that this is a multi-disciplinary and potentially complex task. In Europe, although lift requirements are usually harmonized across CEN countries, building design requirements are determined by national building regulations.

It should be noted that CEN lift standards are limited in the guidance they can provide for aspects beyond the lift specification such as the building design elements necessary for protecting an evacuation lift and interfacing it with the building systems.

In a UK context, the building design elements should follow guidance to the Building Regulations and either follow standards for the fire safety of buildings such as BS 9991 or BS 9999, or take an alternative fire engineered route.

Having identified the importance of the building's evacuation strategy for the operation of evacuation lifts, how might a lift operate in response to commands from the building management system (BMS)? The options include the following.

- **Remove the lift from service.** Lifts not intended to be used in the event of fire, for the use of firefighters or evacuation lifts, could be removed from service e.g. using the methodology of EN 81-73 [6]. The lift car would be recalled to the exit floor, allowing passengers to exit the lift car, and then be removed from service. Since the scope of EN 81-73 specifically excludes lifts that remain in use in the event of fire (lifts for the use of firefighters and evacuation lifts), it is not applicable to these types of lifts. However, a similar methodology to EN 81-73 could be used to remove an evacuation lift from service if it could be unsafe to use e.g. fire detected in the lift spaces by a suitable fire detection and alarm system.
- **Recall to exit floor to await evacuation assistant to take control of the lift.** The evacuation operation described in BS 9999:2017, Annex G [2] is based on an evacuation assistant taking control of the lift. At the time of writing, this is the only evacuation lift operation described in British Standards and has remained relatively unchanged since first included in British Standards in 1988 [1]. After recall to the exit floor, an evacuation assistant/ driver can use the evacuation lift to drive to the floors where there are people needing the lift for evacuation i.e. who cannot readily use the stairs. This has advantages of simplicity.
- **Automatic (self-evacuation operation).** This was suggested by O'Loughlin, Wiles and Ryan [4] who noted that *"challenges that would need to be addressed include the applicable control logic, prioritisation of the lift response depending upon the fire scenario, the level of information provided to the user(s), and overcoming the traditional instruction of 'do not use the lifts in the event of fire'"*. Such an operation would need the BMS to determine whether it would be sufficiently safe, raising questions about its decision making and security. Other questions revolve around ensuring that lifts in an automatic operation are effectively prioritised for the evacuation of those depending on lifts.

How the lift might behave under automatic evacuation operation is further considered below.

Note: Control of an evacuation lift described in BS 9999 by an evacuation assistant has superficial similarities to the control of a firefighters lift described in EN 81-72. Although it might be technically feasible to apply evacuation lift requirements in addition to the requirements of EN 81-72, use of the lift for evacuation should cease when the lift is recalled from the firefighters lift switch.

2. EVACUATION LIFT WITH AUTOMATIC EVACUATION OPERATION

A CEN standard is limited in the guidance it can provide for aspects beyond the lift specification. In the case of a driver assisted evacuation described above, the basic specification is mature and well understood [8]. However, in the case of a novel solution such as a lift for self-evacuation, the lack of additional guidance in a CEN standard for interface issues might make the introduction and application of the standard more difficult. There is therefore scope for national standards and guidance to address this gap to help with the safe application of a CEN standard.

The draft BS 9991 [7] recognises that automatic evacuation operation should not be used unless there is a building management system (BMS) in place to:

(a) recall the lift;

(b) provide the automatic evacuation signal; and

(c) where landing calls are to be accepted only from priority floor(s), signal the priority floor(s) to the lift controller.

The safety of the lift also depends on there being a fire alarm and detection system covering the lift spaces and

lift lobbies to suspend evacuation service (similar to the operation in EN 81-73).

Clearly, resilience and decision making are essential elements of the BMS.

A crucial consideration for the building design is how long the evacuation lift should be available to operate to evacuate people who would have difficulty using the stairs, and hence the minimum period for which it needs to be protected from fire, minimum autonomy time of a secondary power supply etc. It is assumed to be two hours for a firefighters lift, which is professionally supervised. This is where a consideration of the traffic flow is required using well-established methods based on an estimation of the number of people needing to be evacuated by lift, and the intended use/operation of the lifts.

THE PROPORTION OF PEOPLE ON A GIVEN FLOOR OF A BUILDING WHO MIGHT NEED THE USE OF LIFTS FOR EVACUATION CAN BE CATEGORIZED AS:

1. Those unable to use the stairs – even for a single floor.

2. Those who would have difficulty using the stairs to evacuate from their floor of the building. This proportion would increase with floor height to take account of their impairments and factors such as fatigue. For simplicity, this proportion includes those who start to evacuate by stairs but due to fatigue or injury need evacuation lift service from a lower level.

3. There is a further proportion who, although the lift would be designated for those with difficulty using the stairs, would opt to use a lift that is available even though they could use the stairs.

Clearly, in considering the specification of evacuation lifts, it is important to estimate the demand for them, how to prioritise their availability for intended users (items 1 and 2), and how to control or mitigate use by others which might have an undesirable impact on their availability (item 3). This paper reviews a number of sources which have tried to assess the proportions of building population which might use evacuation lifts. It is noted that in these sources, building users were surveyed for their intentions based on the lifts being fully available to all.

There is an underlying concern that specification of the number of evacuation lifts based on estimates of the users in categories 1 and 2 might result in the under-provisioning of evacuation lifts, if used by a significant number of users in category 3.

The strategies available to address demand from the third group above are:

- Evacuation lift controls are for use by evacuation assistants who take control of the lift during an evacuation. This is the approach taken in the UK with the first publication in 1988 of BS 5588-8 [1] through to more recently BS 9999 [2]. This strategy is applicable where suitably trained assistants are available e.g. managed buildings.

- Where lifts are to operate automatically without trained assistants, then their application could be restricted to buildings of up to a maximum height/number of floors. At such a height, most users would be assumed to opt to evacuate by stairs.

- Where lifts are to remain in operation without trained assistants and the building height is not restricted then all the lifts used for regular access could be specified as evacuation lifts to ensure adequate provision or the number of lifts should be selected according to a more detailed process. This is the basis of ISO/TS 18870 [9] which provides more guidance in this more complex scenario.

3. DEMAND FOR EVACUATION BY LIFT

The implications for the specification and number of evacuation lifts were briefly discussed in section 2. This recognized that demand for use of lifts for evacuation relative to floor height consisted of a fixed demand (item 1) and demand which would vary according to floor height (items 2 and 3).

3.1. ESTIMATE OF NUMBERS OF POPULATION REQUIRING A LIFT TO EVACUATE

The UK Government [10] estimates that 15% to 22% of people have a disability and that of all disabled people, 46% to 63% are estimated to have a mobility impairment. Multiplying the low and high values gives a range of 6.9% in the low scenario, 13.9% in the high scenario, and a central estimate of 10.1%. Although noting that this assumption is uncertain, and might be an under-estimate if significant numbers had not self-identified. A figure of 10% has been used elsewhere such as DD CEN/TS 81-76 [8].

The UK Government data referenced above estimating that 22% of the population have a disability, also provides details on impairment type with 46% of all disabled people reporting mobility problems and 33% reporting stamina/breathing/fatigue problems. Other categories with temporary impairments should also be considered such as people with injuries, pregnant women and companions/partners of the mobility impaired person. Taken together, these might indicate greater numbers of the population needing to use a lift for evacuation.

While such broad estimates might provide baseline assumptions where no better information is available, figures relating to the type of building and its intended use might be used when available. It is prudent also, in providing fixed assets and building space, to consider how changes over the life of the building could impact the figures used in design. Trends in the general population to longer life expectancy and co-morbidities including obesity would argue for a conservative (higher) figure to be used, noting that in social housing, 40% of occupants might have mobility issues and 40% might have stamina problems.

It is difficult to find accurate data on the numbers of wheelchair users as Hewitt [3] observed but estimated 1.5%. Users of wheelchairs and mobility scooters would need attention not only to ensure a suitable minimum size of evacuation lift car, but also because a wheelchair user would occupy the space of several ambulant disabled passengers.

3.2. RESEARCH INTO ASSESSING THE POTENTIAL DEMAND FOR EVACUATION LIFTS

While some broad conclusions can be drawn from evacuations due to real emergencies, the data available from post evacuation surveys is often not sufficiently detailed so other sources, typically surveys, are useful.

Owing to the lack of use of lifts for evacuation, these studies have been undertaken where the general expectation is not to use lifts. Unless noted otherwise, the surveys were conducted on groups who have not been trained to use lifts as part of an evacuation.

Heyes and Spearpoint [11] reported on post-evacuation drill surveys of students and staff of the University of Canterbury, New Zealand, and online surveys completed by workers (the majority were engineers) from Arup from locations in Perth, San Francisco and Singapore. The post-evacuation drill survey was given to students and staff after evacuating two buildings on campus as part of a drill. 91 people completed surveys about their evacuation experience and were asked if they would consider using lifts if it were acceptable to do so. Participants were divided into two groups; "educated" who had been taught that lifts could be used as part of evacuation and "uneducated" who were not. In the online survey, 138 participants were asked to judge how imaginary characters would behave within a hypothetical evacuation, their understanding of evacuation procedures in their building, the number of stairs that they would be capable of evacuating down and what concern they would have for using lifts/stairs during an evacuation.

The data, from 5 to 60 floors was presented in a graph to which a linear regression line was fitted to predict the proportion of lift users given the floor level:

$$p = 1.14f + 5.3 \qquad 5 \leq f \leq 60 \text{ floors} \qquad (1)$$

where:

p is the percentage of occupants to use the lift (%)

f is the floor level of the building

A goodness of fit value (R^2) of 0.877 was achieved.

Heyes and Spearpoint [11] reported a negative correlation between willingness to use lifts and the waiting time to evacuate. The proportion of occupants willing to use the lift was seen to reduce as waiting time increased and a further linear regression was used to describe the dependence of the proportion on waiting time.

Kinsey 2011 [12] and Kinsey et al 2012 [13] presented data drawn from online surveys on the overall proportion of participants that would consider using a lift/stair for a number of floor ranges. This showed increasing proportions of participants that would consider using the lift increasing as the floor number/height increased. They noted that approximately 10% of the population would use a lift even if located on the lowest floors i.e. 2-10. The proportion of the population that would use the lift increased to approximately 80% at floor range 31-40 and remained at this level for the higher floor ranges. In addition, the results suggested that when located on or above floors 21-30, the majority of people on each floor would elect to use the lift compared to the stairs. Above floor 30, approximately 20% of the population were not prepared to use the lifts to evacuate irrespective of floor number/height.

The relationship between proportion of floor population who would use the lift to evacuate and the floor number presented by Kinsey et al [13] figure 5 is reproduced in Figure 1.

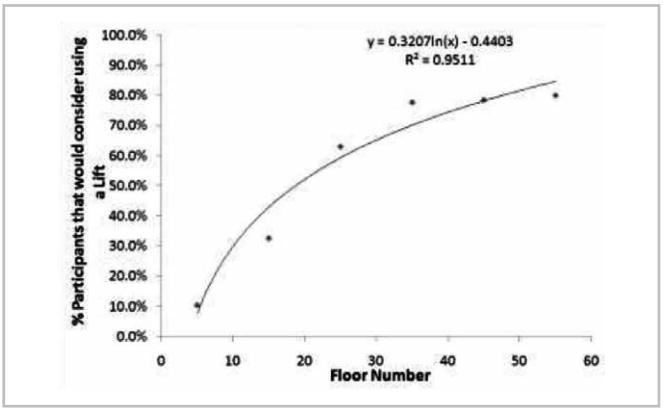

Fig 1: Proportion of participants that would consider using a lift according to floor number

(Figure 5 from Kinsey et al [13])

The data presented in Figure 1, the mid-points of each floor range (e.g. 5, 15, 25 etc) with the respective proportion of participants that would consider using lifts during the evacuation has been plotted. Using regression analysis, the relationship between the floor number and percentage of participants shows the following formula to approximate the data:

$p = 0.3207 \ln(f) - 0.4403$ for $5 \leqq f \leqq 55$ (2)

Where 'p' equals the proportion of people that would consider using a lift and 'f' represents the floor number that the people are initially located on above ground level. An R2 goodness of fit value of 0.95 was obtained from this formula which suggests it to be a good predictor according to the data collected. It should be highlighted that this formula is only applicable between floor ranges 5-55 (the lower and upper mid points of the floor ranges).

Jönsson and Andersson [14] in a survey of 10 of Sweden's tallest buildings found that the floor a respondent was on was a clear factor in their perception of risk and whether they said that they would use a lift to escape. They found that the relationship was linear (2% at 2 floors up to 21% at 24 floors).

Ding et al. [15] reported on experiments in a 10 floor building in Beijing using 45 students; 27% were prepared to use lifts before education and 40% after briefing. They were asked to complete questionnaires which showed the proportion willing to use lifts up to 75% at 20 floor and 100% for 50 floors. Figure 2 reports the results from Ding et al. Although it can be noted that the general form of the results is similar to Kinsey et al., the proportions willing to use lifts are generally 20% or more greater than the equivalent figures reported by Kinsey et al. for the proportions that would consider using the lift. It might be observed that even at large numbers of floors, some residual proportion would be expected to use stairs.

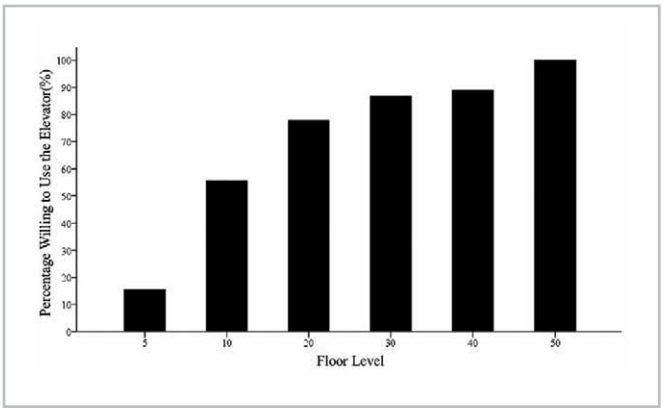

Figure 2: Cumulative percentages of participants who want to use elevators

(Figure 3 from Ding et al)

3.3. DEMAND FOR LIFTS FOR EVACUATION – CONCLUSION

Except for very low building heights/ lift travel distances, any baseline estimate of numbers of people needing to use lifts for evacuation either owing to not being able to use the stairs or because of stamina/breathing/fatigue issues is likely to be significantly increased by those seeking to use lifts to evacuate – either because of stamina/breathing/ fatigue issues or because they have otherwise opted to use lifts.

The implications for specification of evacuation lifts specifically allocated for the use of those needing lifts for evacuation are clear:

- Except at very low floor heights, the estimate of floor population needing to use a lift for evacuation should take account of this additional demand if the needs of those relying on lifts are not to be compromised.
- Except in low rise buildings, if there is a simultaneous evacuation strategy, all passenger lifts should be specified to be used for evacuation. This takes the specification of evacuation lifts away from the scope of prEN 81-76 (evacuation of disabled people) [5] and to the scope of ISO/TS 18870 (evacuation of the general building population) [9].
- For modelling purposes, the figures from Kinsey et al. would be a good basis, adjusted to include a minimum demand even for low rise lifts.

4. INFLUENCE OF EVACUATION AND MANAGEMENT STRATEGY

AS DISCUSSED EARLIER, EVACUATION LIFTS MIGHT BE SPECIFIED WITH AT LEAST TWO GENERIC WAYS OF WORKING:

1. **Driver assisted evacuation lift**
   An evacuation lift switch is provided which allows a trained evacuation assistant to control the lift. This is not further discussed in this section because the evacuation team should be able to direct the lift to the floors where evacuation is needed.

2. **Automatic evacuation operation**
   Signals from a Building Management System (BMS) switch the lift into an evacuation operation which shuttles between the exit floor and the priority floor to be evacuated. Key issues are the BMS determining that the environment allows the evacuation lift to operate and how the landing calls are prioritised.

Taking the "automatic evacuation operation" and looking at the way landing calls might be prioritised, prEN 81-76 [5] proposes that the priority of the landing calls would be based on distance from the exit floor with the furthest landing call getting highest priority, if not otherwise specified by the evacuation strategy.

The landing calls would usually be connected directly to the lift control system and so the lift control system could readily prioritise landing calls based on their distance from the exit floor and would need only a simple interface with the BMS to achieve this. Such a landing call prioritisation might be appropriate for very simple low rise buildings but suffers from not being able to prioritise calls from floor(s) where fire is detected and the immediately adjacent floors.

Where a phased evacuation is needed e.g. fire floor and floors immediately adjacent are prioritised for evacuation over those more distant from the fire floor, this would need to be specified as part of the definition of the evacuation lift. The interface between BMS and lift controls in this case would need to be more sophisticated to communicate the prioritisation to the lift controller to allow the lift control system to prioritise the landing calls presented to it.

It is suggested that in many buildings there would be a need to specify the evacuation strategy, the prioritisation for landing calls, and the interface between the BMS and lift control system to accomplish this. Where the prioritisation of landing calls based on their distance from the exit floor is a default, it would be important that these are specified as part of the negotiation of the evacuation lift.

5. PLANNED EVACUATION TIME

Any capacity assessment would be based on an estimated number of people to be evacuated in a given time; the number of lifts required being strongly related to this time. A figure for maximum planned evacuation time is therefore essential for undertaking a capacity assessment.

In the case of evacuation due to fire, a distinction can be made based on the relationship between the maximum planned evacuation time and the expected time for attendance by the fire and rescue services and commencement of firefighting operations.

In the case of simpler buildings and where relatively small numbers need to be evacuated using a lift, it might be feasible to complete the evacuation before commencement of firefighting operations. This would be required for an evacuation lift which is also specified to be firefighters lift so that it is available for use by firefighters, unless other dedicated evacuation lift(s) are provided.

The maximum planned evacuation time would have implications for the evacuation management strategy as well as for building design (beyond the immediate specification of an evacuation lift) to ensure adequate protection and resilience including:

- the level of fire protection to the evacuation lift lobbies, well and machinery spaces;
- the endurance/autonomy time and capacity of secondary power supplies to cope with the planned demand from evacuation lifts and also lifts for firefighters use;
- water management to prevent water from entering the lift well;
- how evacuation would be carried out during firefighting operations.

6. CAPACITY ASSESSMENT

6.1. THE NEED FOR CAPACITY ASSESSMENT FOR EVACUATION LIFTS

The new London Plan came into force in March 2021 and set out a framework for how London should develop over the next years. In the new London Plan, policy D5(B5) on inclusive design includes a minimum of one evacuation lift per core (or more subject to capacity assessments) to be provided for the safe and dignified emergency evacuation of people who require level access from the building.

The Greater London Authority published draft Fire Safety London Plan Guidance (LPG) in February 2022 with guidance to support policy D5(B5) [16]. This included the following on capacity assessment.

"i) Capacity assessment

6.3.3 A capacity assessment should be carried out to establish the number and size of evacuation lifts that the development will need to provide. This assessment should set out:

- the likely number of occupants and visitors
- the nature of the occupants (for example the likelihood that occupants may require evacuation in a wheelchair or bed) and any other assumptions the capacity is based on
- the calculation of the evacuation lift capacity required
- the evacuation lift capacity that would be provided
- any potential risks during evacuation due to the anticipated capacity".

In addition to these items, a number of other important determinants should be considered which were discussed above:

- The evacuation strategy which will determine the type of evacuation and how the evacuation lift is used e.g. if driver assisted, the presence of the driver needs to be considered;
- A planned evacuation time is an essential requirement for any capacity assessment seeking to establish the number and size of evacuation lifts to evacuate a given number of people in the planned evacuation time.

The draft LPG does not seek to provide guidance on how such a capacity assessment should be undertaken. It can be observed that specialist guidance on evacuation lift capacity assessment would not be appropriate to sit in the LPG or standards such as BS 9999 [2] or draft standards such as the revision of BS 9991 [7] or prEN 81-76 [5]. Hence other guidance is needed. The draft LPG in relation to evacuation lift car size includes: "No specified lift size, but likely to be larger to accommodate beds or stretchers". BS 9999:2017 and prEN 81-76 refer to BS EN 81-70 [18] for lift car sizes. It can be noted that car sizes 1 and 2 in BS EN 81-70 could not accommodate a stretcher or bed. This suggests that the smallest size of evacuation lift which should be considered is type 3 in BS EN 81-70:2021. See also Appendix 1 "Consideration of minimum evacuation lift car sizes – UK context".

Unpublished data from a BRE study has been used to estimate the likely space used by a range of users with different disability types based on published UK data such as in reference [10]. Based on these, an average area for each disabled user of 0.42 m2 is suggested. This represents a packing factor of two compared with the average space occupied by an adult for lift traffic considerations of 0.21m2 from Barney [17]. A packing factor of two has been assumed to account for factors which might increase the space needed by people being evacuated e.g. to access and hold a handrail, account for any walking aids, to account for additional area taken by people with higher body mass index, space taken by those with helpers, those using wheelchairs etc.

Table 1 lists the car sizes listed in BS EN 81-70 [18] and uses the average area per user of 0.42 m2 to arrive at maximum average passenger occupancy for each car size. In the case of the driver assisted car, the driver has been assumed to require 0.21 m2. The resulting number of people has been rounded down to the next lowest integer.

TABLE 1: Disabled persons occupancy during emergency operation

Rated load, Q (kg)	Car type from BS EN 81-70:2021	Car dimensions width (m) x depth (m)	Nominal available car area, A_c (m^2)	Driver assisted car capacity, P_{de}	Automatic evacuation car capacity, P_{ae}
630	2	1.1 x 1.4	1.54	3	3
1000	3	1.1 x 2.1	2.30	5	5
1000	4	1.4 x 1.6 1.6 x 1.4	2.24	5	5
1275	5	1.4 x 2.0 2.0 x 1.4	2.80	6	6

NOTE 9: P_{de} and P_{ae} are the integer values of A_c/0.42 taking account of a small area in the car entrances.

The resulting car capacity is a key determinant of the capacity assessment for evacuation of disabled people. As was discussed in section 3, even from moderately low floor heights, this demand for evacuation lifts is likely to be supplemented by those opting to use lifts. The capacity assessment would need to take account of this demand and its increasing proportions of floor populations as floor height increases. When estimating their space taken, it would be reasonable to assume a packing factor of one, i.e. the cars would accommodate approximately twice the automatic evacuation car capacity.

THE FOLLOWING MATERIAL IN THIS SECTION IS ADAPTED FROM MATERIAL FROM DR GINA BARNEY, WHO IS ACKNOWLEDGED WITH THANKS. THE FOLLOWING PROPOSES TWO METHODS OF CAPACITY ASSESSMENT:

1. A simple calculation suitable for non-lift specialists e.g. architects, fire consultants and fire engineers giving a "ball park" view;

2. a more advanced method for competent lift traffic designers to use and where the results of the simple method need to be elaborated such as for a more complex building design. For example to fit the "jigsaw" of irregular spaces into a rectangular car.

The calculation method below is based on established measures to assess the round trip time and handling capacity of lifts adapted for use in the evacuation situation.

Assumptions made to provide the simple calculation method are:

- The automatic evacuation lift shuttles between the exit floor and the floor for evacuation where the middle floor evacuated is a distance dm from the exit floor;
- Rated speed (v) is 1.0 m/s (increasing rated speed has only a small benefit);
- Round Trip time (RTT) consists of:

Time to travel between exit floor and evacuation floor and back $2*d_m/v$

Time to open and close doors (t_d = 6 seconds) at the two stops $+ 2*t_d$

Time for passengers to board and exit (t_l = 5 seconds per passenger) $+ 2*P_{ae}*t_l$

Round Trip time (RTT) = $2*d_m + 2*6 + 2*P_{ae}*5 = 2d_m + 12 + 10*P_{ae}$

- Round trips per 5 minutes = $300/RTT$
- Persons evacuated per 5 minutes = $(P_{ae}*300)/(2*d_m+12+10P_{ae})$ (1)

6.2. SIMPLE CALCULATION METHOD FOR BUILDINGS WITH HIGHEST FLOOR NOT GREATER THAN 18 M

Number of persons evacuated in 5 minutes per evacuation lift

$$= \frac{300\times P_{ae}}{2\times d_m+12+10P_{ae}} \quad (2)$$

P_{ae} is the possible occupancy of the lift car taken from Table 1. For a driver assisted operation, P_{de} can be used.

6.3. ADVANCED CALCULATION

A more complex calculation or simulation is needed where automatic evacuation operation is used and where the floor heights are such that part of the building population is likely to use the lifts. There are well established principles on which advanced calculation or simulation would be based [19]. No doubt the introduction of a standard for automatic evacuation lifts would be a catalyst for more work in this area and further guidance.

7. CONCLUSIONS AND FURTHER WORK

In a UK context, documents such as the London Plan are likely to lead to a larger proportion of passenger lifts in new buildings being specified for disabled people to evacuate. A new European Norm (EN) is expected which will provide a much enhanced specification for driver assisted evacuation (compared with legacy evacuation lifts described in British Standards) and an entirely new (in standards) specification for an automatic evacuation operation.

A number of issues linked to the specification and planning of evacuation lifts have been discussed. It is suggested that guidance on these and other issues should be developed to support the implementation of a European Norm for evacuation lifts. A European Norm for lifts would set normative requirements for an evacuation lift and would be constrained in the guidance it could give for building design aspects. However, much of this guidance would be more appropriately implemented at national level.

THE FOLLOWING AREAS ARE HIGHLIGHTED FOR FURTHER GUIDANCE TO BE DEVELOPED ESPECIALLY TO SUPPORT THE INTRODUCTION OF A NEW EVACUATION LIFT STANDARD.

1. Guidance on capacity assessment to estimate the likely number of evacuation lifts based on a number of factors considered in this paper. This could include simple tools for low-rise buildings and more sophisticated methods for taller and more complex buildings.

2. Guidance on estimating the proportion of floor populations who could be expected to use lifts for evacuation in addition to disabled people depending on the lifts for evacuation with default figures to be used where more specific and detailed studies are available.

3. Consideration of the maximum planned evacuation time as a key determinant of the number of evacuation lifts needed with guidance on the implications for protection to be specified for evacuation lifts to achieve the required level of resilience.

4. Recommendation that evacuation lifts have minimum lift car dimensions as BS EN 81-70:2021, type 3 (1100 mm x 2100 mm).

5. The introduction of automatic evacuation operation would be a significant change which should be supported by further guidance. Landing call prioritisation must be specified based on the evacuation strategy and suitable interfaces between the building management system and lift controls specified accordingly.

These are all in the context of developing standards and guidance for new evacuation lifts in new buildings. It might be anticipated that there could be a call for guidance for how existing passenger lifts could be improved to provide for the evacuation of disabled people from existing buildings. In a UK context, this would need to consider not only the improvement of existing evacuation lifts (installed since 1988) but also the improvement of existing passenger lifts to provide for the evacuation of disabled people. Framing useful guidance in this area will be a challenge.

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APPENDIX 1: Consideration of minimum evacuation lift car sizes – UK context

This appendix considers the current standards in a UK context and whether the minimum lift car dimensions currently specified are sufficient for moving a person on stretcher.

It is understood that many UK ambulance trusts use stretchers which have lengths between 1450 mm and 1680 mm when "fully shortened" with total lengths when fully extended of between 1930 mm and 2045 mm (depending on make and type). A car depth of 2100 mm would therefore be sufficient to accommodate these.

Minimum lift car sizes for accessibility to buildings are listed with their accessibility levels in BS EN 81-70:2021; Accessibility to buildings Accessibility to lifts for persons including persons with disability. Car type 3 (1100 mm x 2100 mm) is listed as allowing transport of stretchers. However, the standard does not specify minimum lift car dimensions for access to and use of buildings; this is left to Building Regulations guidance such as, in England, Approved Document M; Access to and

use of buildings. The minimum car sizes (such as 1100 mm x 1400 mm) in Approved Document M do not allow for a person being moved on a stretcher.

Minimum lift car dimensions to allow for people on stretchers to be extracted from a building is related to the use of lifts for evacuation. BS 9991:2015; Fire safety in the design, management and use of residential buildings – Code of practice points to the recommendations in BS 9999:2017; Fire safety in the design, management and use of buildings – Code of practice which recommends that evacuation lifts are in accordance with the relevant provisions in BS EN 81-20 and BS EN 81-70. Building Regulations guidance, such as Approved Document B; Fire safety does not specify a minimum evacuation lift car size and references BS 9999. The conclusion is that these fire safety documents reference to BS EN 81-70 but do not specify which car type in that standard should be selected.

BS EN 81-72:2020; Firefighters lifts details a minimum car dimensions for firefighters lifts and has the following: Where the intended use of the firefighters lift is to include evacuation, to accommodate such items as a stretcher or bed, then the minimum rated load shall be 1 000 kg and the minimum dimensions of the car 1 100 mm wide by 2 100 mm deep.

At the time of writing a draft European standard, prEN 81-76; Evacuation of persons with disabilities using lifts is out for public comment. This document includes a minimum evacuation lift car size of type 2 according to EN 81-70:2003, Table 3 (car dimensions of 1100 mm x 1400 mm). If published as a British Standard, a future BS EN 81-76 would be referenced by standards such as BS 9991 and BS 9999 and by Building Regulations guidance.

If new lifts need to be specified to have minimum car dimensions to accommodate a person on a stretcher, at least car type 3 from BS EN 81-70:2021 will need to be referenced from Building Regulation guidance for fire safety and accessibility, and British Standards such as BS 9991 and BS 9999.

BIOGRAPHICAL DETAILS

Nick Mellor is the Managing Director of the Lift and Escalator Industry Association (LEIA) where he has worked since 2012 and has been in the lift industry since 1992. LEIA is the trade association in the UK for the lift and escalator sector which, along with the University of Northampton and the CIBSE Lifts Group, co-organise the Lift & Escalator Symposium. Nick was in the inaugural cohort on the MSc in Lift Engineering from the (now) University of Northampton from which he graduated in 2002. He is an Associate Lecturer and visiting fellow at the University of Northampton. Nick chairs the BSI's MHE/4 lift and escalator committee where he has been involved in the development of various British Standards. He is a BSI delegate to various European (CEN) and International (ISO) working groups including those considering firefighters lifts and lifts for evacuation. Nick is the principal author of two chapters of CIBSE Guide D:2020 and has published a number of papers.

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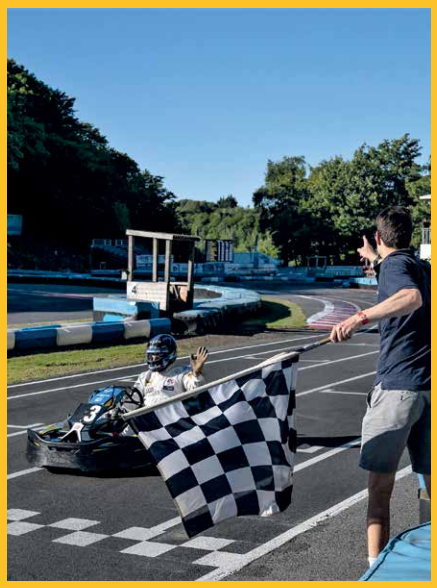

HOT WHEELS FOR SUCCESSFUL CHARITY KART DAY

Putting pedal to the metal for the 30th annual Lift Industry Kart Challenge, 2022's event saw 25 lift and escalator teams from across the UK and Europe compete at the internationally renowned Buckmore Park outdoor circuit in Chatham.

The high-octane endurance event runs over six hours, and anything can happen. The race is not won on the first corner of the first lap, or by the driver who posts the fastest lap, but through team planning, strategy and efficiency. Pit signals and swift pit stops and driver changes are essential in this team sport.

Teams used Sodi RT8 karts, specifically designed for use in endurance events at Buckmore Park. Capable of speeds approaching 80mph, they hold a 390cc Honda engine, with crisp handling, providing an excellent driving challenge for the regular and novice driver.

Buckmore Park has been at the forefront of British karting for several decades and is now pioneering the next generation of kart circuit. Today the track is recognised as one of the most impressive and advanced karting circuits in the world, delivering all the excitement, thrill and emotion karting can bring. A new fleet of Sodi RT10 karts and further improvements to the circuit demonstrate Buckmore's commitment to strive to be the best kart circuit in the UK

Lifting the Lift Industry Kart Challenge trophy this year were the Bridgestone Cowboys. Grant Wright's team pulled in another win with some excellent driving, closely followed by some absolute pros.

THE AWARDS TABLE

2022 A & A Electrical Trophy Winners:
Bridgestone Cowboys

2022 Challenge Trophy Winners:
Running on Arrival

2022 Wheel Change Challenge
Winners: Al a Kart

2022 Fastest Lap:
Running on Arrival - 50.365 (lap 15)

To top the superb day, the Lift Industry Charity raised well over £1200. Thank you to all who participated!

A special thank you to the sponsors, Dewhurst Plc, Horsler, Djmotorsport, A&A, TVC, DAC, LECS, ILE, Global1, Jackson and TLS. Thank you to everybody that helped on the day and to DJmotorsport Ltd for organising the event.

The UK Lift Industry Charity helps industry colleagues in times of trouble. The group has organised fundraising events including five-a-side football tournaments and golf days. Officially registered in 2007, The UK Lift Industry Charity has made donations in excess of £55,000 to individuals and the families of those who have been injured or sadly killed whilst working in the industry. This has only been possible with the help of donations, sponsorships and events.

If you have a great idea for a fund-raising event, or ways to improve the safety of people working within the industry, get in touch - https://www.liftindustrycharity.co.uk/contact-us/

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The UK Lift Industry Charity Mission... The relief of financial hardship and provision of appropriate support where required to industry colleagues and their families who have been injured whilst working or employed within the industry.

The Charity has made numerous donations to individuals and the families of individuals who have been injured or sadly killed, whilst working in the Industry. We are continually looking for opportunities where we can assist.

Can we help you, can you help us, would you like to join in the next **2023 Cycling Challenge** just email

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LETTER FROM AMERICA

The 88% Union Density of the North American lift engineers gives one an understanding of the IUEC's influence in the industry.

One of the unique aspects of the US and Canadian lift industry is that it has many organizations and associations that represent distinct groups within the industry.

The organization that has the largest group of members is the International Union of Elevator Constructors, better known as the IUEC.

The IUEC is a trade union that represents approximately 88% of the lift engineers (Elevator Mechanics in the USA and Canada) who install, service, or modernize lifts, escalators, and other conveyances such as moving walks and dumbwaiters in the USA and Canada. The IUEC was organized in 1901; has seventy-seven locals (branch offices), and over 31,000 members.

The Organization for Economic Co-operation and Development (OECD) measures the prevalence of trade unions using the metric "Union Density", which is expressed as a percentage of the total number of workers in an area who are trade union members.

The following are Union Densities of the UK, the USA, and Canada:

UK: **23.4%**

USA: **10.1%**

Canada: **25.9%**

The 88% Union Density of the North American lift engineers gives one an understanding of the IUEC's influence in the industry.

All the multinational lift companies in North America have agreements with the IUEC. Most local and regional lift contractors also have such agreements. These agreements establish wage rates, benefits, and working rules.

Whilst each lift company has an individual agreement with the IUEC, these agreements are virtually identical. The following are a few of the key features of these agreements:

1. In any given city or region, the wage rates, benefits, and work rules are the same. Note: The wage rates vary from city to city as the cost of living varies from city to city.

2. The companies can only employ IUEC members.

3. IUEC members can only work on lifts and escalators for companies that have agreements with the IUEC.

4. Companies may employ subcontractors. However, the subcontractor must have an agreement with the IUEC and employ only IUEC members.

5. IUEC members are free to work for any company with an agreement with the IUEC.

Lift engineers are required to be licensed in most states and cities. Lift engineers must successfully complete a four-year apprenticeship to become licensed. Both engineers and apprentices must be IUEC members to work for a company who is signatory to an agreement with the IUEC.

Trade unions originated in the UK during the Industrial Revolution. Trade unions rapidly spread to the USA, France, and Germany.

Historically, the relationship between trade unions and companies was adversarial. Over time, this confrontational relationship has softened.

The relationship between the IUEC and the lift companies today is far from confrontational. The IUEC represents the interests of its members, and the lift companies represent the interests of its stockholders. Both entities are equally concerned about their stakeholders, who include both the public who use lifts and escalators and the people who work on them.

In short, an important level of cooperation exists today between the IUEC and the lift companies that is centred around safety. It should be noted that this joint commitment to safety has resulted in a huge reduction in the accidental death rate of engineers and apprentices from an average of six deaths per year to less than one.

Continuing education of the work force is also a priority for both the IUEC and the lift companies.

HOW DOES ALL THIS WORK?

Unionized lift companies all have similar labour costs. As a result, they do not compete based on labour costs.

The combination of fringe benefits and wages makes lift engineers the best compensated blue-collar workers in North America.

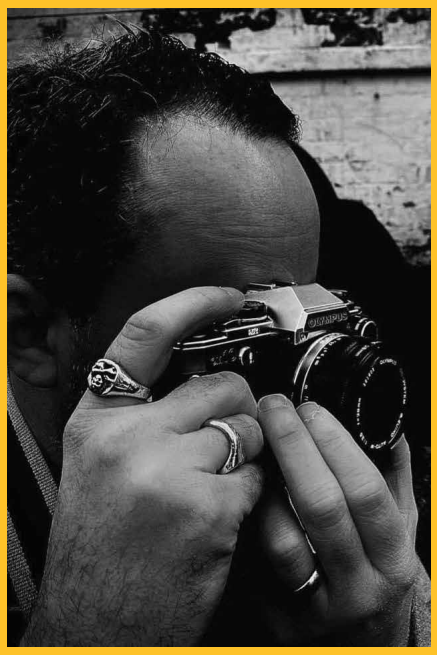
Conflicts between the IUEC and the companies are rare. Contracts are usually renewed without strikes. Both the companies and the IUEC are proud of their strong working relationship.

ACKNOWLEDGEMENT

I want to thank Frank Christensen, General President of the International Union of Elevator constructors for sharing with me the vision and accomplishments of the IUEC.

RORY SMITH

Rory Smith is Visiting Professor in Engineering/Lift Technology at the University of Northampton. He has over 53 years of lift industry experience during which he held positions in research and development, manufacturing, installation, service, modernization, and sales. His areas of special interest are Robotics, Machine Learning, Traffic Analysis, dispatching algorithms, and ride quality. Numerous patents have been awarded for his work.



ELEVATOR PITCH

We've nipped down to Canary Wharf in London to chat with Matt Davies, Head of Strategic Marketing for Europe, at Avire.

We've taken a moment to experience the lifts at One Churchill Place, former headquarters of the Olympic Delivery Teams for the London 2012 Games. Standing at 156m, the building was originally designed with 50 floors, but was scaled down to 32 after the 9 /11 attacks in New York. We'll hop in and take a ride before having a peek at Matt's favourite lifts; read on to find out more!

DOORS CLOSING, GOING UP...

DESCRIBE YOUR JOB FOR US?

I define our strategy for the European market; how we engage with different countries, what we do with different products and how we support the industry with participation in codes and standards committees.

HOW DID YOU GET INTO LIFTS?

I got bored after nearly ten years in the semi conductor industry! I wanted to work for a company that made their own products and was looking for a product management role with a manufacturer. I then stumbled across this company that made lift protection and communication equipment.

CAN YOU GIVE US A SNEAK PEEK INTO A TYPICAL DAY FOR YOU?

Nearly every day I receive a question around standards. This is usually a customer querying a standard being updated or how a certain product complies. A portion of my day will always be given over to research, and I also head up the training here, so I'll be delivering training or updating training. As well as that, we're always looking at different innovations. There'll always be couple of business cases I'm working on.

Anywhere you reach out into the industry you've got people who care.

WHAT DO YOU ENJOY MOST ABOUT YOUR JOB?
The passion of the people in the industry. Most people you meet have spent their whole careers in the industry and are genuinely passionate about it and doing a good job for their customers – I'm still the new boy in the lift industry, after seven and a half years! Anywhere you reach out into the industry you've got people who care.

WHAT ARE YOU WORKING ON AT THE MOMENT?
The big project for me is the digital switch. It's a huge change facing the industry. We've always relied upon land lines in the UK to connect our lift alarms to, and the move to fibre takes that option away. The sooner we engage with that as an industry, the better. Education of the industry is vital, and for us at Avire, we want to help lift companies and lift owners to update their connections to a resilient solution. I think it'll be the biggest thing we're doing until the 2025 switch over date and beyond as we update nearly 260,000 lifts in the UK.

OUTSIDE OF WORK, WHAT DO YOU ENJOY DOING?
I'm a keen film photographer, I have a big nostalgia for it, and I also help run a small film production company. At least half of my holiday allowance each year is devoted to film making. In the last five years we've made three horror feature films – two of which are available to view on Amazon Prime – 'Dogged' and 'Nefarious'. 'Mask of the Devil' is currently in film festivals, out next year! I've also had a few short stories published in the horror genre as part of a couple of anthologies – Castle Heights – 18 different stories set on different floors a tower block (perfect for the lift industry!), and Sweet Little Chittering, each story set on a different street in a village.

WHAT'S YOUR FAVOURITE BISCUIT AND WHY?
A Jammy Dodger – an absolute classic. I used to eat them at my Grandma's.

WHERE IS YOUR FAVOURITE PLACE IN THE ENTIRE WORLD?
The Lake District – it's the best of the British countryside, I absolutely love it up there.

IF YOU STEPPED OUTSIDE THIS LIFT AND FOUND A WINNING LOTTERY TICKET, WHAT WOULD YOU DO WITH THE MONEY?
It would go on film making! I'd burn through that and have a bunch of feature films to show for it!

IF YOU HAD TO CHOOSE YOUR FAVOURITE LIFT, ANYWHERE IN THE WORLD, WHICH ONE WOULD YOU CHOOSE?
I'd love to say one of the incredible scenic lifts, or fast lifts, however the lifts that impress me most are the lorry lifts at Canary Wharf, because of their sheer scale. If you see a picture of them, a way to scale them is by looking at the fluorescent tubes. They're six feet long – so that gives you an idea of their size. The scale of the engineering is impressive, rather than the views!

Well we're off to look at them in more detail! Thanks to Matt for taking a ride with us and giving us an insight to his life and work.

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LETTERS FROM THE PIT

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"CAN A LIFTING PLATFORM BE USED AS AN EVACUATION LIFT?"

Jane from London tries to satisfy a requirement for an evacuation lift.

DEAR JOHN

I have heard that we need to provide an evacuation lift for mobility-impaired occupants. Can a platform lift be used for evacuation?

JOHN SAYS

Simple response; No…
next question.

Reasoned response.

Should any lift be used as an evacuation lift may be a more pertinent question! My immediate and pragmatic reaction to the use of a platform lift for evacuation would be to say no. That said, in the absence of a harmonised standard and in particular with no (as yet) published draft annex to BS8486 or other comparable test standards we can only use the guidance in BS9999 & BS9991 and the drafted formats of BS EN81-76 to form an opinion. This longstanding debate continues, led by our esteemed industry colleagues at LEIA and committee members at BSI and CEN.

I understand we are now quite close with prBS EN81-76 currently circulated for public comment. As an aside, I do find it somewhat irritating to see numerous products on the market claiming to be BS EN81-76 compliant; how do they know?

With the increasing popularity of 'cabin' lifts (enclosed car platform lifts) we may well need further considerations in the future. Speed would be my first misgiving when seriously considering platform or 'cabin' lifts for evacuation, given the 0.15m/s or possibly 0.3m/s speed constraints, building designers and in particular fire design and building control consultants would need to develop strategies that indicate required times for overall building evacuation and the number of persons needed to be moved in a specified period.

Secondary supplies, communication systems and the use of automatic evacuation, remote assisted evacuation or driver assisted evacuation would all need to be considered which may, in turn, rule out the practicalities of using a platform lift as part of an evacuation strategy.

The annexes to the draft prBS EN81-76 give strong guidance, for instance, Annex C; C.1 states "The evacuation lift shall be located in a well (see BS EN81-72 for definition). This would immediately exclude all free-standing semi enclosed platform lifts. Most, if not all of the annexed guidance in A-F of prBS EN81-76 points towards platform

lifts in each of their varying guises and derivatives as being unlikely to be appropriate for use in a building evacuation strategy.

My summary response and opinion is that considering the use of a platform lift in a building evacuation situation is likely to increase the risk to mobility restricted occupants rather than reduce it. I am of the firm opinion that building safety and in particular evacuation strategies should be led by the design team and informed by Fire and Rescue professionals at all junctures. The lift industry can then advise on the practicalities of meeting or modifying design requirements utilising the (hopefully) newly published standard.

DESIGNING FOR LOW INCOME RESIDENTS

Simon from Brighton suggests it is time to update our language.

DEAR JOHN

CIBSE Guide D 2020 Transportation Systems in Buildings is an excellent reference book. However, I am slightly uncomfortable with the use of the term 'Low Income' when considering planning. Should we be using a differential in passengers' income as means of advising on lift design?

JOHN SAYS

I agree with you, Simon. I asked one of the CIBSE Guide D authors, Dr Richard Peters, to comment. This was his response:

Thank you for contacting me with an invitation to comment on the question posed by your correspondent. I do think that language is important; it evolves and is certainly more nuanced than when the term "low income" was first used in this context in the 2005 edition of Guide D. I agree that we should update this language in the next revision. Incidentally, your readers may want to note that the editors and authors of CISBE Guide D have already removed the gender bias found in many other engineering documents – we do try!

If your correspondent (or anyone else) would like to contact me by email at ***richard.peters@peters-research.com***, I will provide them with a commenting template so that they can formerly make technical and editorial suggestions for consideration in the next revision to the Guide. This is the process we use; it works well.

JOHN BENTLEY

John is an established professional within the lift industry, with over 42 years of varied management and technical experience with a specific interest in quality service delivery, sympathetic lift modernisations where viable, and the development and adaptation of modern technology and design installed in existing environments.

His career started with H&C Lifts/Dover Elevators (USA) and in 1998 he established his own contracting business, trading as ANSA Elevators Ltd. – now recognised as one of the leading independent lift engineering companies in the UK. Since 2015 he has been part owner of LECS (UK) Ltd employed as a Director and Project Engineer covering all aspects of building transportation design and maintenance. He provides the company with all lift traffic analysis support along with expert witness information gathering and reporting.

John believes you never stop learning, so is currently studying Lift Engineering at the University of Northampton.

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