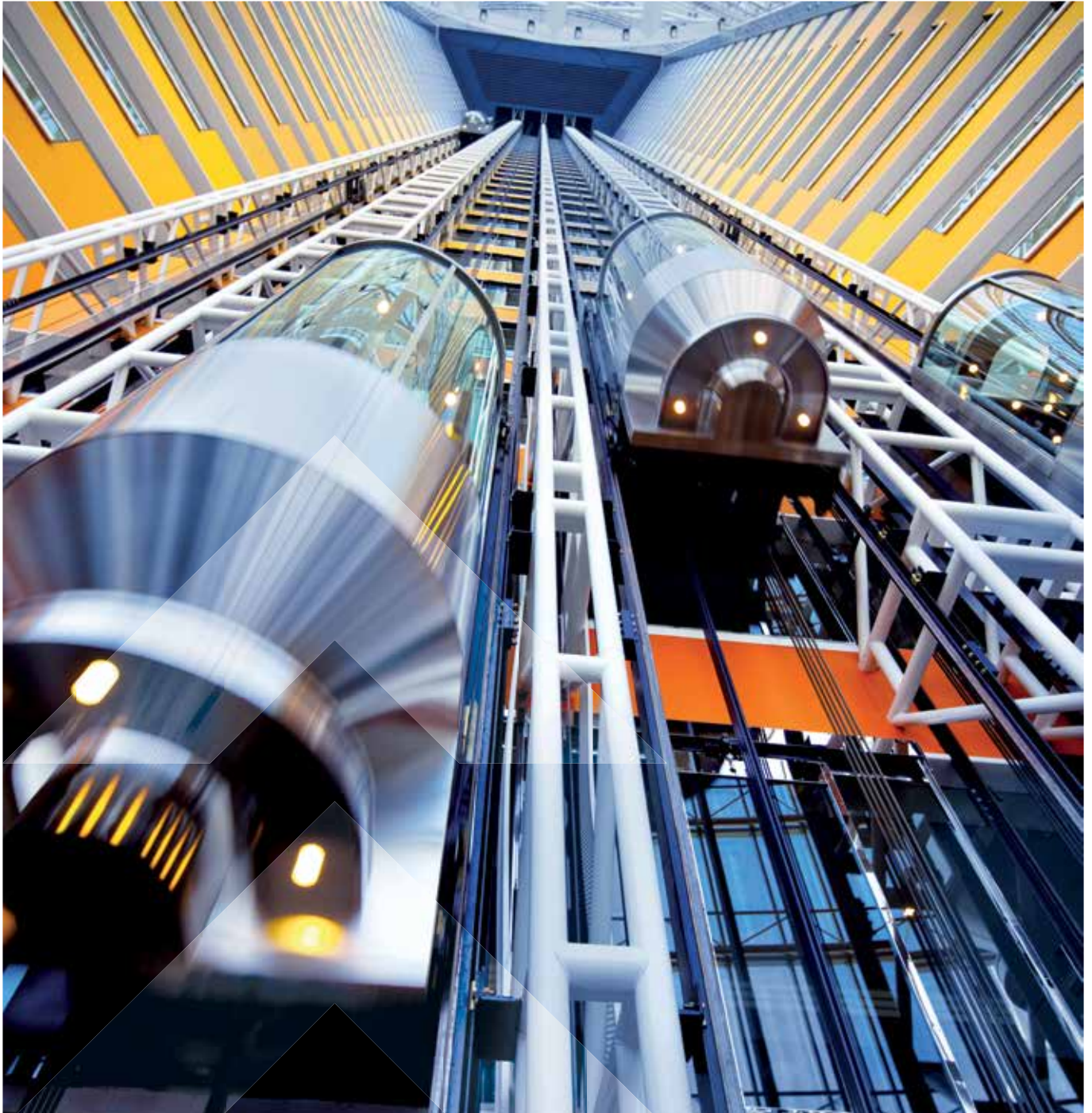


# lift Industry News

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



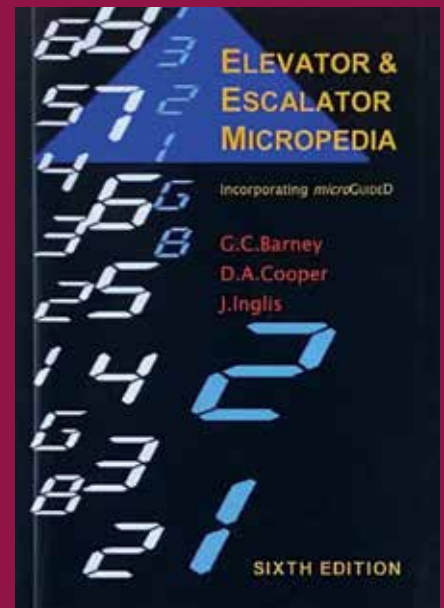
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This edition has been extensively revised to cover the advent of EN 81- 20 / 50 and the emergence of the ISO 8100 family of standards.

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WITH A GLOBAL OUTLOOK  
FOR THE LIFT AND  
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# ROBERT ORR

# OVERVIEW

Welcome to the winter edition of Lift Industry News

**A very happy 2024 to all the readers of Lift Industry News. I am delighted to be the first Guest Editor in the new year and particularly so as this edition celebrates apprenticeships, something that is very important to L.I.T.S. as one of the UK's leading work based technical training provider, offering training and assessment to industry including NVQ & apprenticeship monitoring.**

National Apprenticeship Week is 5-11 February this year and it really shines a light on how important apprenticeships are and the vital role they play in the lift and escalator industry. Read all about the apprentices at ILE, LECS (UK) Ltd, Pickering and TVC from page 33.

We also have an HR perspective on hiring apprentices on page 32, a paper in the Knowledge Bank presented by a software apprentice on page 59 and Len Halsey's always thought provoking Point of View on page 12 talks about his own experiences as an apprentice and the challenges the industry faces today.

Our apprentices will have to be aware of industry standards and we feature a great paper dating back to 2012 from former Technical Director

of LEIA UK/OTIS, Derek Smith, that explains Standards and where they come from – with an update for today by Nick Mellor who succeeded Derek at LEIA.

Standards were a hot topic at CIBSE's Build2Perform exhibition back in December last year, with the CIBSE Lifts group presenting on a Vertical Transportation Perspective. Read more on page 30. We also have an update from the CIBSE Guide D meeting on page 28.

We always want to ensure we are safety aware across our businesses, in this edition Dave Cooper's Safety First column on page 18 looks at Escalator Runaways and we have a Letter from India on page 23 from the CTBUH India chapter Panel Discussion on Elevator Safety - A Reality Check held in December in Mumbai. A fascinating market from which we can all learn.

L.I.T.S are supporters of the Lift Industry Mental Health Charity and I am delighted to welcome the newest correspondent to the pages of Lift Industry News – this one has four paws and a huge personality! You can read Ted Barks on page 71, where a small dog gives excellent advice on maintaining good mental health.



L.I.T.S. has a network, across the UK, Republic of Ireland and Channel Islands, of experienced and qualified lift engineers, trainers and assessors enabling access to both our adult and government levy funded apprenticeship programmes.

**Website:**  
<http://www.lits.org.uk>

**On behalf of Lift Industry News and L.I.T.S we wish you continued success throughout 2024.**

**Robert Orr**  
**Managing Director**  
**L.I.T.S.**

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# lift Industry News

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Missed any earlier editions?



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5-11th February is NAW, bringing together businesses and apprentices across the country to shine a light on the positive impact that apprenticeships make to individuals, businesses and the wider economy - we talk to 6 apprentices across 4 companies in the lift industry about their experiences.  
**#SkillsForLife**



#### TED BARKS

Meet our newest team member, French bulldog Ted, spokesdog for the Lift Industry Mental Health charity





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# lift Industry News

## CALENDAR 2024

<b>February</b> 01 - 03 Thurs to Sat	<b>Lift City Expo 2024</b> February 1-3 <b>CAIRO, EGYPT</b>  	<b>March</b> 06 - 08 Wed to Fri	<b>March 6-8 Smart Lift Indonesia</b> March 6-8 <b>JAKARTA, INDONESIA</b>  	<b>October</b> 01 - 02 Tue to Wed	<b>E2 Forum</b> October 1-2 <b>FRANKFURT, GERMANY</b>  
<b>February</b> 21 Wed	<b>CIBSE Lifts Group AGM &amp; Evening Seminar 2024</b> February 21 <b>LONDON, UK</b>  	<b>May</b> 08 - 11 Wed to Sat	<b>World Elevator &amp; Escalator Expo</b> May 8-11 <b>SHANGHAI, CHINA</b>  	<b>November</b> 12 Tue	<b>Nordic Lift Expo</b> November 12 <b>STOCKHOLM, SWEDEN</b>  
<b>March</b> 01 - 03 Fri to Sun	<b>Smart Lift &amp; Mobility World 2024</b> March 1-3 <b>BANGALORE, INDIA</b>  	<b>May</b> 09 - 11 Thurs to Sat	<b>Inelex</b> May 9-11 <b>IZMIR, TURKEY</b>  	<b>December</b> 04 - 06 Wed to Fri	<b>Lift Expo Italia</b> December 4-6 <b>MILAN, ITALY</b>  
<b>March</b> 02 - 04 Sat to Mon	<b>Cairo Liftech Show</b> March 2-4 <b>CAIRO, EGYPT</b>  	<b>September</b> 16 - 18 Mon to Wed	<b>The Elevator Show</b> September 16-18 <b>DUBAI, UAE</b>  	<b>December</b> 05 - 07 Thurs to Sat	<b>International Sourcing Exposition for Elevators and Escalators</b> December 5-7 <b>MUMBAI, INDIA</b>  

# /2025

**06 - 08**  
Thurs to Sat

**February**

**Lift City Expo 2025**  
February 6-8  
**CAIRO, EGYPT**



**24 - 27**  
Thurs to Sun

**April**

**Asansör**  
April 24-27  
**ISTANBUL, TURKEY**



**11 - 12**  
Wed to Thurs

**June**

**LIFTEX**  
June 11-12  
**LONDON, UK**



**14 - 17**  
Tues to Fri

**October**

**Interlift**  
October 14-17  
**NUREMBERG, GERMANY**



## LIFTEX 2025

The dates for LIFTEX have been announced so get it in your diaries – 11 & 12th June 2025, once again at ExCel, London. More details are coming soon but if you want a reminder of the 2022 show:

<https://bit.ly/3rEiXPM>

## THE INTERNATIONAL SOURCING EXPOSITION FOR ELEVATORS & ESCALATORS (ISEE)

**Of the industry, by the industry, for the industry**

The India Elevator Market is witnessing remarkable expansion, largely attributable to India's rapid urbanisation, population growth, and burgeoning middle class. The construction of high-rise buildings, commercial spaces, and smart infrastructure projects in major metropolitan areas has led to a surge in the demand for elevators and escalators, both in the residential and commercial sectors. ISEE was conceptualised to bring together OEMs and Component Manufacturers of the Elevator Industry to showcase India as a marketing hub.

# POINT OF VIEW

by Len Halsey

**This edition of Lift Industry News is focusing on something very close to my heart; apprenticeships. I have to declare an interest here, as a former apprentice and someone who has benefited enormously from the opportunities apprenticeships offer, it is something I feel passionately about. While apprenticeships cover a wide range of careers, I would like to focus on craft apprenticeships. These have been a significant point of entry into our industry and have provided a route to long and successful careers for many who have taken the opportunities apprenticeships offer.**

We are all acutely aware of the skills shortage our industry is experiencing, the cause of which has multiple sources, whether government apprenticeship policy, the move to subcontracting or the wider approach taken by lift companies to the question of training.

Looking back there is little doubt that over time government policies have not provided the most stable base on which to build long term foundations for apprenticeships. The closure of technical colleges (many renamed universities), changes in government bodies responsible for apprenticeships, funding arrangements and shifting training priorities have all contributed to a situation which saw a drastic reduction in apprenticeship in the 1990s and early 2000s. This coincided with a move within our industry to subcontracting in a host of areas including installation and specialist works, such as roping, hydraulics and major repairs. With little need for subcontractors to employ apprentices and the industry moving more in the direction of contracted works, it was only a question of time before the skills shortage started to bite.

The lift industry isn't alone in facing these difficulties of course; many trades, companies and organisations across a wide spectrum of the construction and services sector are confronted with skills shortages in all areas of their business, and as a result are having to look to fill those gaps with alternative sources of skills from other industries.

At a basic level we know that engineering in the UK does not carry the same level of recognition and status as other professions. While engineers in other countries enjoy the same standing as doctors, the legal profession, teachers etc. the same cannot be said of the UK, which has a long standing and fundamental issue with this proposition. By extension, this lack of recognition applies to apprenticeships as well as other forms of vocational training. While other countries value vocational training to a much greater extent, the UK appears to see apprenticeships as 'second best' to a university education and degree, and perhaps something to be avoided.

Yet we know that apprenticeships can offer real opportunities to those who are not so academically inclined but have practical skills and the ability to learn through a combination of on the job and classroom training. Apprenticeships provide the means of learning a trade while earning and from there offer opportunities for progression into senior management and technical positions. This means of social mobility is an often overlooked benefit of apprenticeship schemes.

While the benefits of an apprenticeship appear inarguable, how does the lift industry view the question of filling the skills void using apprentices?

Going back in time, apprenticeships were well rounded, giving trainees exposure to all aspects of lift installation, maintenance and repair, covering both mechanical and electrical aspects of the equipment. As part of their initial training, apprentices may have learnt basic skills in a workshop before moving into the field where time was spent not only in construction and service but also in specialist areas such as roping, gear works, repairs, hydraulics and testing. Some may have spent time working on escalators and moving walks, providing them with a wider skill set and an understanding of a key component of the vertical transportation market. The on site training went hand in hand with either day or block release at a technical college where apprentices studied for ONC or HNC qualifications. Much of this was supplemented with in house product training and courses covering installation methods and maintenance procedures.

Major changes in apprentice training started to come about as manufactures began the move to pre-engineered model lifts. These products were first introduced into the lower end of the market but as time passed the innovation of machine room less (MRL) products saw model lift speeds and duties expand as they increasingly came into the mid and higher ends of the market, making them the mainstay of the VT offerings we see today. By their design, the installation and maintenance of model lifts require different skills to those needed to install and maintain their 'traditional' counterparts.

It could be reasonably argued that model lifts effectively de-skill the industry as the installation of equipment is effectively an assembly process accompanied by plug and play electrics. As a result many of the skills needed to install high speed, high rise traditional lifts are simply not needed for model equipment, and this presents the industry with a significant dilemma when it comes to training apprentices. On the one hand we have the major international suppliers whose core business is centred on their commodity products, and on the other, the independent sector, who while providing 'package lifts', appear to need people with a wider skill set and are prepared to invest in broader based training.

With the bulk of the market in the mid range sector, do companies focus their training efforts in the model market or provide a wider, more rounded apprenticeship which ultimately will provide the organisation with a more flexible workforce capable of installing and maintaining the full range of company products? This question is no doubt debated and discussed in many training departments and will be viewed differently by the independent sector, where an agile and flexible workforce is perhaps more of a necessity.

To the vexed question of training priorities is the added factor of short termism in management thinking, where the business focus is on results rather than investment in the workforce of the future. The training of apprentices is a considerable investment, both in terms of cost and in providing the structure and administration of the scheme, even if this is delegated to a third party. As we know an investment means putting money in at the front end for a return in the future, in the case of apprentices

perhaps 5 – 6 years, given the initial 3 year apprenticeship and then the time necessary to gain experience and become fully productive. It seems to me that although many companies subscribe to improving skill levels and have taken up apprentice training, some perhaps by virtue of having to pay the levy, few have time horizons much beyond this year's results and next year's targets; the thought of having to wait 5 years or more for a return on investment isn't something seen as attractive or a priority. And yet it has been precisely this approach that has led to the situation we are now having to confront. Short term thinking is a significant issue in many areas of business and the lift industry is no different.

Recruiting and retaining apprentices is also something of a challenge with seemingly high dropout rates. Making the job appealing when competing with the desire to sit in front of a computer in a warm, dry environment isn't easy and an issue the industry faces. There is no question of the need to 'sell' the industry as one to aspire to, and this can be a difficult task. However, key factors and selling points, I believe, sit around the use of technology and opportunities to make progress through the business to senior positions. From my experience these are messages younger people are responsive to and areas that take their interest.

We still have a long road to travel with apprenticeships but we do appear to be making progress. We certainly need to build on the foundations that have been established, but it will demand long term commitment and determination to address the situation we currently face. Automated installation systems and remote monitoring are all part of the way our industry is moving and these innovations will bring the need for new skills. I would like to think that apprenticeships will lead the way into this new and exciting future.

## **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.*





# BEHIND THE SCENES AT LEIA

## NEWS ROUND-UP

### Three new members join the LEIA Board

Welcome to Karis Walker, Head of Commercial at TK Elevator, Andrew Renwick, MD at Caltech Lifts, and David Martin, MD at DeSeM Lifts who have joined the LEIA Board.



### Date for your diary

The distance learning cut-off for enrolment for the May cohort is **15th April 2024**.

### LEIA Assessment – what's in store for 2024?

**Karen Slade, Head of End-Point Assessment at LEIA Assessment, gives us an update**



LEIA Assessment has been delivering end-point assessments for around 18 months now. Lift apprentices from a range of employers have undertaken their EPA. Initially, there was some uncertainty around what EPA was and how it was going to be delivered but as employers and providers become more familiar with it, and the processes, it is becoming the new 'normal'.

EPA is certainly seen as a more robust way of gauging competency as Apprentices have to demonstrate through independent assessments that they are competent and knowledgeable about their role.

There are still areas that can and are being improved though. This includes the review and re-write of the core lift and escalator standard the Lift and Electromechanic at level 3.

A stakeholder group is working with the Institute for Apprenticeships and Technical Education. It's likely that there will be significant changes that will see the standard become more accessible to those across all professions it covers, including a different approach to the assessment methods. We're looking forward to welcoming the first Lifting Equipment Technician Apprentices through for EPA early in 2024. **Watch this space!**

### View from the floor

We asked new board members Andrew and Karis about their routes into the industry and their experiences of apprenticeships.



### Andrew Renwick and Conar Tweed

**Andrew Renwick** has been involved with Caltech Lifts since childhood - instead of doing a paper round for pocket money, he was helping his father, Howard, with paperwork. Having completed a degree at Dundee University and a graduate sales role at Whyte and Mackay, Andrew joined the business in 2007 and became MD in May 2013.



"Caltech has believed in the power of apprenticeships for a long time – my brother Fraser was our first. Then, in 2016, we hired local 18-year-old, Conar Tweed," Andrew recounts. "Conar studied for an HNC in Electrical Engineering followed by an NVQ Level 3 in Lift Engineering Maintenance." The company helped him on the path to offering him a full-time job at the end of his training.

"Since then, we've hired three more apprentices and currently employ two. We recently took on our first female apprentice, which we hope will encourage more girls to think about a career as a lift engineer."

"One thing we've learned over the years is to really allow the apprentices to effectively 'fail forward'. This means making a minor mistake in a controlled, safe environment and then working out how they can rectify it and what they can do next time to complete that task better."

Highlighting the benefits, Andrew observes, "As the marketing says, it's an opportunity to earn while learning, so it particularly helps those whose family finances mean they can't consider going to university or college full-time. They get practical experience to reinforce classroom learning, tackling work with confidence."

*"Also, working alongside experienced colleagues helps them to pick up 'soft skills' and builds a new social network of colleagues who can help with any stress around work, in addition to the support we provide."*

However, Andrew believes there's still more to be done to attract new talent to the industry. "There's a lot in the idea that 'if you can't see it, you can't be it', so employers, LEIA and training bodies must do what we can to recruit people from more diverse backgrounds and then, crucially, communicate their roles and positive experiences to the young people who could follow in their footsteps after being inspired by them."

*Andrew also represents LEIA on the CICV. <https://www.caltechlifts.co.uk/>*

"I started my career via an apprenticeship in aerospace," **Karis Walker** explains. "It offered a great opportunity to both learn and study, gaining experience through all aspects of what was an interesting and exciting global business. It was such an enjoyable and eye-opening experience, which has led me to be a huge advocate for apprenticeships ever since. I left with a clear passion for commercial, but I actually entered the lift industry through finance, supporting debt recovery through contract enforcement and supporting the business with controlling and improving commercial practices. It was being given that opportunity to expand on my role, that led me to the area in which I specialise now."

"TK Elevator are committed to creating an environment where future generations want to work and therefore actively recruiting apprentices across the organisation. Apprenticeships offer a great balance to theoretical learning and on the job training, working alongside highly skilled colleagues."

*"I have been fortunate enough to benefit from some great mentorship throughout my career, with business leaders who were keen to support and develop colleagues, giving them the trust to own and develop through their roles. With TK Elevator, I have been given some great opportunities through different areas of the business, to really build on my skills, learn some lessons, and develop my business and industry knowledge."*

When it comes to attracting more young people to the industry, Karis remarks, "We need to encourage individuals to see that there are long term career prospects in an exciting array of specialisms. I believe the general perception of our industry is quite narrow in this regard, so if we could get more members to share their industry experiences, more organisations to share their exciting technological advancements and what goes into these from an individual colleague perspective, I believe this would connect more with the next generation and help foster that long-term interest. The industry has and still faces a lot of challenges, but there are also a great many positives. Lifts and escalators will always form a part of our day to day, they will always be needed and so will the people that make that happen."

*Karis also chairs the LEIA CLC. <https://www.tkelevator.com/global-en/>*

**Read the full interviews with Andrew and Karis on the news pages of the LEIA website.**

<https://www.leia.co.uk/leia-welcomes-three-new-board-members/>



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# SAFETY FIRST



Dave Cooper, our expert adviser looks at

## UNCONTROLLED MOVEMENT OF ESCALATOR STEP BANDS

There have been a number of examples of uncontrolled movement of escalator step bands. By uncontrolled movement I mean rolling backwards out of control and they can be compared with lifts rolling away due to the counterweight or car taking over and causing an overhauling situation on a lift where a gearbox or brake failure have occurred.

### Recent escalator runaways include:

- February 2014 Cutty Sark Station, London
- 26th March 2017 Mong Kok Shopping Mall, Hong Kong (17 injuries)
- 23rd October 2018 Piazza Della Republica, Rome (20 injuries)
- May 2023 Argyle Street Station, Glasgow

In reality, runaways have been occurring ever since escalators were invented, with some attracting more media attention than others.

One of the worst cases occurred in 1994 and became known as The Camden Yards incident in the USA, with an injury toll of 43 people. The reason casualties were so high is simply because the speed that the escalator step band manages to achieve when there is no method of arresting the situation can be very high and a function of the mass of the passengers on the step band at the time.

A runaway situation can occur in both the upward and downward modes but the ultimate event results in the escalator rolling backwards (down mode) in an uncontrolled manner.

Where the escalator was initially travelling in the up direction and a runaway occurs it may also be referred to as a runback or unintended reversal.

Where the escalator was running in the down mode the escalator will simply be in an uncontrolled descent but the starting speed will be the rated speed of the escalator whereas in up mode the step band will have to come to a stop and then roll backwards.

In such situations, and especially when there has been an acceleration component involved, passengers are often deposited in a pile at the bottom end of the escalator due to the inability of passengers to egress the escalator due to its high speed.

When these events occur, passengers are often seen clambering over the handrail to avoid the collision with other passengers at the bottom of the escalator.

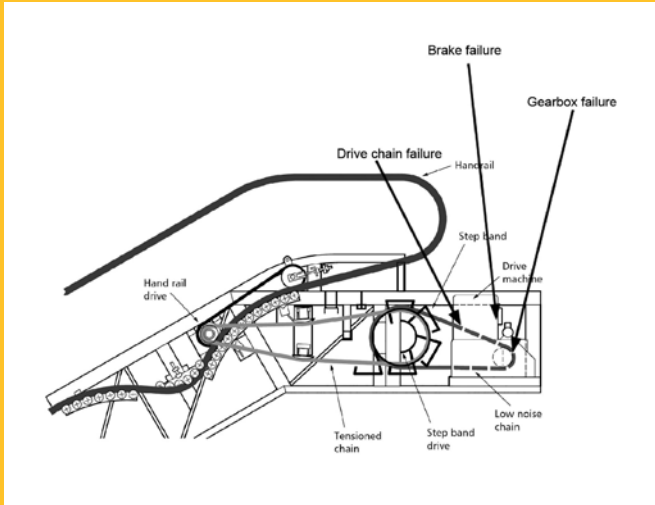
An accumulation of passengers can be seen building up in the below photograph with passengers behind them unable to avoid the passengers at the bottom as there is no way of escape due to the escalator being installed with a void to the side.



**Photograph 1: Passengers at base of escalator in the Mong Kok Mall incident in Hong Kong**

## HOW CAN IT HAPPEN?

Investigation into such incidents reveals a number of ways uncontrolled movement can occur including:



**Fig 1: Principal Components of an escalator drive system (source CIBSE Guide D)**

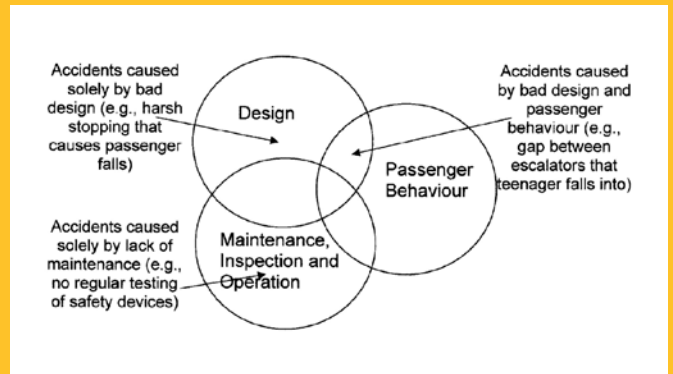
There have been incidents where a second component failure has also contributed to a runaway condition primarily when an auxiliary brake is installed but has failed to bring the step band to rest.

There are other reasons why an escalator can runaway but the above are the primary reasons found in researching the subject.

One example of another reason found is a drive unit fixing failure leading to the drive chain, brake and gearbox being ineffective.

Al-Sharif has previously derived a Venn Diagram showing seven possible ways accidents occur with escalators and escalator runaways fall into the categories identified including design, maintenance and passenger behaviour.

When it comes to passenger behaviour, they have not been found to be associated with primary causation of a runaway but minor contribution such as pressing an emergency stop button leading to the primary reason for it becoming apparent (e.g. operational brake doesn't hold when required to do so). In addition, it has been found that in the initial stages of an accelerating runaway passengers continue to board the escalator if it is a down running machine unaware that it is in trouble.



**Fig 2: Al-Sharif's Venn Diagram of escalator accident causation**

This leads to the other two components namely design and maintenance.

When it comes to design the inclusion of an auxiliary brake is a consideration. Not all escalators require an auxiliary brake and this is discussed later in this column in the section about whether standards are sufficient.

Consideration should also be given to the location of the operational brake as if it is onboard of the gearbox it will provide no protection in the event of a gearbox internal failure. This is the same for lifts where the brake on geared machines is mostly found between the hoist motor and gearbox.

Maintenance is normally a key contender in escalator runaway situations especially with respect to brake failures where issues such as lubrication getting onto braking surfaces, poor adjustment or worn pads can be a contributory factor. We should also remember that the brake is often used as a means to stop an escalator at the end of a working day and therefore, even if the escalator has a VF drive, the pads are subject to wear on a regular basis.

In the incident in Rome the CCTV footage can be seen showing the escalator slowing down and then increasing in speed.

It appears what has happened is that someone had operated an emergency stop button and the operational brake had been asked to bring the escalator to a safe stop and hold the step band in position but failed to do so.

It appears the step band starts to accelerate in the down direction causing a passenger crowding situation. In the environment where the escalator was installed it would be expected that an auxiliary brake would have been installed, and on the assumption that it has then it has clearly failed to arrest the reversal of the step band.

By auxiliary brake I mean a device that will prevent step band runaway and not “auxiliary” meaning just another brake in a location that will not prevent runaway. As with all sound designs an auxiliary brake (such as a safety gear on a lift) must operate on the final mechanical component. This is likely to mean the head shaft on an escalator to protect against the component failures described above.



**Photograph 2: Passengers during the initial phase of a runaway starting to hold the passenger in front.**

#### ARE STANDARDS SUFFICIENT?

The 2017 EN115 standard (5.4.2.2) more or less mirrors the previous 2008 and 1995 standard with respect to the requirement for an auxiliary brake and states:

#### 5.4.2.2 Auxiliary Brake

5.4.2.2.1 Escalators & inclined moving walkways shall be equipped with auxiliary brake(s) if:

- a. The connection between the operational brake and the driving sprockets of the steps/pallets or the drum of the belt is not accomplished by shafts, gear

wheels, multiplex chains, or more than one single chain, or

- b. The operational brake has not an electrical-mechanical brake according to 5.4.2.1.2, or
- c. The rise exceeds 6m

The problem with this situation is that an escalator or inclined walk with a rise of less than 6m with a conformant drive chain can still fail and runaway due to brake failure, gearbox failure or drive chain failure.

CIBSE Guide D defines an auxiliary brake as “A fail safe brake, which is used to stop an escalator under all normal conditions or under certain fault conditions only. It is typically situated on one side of the main drive shaft.

It should be noted that this was derived from a London Underground Glossary of Terms – one of the major UK operators of escalators.

The 2017 EN115 standard (Clause 5.12.2.7.3) also calls for detection of unintentional reversal of the direction of travel and states “A device shall be provided for escalators and inclined ( $\alpha = \geq 6^\circ$ ) moving walks to detect the unintentional reversal of direction of travel.” The problem with this is that it could use the operational or auxiliary brake (if fitted) to prevent the reversal and these components are known to have failed in the past.

5.12.2.7.2 also calls for the detection of excessive speed before the speed exceeds a value of 1.2 times the nominal speed.

It can be argued that the standards provide sufficient protection however it is the author’s contention that an auxiliary brake should be provided on all escalators and inclined walks in situations where the failure of the operational brake,

gearbox and/or drive chain can occur. In reality this would mean that all escalators and inclined moving walks would require an auxiliary brake.

In addition, the auxiliary brake needs to be located in a position where compliance with 5.12.2.7.2 can be achieved. It is clear to me that the intent of the standard is to prevent uncontrolled movement of the step band. There are a number of escalator designs that do not meet this requirement.

#### CONCLUSION

**Runaway escalators are still occurring despite the EN115 standard recognising that unintended reversal or an overspeed condition is a foreseeable event.**

**It is accepted that rather like a lift if where the overspeed governor or safety gear fails to work there are scenarios where an auxiliary brake does not provide full protection.**

**It is however concluded that all escalators and moving walks should be provided with an auxiliary brake to support the operational brake.**

**It is also concluded that the auxiliary brake needs to be positioned such that it will be effective in preventing uncontrolled movement of the escalator step band.**

## REFERENCES

1. Chartered Institution of Building Services Engineers (2015); Transportation Systems in Buildings.
2. British Standards Institution (2017); EN115-1 Safety rules for the construction & installation of escalators & moving walks
3. Al Sharif (DnK), Escalator Human Factors: Passenger Behaviour, accidents & design

## BIOGRAPHY

*Eurling Prof. David Cooper MBE 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.*

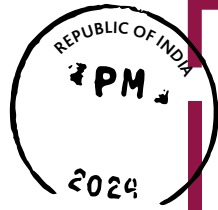
*He is also a Founding Trustee and Chairman of the UK's Lift Industry Charity which assists industry members and/or their families after an accident at work. In 2012 David was awarded the silver medal by CIBSE for services to the Institution.*

*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.*

*In 2023 David received an MBE in the Kings Birthday Honours list for services to lift & escalator engineering.*



# LETTER FROM INDIA



"All safe gentlemen"  
Elisha Graves Otis

**Council for Tall Building and Urban Habitat - India Chapter held a Panel Discussion on Elevator Safety - A Reality Check on December 1, 2023 in Mumbai.**

The panelists comprised Pratik Kataria - NAREDCO Nexgen, Uday Dambe - Lift Inspectorate, S S Warick - Directorate of Fire Services, Maharashtra, Hrishikesh Pawar - Otis Elevators, Mayank Desai - TK Elevators, Karan Turakhiya - Eskay Elevators and Ashish Kapoor - Shuco. The event was sponsored by Otis Elevator Company, TK Elevator, Esky Elevators, Witter Elevator Components, City Lifts and ISEE.

The event began with the introductory address by Girish David, Chairman - CTBUH India. This was followed by presentations by sponsors Otis and TKE. Karan Turakhiya of Eskay Elevators spoke on the anomaly of reducing elevator cost and voicing concern over the reducing equipment life cycle in the elevator industry.

In his keynote address Amit Gossain, President - Indian Electrical and Electronics Manufacturers' Association (IEEMA) Elevator Division, spoke on the need to have a uniform Lift Act in the entire country. As on date only 12 states have a prescribed lift code. He also spoke on the need to upgrade the Indian standards on par with international standards.



**Referencing Elisha Graves Otis' demonstration - "All safe gentlemen" at the Crystal Palace Exposition of 1953, moderator, TAK Mathews, opened the discussion with the remark that the elevator industry was founded on the commitment of safety. He also mentioned that the basic concept of the safety governor has not changed from then to now.**

One of the points brought forward by the panel was that, while façade and MEP have, over the last few years, been accorded a fair share of importance while designing tall buildings in India, the same is not true for elevators. VT is not considered critical and finds no place in the design basis of a large proportion of tall buildings in India. A glaring example of this is that the High-Rise Committee, Mumbai that regulates tall buildings has no pre-requisites for elevators! This is alarming considering that VT inadequacy usually cannot be corrected without bringing down the building.

Uday Dambe of Lift Inspectorate clarified that this is a major lacuna in the governing rules and this is now sought to be corrected. He also highlighted a peculiar problem in Mumbai of slum rehabilitation buildings where a portion newly constructed apartments belongs to the existing tenants and cannot be sold. In such buildings, the lack of governing rules coupled with the attempt by the real estate firm's focus on profitability leads to severe under-elevating. This leads to a situation where the elevator cannot even be made available for service during regular hours as passenger traffic keeps building up. Service quality declines, passengers get more frustrated and sometimes they react by damaging the equipment. All this just goes on to compound the problem. Poor design also leads to insufficient pit, headroom or machine room space comprising safe access to the equipment for servicing.

The discussion went on to address the fallacy of falling elevator prices. While an attempt is made to attribute this to more efficient use of technology – in many cases this is achieved by compromising quality in the face of cut-throat competition. Over the years the life-cycle of elevators has come down from 25-30 years to 15-20 years. This has an adverse impact on sustainability. There was also a discussion on the Safety Norms for Existing Elevators which are already incorporated in the Indian Standard.

Another issue of concern is construction elevators which are not covered by any codes. There is urgent need to bring these under the purview of the codes and standards.

The discussion then moved to safe usage of elevators. Hrishikesh Pawar spoke of Otis's efforts in supporting the Elevator and Escalator Safety Trust in creating awareness on the safe use of elevators and escalators and do's and don'ts to be followed by users.

Pratik Kataria summed up the discussion by saying that we need to change the eco-system so that all stake-holders - the architects and real estate developers, the E&E industry, the regulatory authorities come together to ensure that elevators live up to the original commitment of "All safe Gentlemen".

In the closing address, Suraj Thodimarath, President - Elevator and Escalator Manufacturers' Association of India (EECMAI) spoke on how EECMAI was formed as a coming together of like-minded individuals as a part of the 'Atmanirbhar' India campaign to produce components that could compete with the best in the world. He concluded by reiterating EECMAI's commitment to promoting quality and safety among component manufacturers in India.



PICKERINGS

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The UK's Leading Independent Lift Specialist



## Lift Installation

We supply and install a wide range of passenger lifts, goods lifts, service lifts and home lifts. All of our lifts are energy efficient and are completely customisable with a wide range of high design finishes from our specialist suppliers.



## Lift Maintenance

Whether you have one lift or one-hundred lifts, we are proud to provide an industry leading level of lift maintenance services that ensure your lifts are safe, compliant and available for use at all times.



## Careers & Apprenticeships

We have a rich heritage of employing new entrants into the lift industry and we continue to open up new opportunities each year. We are also growing and recruiting skilled engineers and industry experts.

As one of the founding members of LEIA, we understand the importance of keeping up to date with the most recent developments in the lift industry. Our lift and escalator engineers each have access to LEIA training to extend their knowledge and expertise.



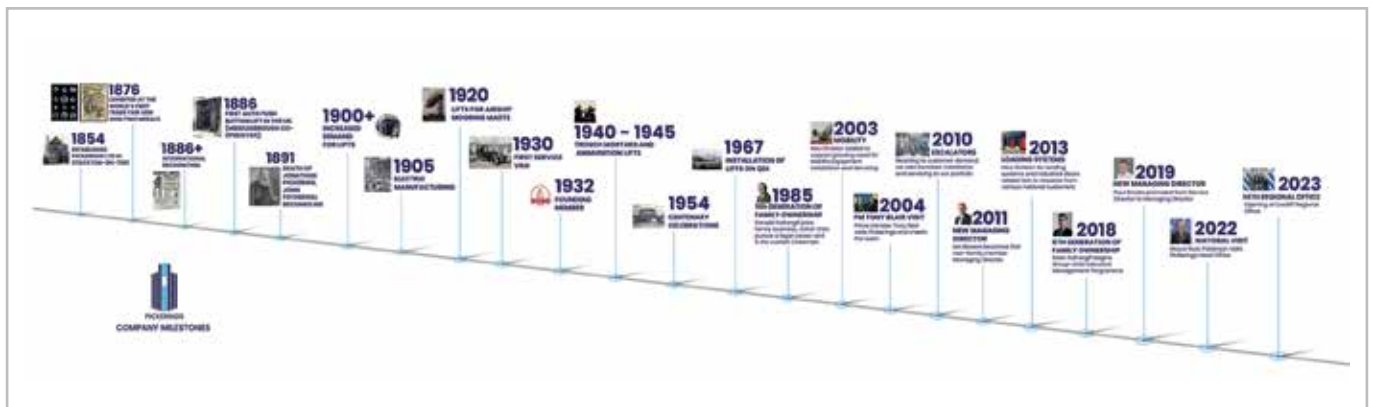
Keeping You Moving

Delivering lift maintenance & repair expertise





# THE INTERVIEW



With 170 years of experience behind them, Pickerings Limited is one of the oldest lift engineering firms in the UK. Family owned since inception, they were a founding member of LEIA in 1932. More recently, January 2023 saw them open their 14th regional office, in Cardiff. We chatted with Rachel Swales, HR Manager, about Pickerings' incredible history and how they are investing in the future.

Pickerings is a stalwart of the lift industry, but there may be new faces who need a little introduction! Could you briefly explain what Pickerings does?

We've been around a long time, it's our 170th anniversary this year and we're in the sixth generation of family ownership. We're a leading independent lift service provider, we install and maintain different types of passenger and goods lifts for a variety of environments, together with mobility lifts, loading systems products and escalators. Since 1854, when the company was founded, we've evolved, reacting to what the marketplace needs and I think that's why we've flourished for so long.

What sets Pickerings apart within the lift industry?

We're a big company, but we tailor our service to each and every customer with the most up to date equipment and highly skilled staff. Because we've been around so long, we offer our customers longevity and sustainability, whether a large commercial customer or an individual. Our customers on the mobility side we provide much needed services to our most vulnerable customers. Our mobility engineers will go into their homes and fix a stairlift, and we understand this can make a huge difference to their everyday lives. With our commercial customers, some of our engineers will maintain the same lifts year after year, building relationships with our customers, which provides a level of mutual understanding and a sense of trust.



## Exceeding customers' expectations is part of Pickerings' mission, but what does this look like in reality?

We benefit from the continuity of service from our engineers, which means that our customers also benefit from that. Each engineer will know the intricacies of the lifts they service, going back to the same ones regularly. With this being the case, some of our customers will request a specific engineer who they've developed a good working relationship with as they know that they have a valuable insight, making fault finding and diagnosing issues much quicker. We can provide that personal service because we have a staff base of dedicated engineers that know and understand our customers and their unique needs so well.

## With a recognised skills gap in the industry, so many organisations are looking to inspire the next generation. How is Pickerings doing that?

I have a great enthusiasm for apprentices and I think it's so important to share with young people the potential career opportunities that a lift apprenticeship can lead to.

We encourage and facilitate work experience as a pre-cursor to an apprenticeship here. This is a great opportunity for someone considering a lift apprenticeship to have a taste and see what a day in the life of an apprentice is like. Often our apprentices join us straight from school or college, so a work experience placement gives a great insight to the world of work. The Apprenticeship Standard is flexible and training can be tailored to the individual. For example, if someone's come in straight

## Many organisations will say that it's 'the people who make the organisation'. How does Pickerings empower their staff?

We have colleagues who spend their entire career with us, from their apprenticeship right through to retirement. Some staff have been here for 25 or 40 years, and it's important to us to celebrate these people. In fact, we had so many colleagues hitting these milestones last year that we held three celebratory lunches. We make sure that we recognise these moments, as we understand that continuity of service is vital, not just for our customers, but for our team members as well. Retaining experience means that our apprentices have a strong and knowledgeable workforce to learn from - it's invaluable. The experienced engineers not only pass on all the mandatory training, but offer insights on behaviour as well, which goes hand in hand with the practical skills.

Our apprentices aren't just picking up technical skills for the job, but a combination of knowledge, skills and behaviours; how to interact with customers as well as internal departments. It's not just isolated learning on how to fix a lift, there's so much more.

Training and progression is embedded into the culture of our company; not just professional training, but personal development as well. We invest in training, which brings with it confidence, and we understand that if our people are confident, they feel empowered to perform well and then take on responsibilities they might never have done otherwise. We also like to promote from within, offering a strong career progression alongside those personal development opportunities.

from school, we'll start them off differently to someone who's come in with a BTech or from an allied trade, there's plenty of scope to be able to do that.

At each of our 14 regional offices we have a network of engineers, a management and administration team, and we have various apprentices across all of those teams, including at our Head Office. It's our ethos to take on apprentices to train and retain them – it always has been – and we see many of our apprentices grow through the business to management. Our long serving, experienced team members are a critical part of our success and add great value to the positive impact on our apprentices' learning.

It's been a career highlight of mine to have contributed to the Trailblazer group for lift apprenticeships and the development of an industry standard apprenticeship, but also to have seen first hand the progression of our wonderful apprentices on their journeys.

You can see a feature of one of our apprentices, Reece, who has recently completed his apprenticeship, on page 39. His manager, Rob, followed the same path, starting here as an apprentice and working up to management, which I think is so valuable for them both, to have that common thread and mutual understanding. Rob knows exactly the path that Reece is walking, and Reece can see that Rob's been through it all ahead of him which is a great support.

## What else could the lift industry be doing to attract talent?

Promoting the lift industry as a rewarding and fulfilling career, especially to young people studying a STEM course, would definitely raise the profile of our industry. I think we have to work hard for the lift industry to be considered as a popular first career choice. The more we can connect with schools and colleges, and open our doors to young people, the better insight they will have. We've found this to be a good pathway that leads into apprenticeships. It also helps the school or college with finding work placements for students, offering valuable real life work experiences. Then once we are seen as a rewarding career choice, it raises the profile of the lift industry for the following year groups.

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

We are a founding member of LEIA, and it's important for us to maintain this membership for the reassurance of our customers and to keep our well-earned credibility in the industry. We recognise that we have a greater responsibility beyond our own company and it's vital that we support and interact with our peers for the greater good of the industry.

## Can you pick out some highlights from the past 170 years?

I think one of our earliest achievements was designing the first auto push button lift in the UK. People were enthralled at simply being able to call a lift at the push of a button! I love our involvement in social history through time, and that we also played our part in the war effort, building

trench mortars and ammunition lifts. Later on, in 1967 we were privileged to install the lifts on the QEII ship and most recently, we're proud to have opened our 15th regional office this month in St.Ives, Cambridgeshire.

## What are your priorities for 2024?

Our Managing Director, Paul Brooks is probably best placed to answer this one!



*He said, "In 2024 we will be setting our ambition to become carbon net zero by 2050. This year will also see us opening our 15th regional office to cover the East Anglia region and we're continuing to create new opportunities to attract some of the industry's best talent. Our people are what excites me the most. With some of the best talent within the industry today, we continue to concentrate on the development of our team members."*

*"We want to be the 'go to' specialist in the sectors we already supply our services to. The business has grown over 50% in the last five-years, and we want to see the same type of growth again over the next five years."*

To find out more about the company, visit their website - <https://www.pickeringslifts.co.uk/>



# NEWS FROM THE CIBSE LIFTS GROUP

## Guide D update



The planning of Guide D 2025 began early in April 2023 as our longstanding Technical Editor, the late Dr Gina Barney, knew she would not be there to complete the project. Gina was a driving force behind Guide D, and it was recognised that no one person could replace her – we needed five people! The Guide D 2025 team is led by Managing Editor Elizabeth Evans and Technical Editors Richard Peters, Adam Scott, Nick Mellor, and Jonathan Beebe. We are again ably supported by CIBSE Editorial Manager Ken Butcher.

With such a significant update coming, Gina thought reviewing our planned updates and inviting feedback would be an excellent topic for the Lifts Group Annual Seminar. So it was that the CIBSE Lifts Group Annual Seminar on 2nd November had the topic, CIBSE Guide D: Transportation systems in buildings, Review and looking forward to Guide D 2025. Speakers included Richard Peters, Adam Scott, Nick Mellor, Steve Normington, Micky Grover-White, Paul Burchett, Michael Turner, Jonathan Beebe, Vince Sharpe and Chuan Lim.

The speakers presented an overview of planned changes and invited feedback. Videos of the sessions are available on the CIBSE Lifts Group website on the Guide D 2025 Update page. **A further invitation to complete the formal commenting template is also available on this web page.**



Drafting of Guide D 2025 commences on 29 January 2024, so if you have comments on the existing Guide D 2020, it is almost too late! Please don't leave it until we publish to make your comments. The completed commenting templates we have received so far made us think there must be some guidance on completing a commenting template. Of course there is! Gina included this in CIBSE Guide D 2020 Appendix 18.1: Commenting procedure on British (UK) Standards. We use the same procedure and a similar commenting template for Guide D. The principle is, do not write – *"this is wrong, fix it"*, or *"You need to do some work and add this thing I think is important"*. You must provide the proposed change, which the author and technical editors will review.

Do refer to Guide D 2020 Appendix 18.1 for more information, but we have included Gina's Figure A18.1.1 Example of a commenting template to demonstrate best practice. We look forward to hearing from you!



## 2024 Events

Our next event, the CIBSE Lifts Group AGM and Evening Seminar, will be held on 21 February 2024. Register and get the latest information about upcoming 2025 events on the CIBSE Lifts Group website, Lifts Group Events page.



Template for comments and secretariat observations Gina Barney

MB/ NC <sup>1</sup>	Line number	Clause/ Subclause	Paragraph/ Figure/ Table/	Type of comment <sup>2</sup>	Comments	Proposed change	Observations of the secretariat
				G	The title of this standard is confusing as it implies that it covers all the aspects of planning and selecting a lift. It only is concerned with <u>traffic</u> planning and selection.	For clarity revise title to: Part 32: <u>Traffic</u> planning and selection of passenger lifts to be installed in office, hotel and residential buildings Also in Foreword. Also heading above Scope.	Agreed
	Page 1	1		E	"planning" and "traffic planning" are used interchangeably.	For clarity, change all references to "traffic planning"  6 instances	Agreed
	Page 3	3.4	Note 2	E	"J" is missing at end of source reference"	Correct	Done
	Page 5	3.21		T	It is not clear that nominal travel time is calculated by dividing the travel distance between terminal landings by the rated speed.	For clarity, add "Note 2 Nominal travel time is calculated by dividing the lift travel between terminal floors by the rated speed."	Agreed
	Page 6	3.30		T	"required handling capacity" and passenger demand terminology needs additional explanation.	For clarity add "Note 3 The required handling capacity determines the passenger demand (3.24), which is used in calculation and simulation. In calculation this is denoted %POP (4). In simulation passenger demand is specified in conjunction with a traffic mix (3.35).	Agreed
	Page 7	3.41		T	Note 2 should include "opening" as this phase also yields zero time waiting for the passenger.	For clarity in Note 2 change "are open" to "are open or opening".	Done

1 MB = Member body / NC = National Committee (enter the ISO 3166 two-letter country code, e.g. CN for China; comments from the ISO/CS editing unit are identified by \*\*)  
2 Type of comment: G = general T = technical E = editorial

ISO/IEC electronic balloting commenting template/version 2012-03

Figure A18.1.1 Example of a commenting template

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**CIBSE's Build2Perform Live is the meeting place for forward-thinking industry professionals, visionary speakers, leading industry exhibitors and young talent.**

**With specialist speakers invited from across the built environment the live two-day event at Excel featured over 70 hours of content, 125 speakers and over 100 exhibitors.**

Lift Industry News was there to hear Dave Cooper, CIBSE Vice President open Day 1. Dave was standing in for President Adrian Catchpole who was at COP 28. Dave covered the key themes of the show that were explored through the day by expert speakers and went on to chair the Keynote session on Delivering Net Zero and Adapting to Climate Change. Speakers asked how can we reduce both the embodied and operational carbon impacts of buildings as we adapt them to better handle climate change and become net zero?

It was great to hear Rachel Smalley, Head of Inclusive Design at Jacobs, talking about Inclusive design - making places work for people as part of the session on How Do We Design Buildings To Foster Inclusion, Wellbeing and Sustainability? Her keynote speech at the 14th Lift & Escalator Symposium last year had raised some great talking points – see Nick Mellor's review on page 43. Her closing reminder that Accessible and Inclusive may be Accessible but not Inclusive gave the audience a lot to think about.



**For the first time the CIBSE Lifts Group was speaking at the event on A Vertical Transportation Perspective,**

**in the Vision Theatre, chaired by Michael Bottomly from the CIBSE Lifts group.**

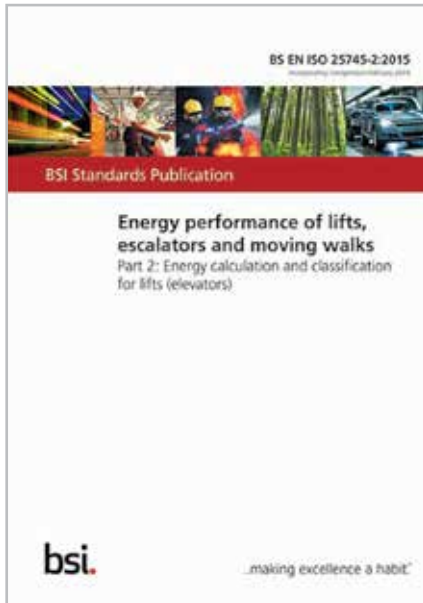
Adam Scott (Sweco) gave a fascinating and thought-provoking presentation on Whole Life Carbon & Lifts - Modelling embodied carbon and operational energy.

**Buildings are currently responsible for 39% of global energy related carbon emissions: 28% from operational emissions, from energy needed to heat, cool and power them, and the remaining 11% from materials and construction.**

The UN projects that the global population will peak before the end of the century – in 2086, at just over 10.4 billion people. As the population grows, building stock will double and the implication is more lifts will be needed.

The lift and escalator industry therefore has an important part to play in minimising the impact of its activities on our climate; the creation of new lift and escalator equipment consumes energy which is quantified by its embodied carbon credentials, whilst the use of lifts and escalators consumes energy characterised by its operational carbon credentials.

Adam explored the current guidance and assessment methodologies touching on such established documents as CIBSE TM54, and the International Standard ISO 25745.



His conclusions were that the need to focus on energy is clear, there is an assessment methodology available but deriving robust data to draw appropriate conclusions from needs care and knowledge.

The range of EPDs needs expanding and a method for deriving project-specific data from representative configurations needs development. Project specific EPD should be specified to align with a broader building energy model.

Operational energy assessments could be moved closer to predicted real world demand and demand models for passenger lifts, goods lifts and other common lift types needs development for both office and residential building. Overall more real world data is needed.



### Nick Mellor, LEIA President talked about Lifts and building safety - evacuation and use by firefighters

As well as the major and important primary legislation that has been introduced under the Building Safety Act 2022 changes are being introduced to the existing fire safety regulations. From 1 October 2023, section 156 of the Building Safety Act 2022 (BSA 2022) has been enforceable, which amends the Regulatory Reform (Fire Safety) Order 2005 (RRO) (except subsection (4)), bringing significant changes to fire safety measures.

The legislation has introduced new requirements for providing key building information and checking the functionality of lifts for use by firefighters and evacuation lifts. These rest on identifying the types of lifts and their expected operation.

Improving building safety from the perspective of building occupants with specific evacuation requirements might include being able to use evacuation lifts independently. This poses a challenge for specification of evacuation lifts for new buildings and for improving existing lifts to provide for evacuation.

Lift Industry News will have more on this important topic in our April edition.

The ninth CIBSE Build2Perform Live event will take place on **13 - 14 November 2024** at **London Excel**.

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# HIRING APPRENTICES: WHAT YOU NEED TO KNOW

## Did you know?

You can use apprenticeship schemes for your existing employees.

**Alison King** is MD of Bespoke HR  
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As the interviews in this issue demonstrate, apprenticeships have many advantages for both employers and employees. From filling skills gaps to growing a company's culture from scratch, the rewards are endless. According to the National Apprenticeship Service, 92% of companies that have taken on apprentices believe this leads to a more motivated and satisfied workforce. So, what do you need to know if you're taking on an apprentice this year?

Apprenticeships are open to anyone over the age of 16 and not in full time education and must last at least 12 months. Apprentices must spend at least 20% of their working hours completing off-the-job training. This will be in conjunction with a pre-agreed training provider. However, this is flexible and can take place online, in the employer's office or at the college or training provider site – or a combination of all.

## HR considerations

- Apprentices must be paid at least National Minimum Wage.
- There must be a genuine job available and a contract long enough to serve the apprenticeship.
- It's the employer's role to find and work with the apprentice training provider.
- The employer must support the apprentice throughout the process and allow them time off the job to study.

## Documents to have in place

- Contract of employment – including pay, working hours and conditions.
- Apprenticeship agreement – signed by the apprentice at the start of the apprenticeship. It should include the skill/trade being trained, name of the apprenticeship, dates and detail the amount of off the job training (you can find a free template on the Gov website).
- Commitment statement – signed by the apprentice and training provider. This details how all three parties will support the successful completion of the apprenticeship.

## Funding

Smaller businesses are eligible for government funding which will pay between 95% and 100% of the apprentice training costs. Larger employers can use their apprenticeship levy to pay for apprenticeship training.

There's a useful funding calculator available on the [apprenticeships.gov.uk](http://apprenticeships.gov.uk) website.

## Next steps

**If you are taking on an apprentice, here's the process to follow:**

- Identify the apprenticeship standard on offer.
- Create an apprenticeship account on the Gov website to access funding, advertise and recruit, approve training costs and give feedback on training.
- Find a registered training provider from the government's list of registered providers. A total price needs to be agreed on for the cost of the training and the assessment.
- Create and advertise your role (or this can be managed by your training provider).
- Find an endpoint assessor who will assess their training and confirm that they are professionally competent.



# A LIFE IN THE DAY

Lift Industry Apprenticeships – the Ultimate Win-Win Scenario. As we celebrate National Apprenticeship week in February we talk to apprentices across four companies, ILE, LECS (UK) Ltd, TVCL and Pickerings.

Nancy Lycett, Managing Director at ILE, expresses a strong commitment to supporting the professionals and leaders of tomorrow. She sees apprenticeships as an important route to feeding the industry with new talent. "The experience that these students receive at ILE will potentially give them the inspiration and opportunity to continue to work with us – and to develop their initial qualification into a stable, long-term career," she says.



Over the past ten years, lift equipment supplier ILE have been hiring local apprentices at their manufacturing and design hubs. The company works with local colleges in Leicester and Keighley to offer students meaningful placements with ILE, allowing them to achieve their chosen vocational qualifications.

## A COST-EFFECTIVE RECRUITMENT TRACK

The Government Apprenticeship scheme is proving to be highly cost-effective for many organisations like ILE, as it enables employers to work with eager and bright young people for an extended period. This influx of younger people is also particularly important in the lift industry, where many specialist skills run the risk of being lost when older team members retire. "Students add age diversity to our workforce, which is always welcomed," Nancy says, "but to ensure successful placements it's critical to work in partnership with colleges.

"These apprenticeships enable us to build links with the local community through different educational institutions. When you have worked with a college for a while, they begin to build up a very well-drawn profile of students who fit an employer's philosophy."



### TRAINING AND LEARNING ON THE JOB

When a student arrives at ILE, they are given a full programme of participation, which includes on-the-job training from experienced mentors as well as peer learning. This allows the business to work closely with the student and help them understand the processes and expectations to deliver high-quality, sustainable, UK lift equipment. Should the apprentice then choose to stay with ILE after their qualification, the company can be confident that they're employing a fully-trained, well-rounded individual.

### NO RESTRICTIONS ON EXPERIENCE

"Our mentors encourage independent working as soon as the individual student's confidence allows," Nancy explains. "We are fortunate in that we can give our young people a 360° view of both electrical and manufacturing experience, including design. We do not restrict students to what they initially believe to be their likely career. Our rotation of experience often means that they find unexpected areas of fulfilment. We always encourage students to follow their own ambition and develop their own specialisms."

### Three Apprenticeship Perspectives

#### Macauley – Electrics, Service, and Repair

Macauley Fergusson, 26, works in ILE's electrical department supporting the team with a wide range of tasks including testing panels, wiring, and doing site visits. Having started as an ILE apprentice in November 2014 he is now continuing his education by completing his NVQ Level 3 for lift service and repair. "My goal is to be able to go on site on my own if required, to meet customer engineers, and resolve any technical problem," he explains. He describes the ability to shadow senior engineers and gain real-life site experience as critical for building the right knowledge alongside his qualification.

Macauley's journey into apprenticeship started when he realised he wasn't enjoying the idea of being a full-time college student, and that he would much rather have the option to earn some money for his driving test.

*"Leicester College ran a scheme where you would remain at college until they found you an apprenticeship. I went to an apprenticeship fair and met different companies, but none of them seemed interesting to me. That's when the advisor mentioned ILE, and I ended up finding an apprenticeship here."*

Apart from doing his NVQ Level 3, Macauley is strengthening his skills across a range of other areas as well. "I am currently taking an online CAD course, I am doing the EOR202N Lift Safety course, and I will also be training for the assembly and disassembly of Sassi geared machines."

At ILE, Macauley describes his overall experience as a good one. He gets to deal with different challenges every day, interesting jobs, and plenty of opportunities to progress and continue learning. His ambition for the future is to be financially secure through earning an income while still being able to keep progressing his career.

#### Krushant – Product Design

Krushant Chauhan, 19, is a design engineer apprentice. He is currently taking an Higher National Certificate (HNC) Manufacturing course at Loughborough College, as he is keen to expedite his skill development rather than taking a traditional university route. In his role at ILE, Krushant gets to learn how to develop a variety of lift-specific component designs using 3D CAD software.

*"It felt natural to pursue an apprenticeship rather than going down the standard academic paths," Krushant says.*



*"This way I get to gain qualifications while getting important practical experience, and that really appealed to me."*

During the interview process, Krushant was impressed by the integrated design and manufacturing setup at ILE. Having the ability to observe and participate in every step of the lift production process was something that greatly appealed to his desire for a comprehensive learning experience. "At ILE I get to actively engage in projects, which means I can apply and enhance my skills in a practical, real-life setting," he explains.

He describes his experience of working at ILE as a rewarding one, where he receives all the tools and training needed to design and manufacture diverse lift components. "I've also gained hands-on experience with various industrial equipment," Krushant adds, "enhancing my technical skills and commitment to safety."

With the aim to successfully complete his HNC course, Krushant hopes to secure a permanent position at ILE to continue his learning and development in the industry.

### **Dhru – Electronics**

Dhru Taylor, 17, is an apprentice who works in ILE's PCB department. In his role he is learning the assembly of circuit boards using the latest surface-mount technology, and the testing of completed boards ready for control panels. He is currently a year into his apprenticeship and describes his experience so far as nothing but positive. "I've learnt so much," he says, "and I am still keen to learn more."

Dhru's interest in lift equipment came from a genuine curiosity about lifts and the technology behind them. "I basically wanted to find out what happens when you press a button in a lift, and what goes into making a lift."

Dhru was already familiar with ILE after having done work experience in the factory, where he'd been shown around and discovered the many skills that are involved in making a lift work. Becoming an apprentice seemed like the next natural step to continue towards working in the industry. *"My goal is to build a career whilst gaining a qualification relating to the lift industry, to continue learning and developing my skills here at ILE. After my apprenticeship, I want to look into becoming an engineer in repairing and installing lift equipment."*

*"It felt natural to pursue an apprenticeship rather than going down the standard academic paths."*



# Opening doors

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**Sophie Brown is currently an apprentice with The Lift and Escalator Consultancy LECS (UK) Ltd. Having been familiar with the industry from a very young age, she is now pursuing her University Certificate in Lift and Escalator Technology.**

#### WHAT MADE YOU DECIDE TO PURSUE AN APPRENTICESHIP IN THE LIFT INDUSTRY?

"My dad and my uncle are in the lift industry and had a business together, so I grew up around it. I used to really enjoy being in the office, helping out when I was younger, it was a lot of fun. I did try out other paths – I explored hairdressing, but it wasn't for me. I like fixing things, so this was the route for me. My dad and my uncle sold it to me – it's obviously in the blood!"

#### WHAT DOES A TYPICAL DAY LOOK LIKE TO YOU?

*"It depends, some days I'll be doing university work with video calls to tutors, and some days I'll be out working onsite with our engineer witnessing testing, carrying out site surveys, preparing reports, taking photos, going to meetings or attending webinars about new products. It's so flexible, I can work from home, or our shared office space where we have meetings as well. I've got exams soon to get my University Certificate, and then I'll be working towards my HNC and then HND, then on to my Masters, hopefully!"*

#### WHAT'S YOUR FAVOURITE THING ABOUT THE ROLE?

"I like all the aspects! I like working onsite, there's loads of banter. It's a lot of work but we make it fun too. It's more fun than working in the office every day. I also really enjoy maths, so I love the way that's part of my day to day work. I'm even teaching my dad some of the maths I'm learning at university!"

#### WHY DID YOU CHOOSE LECS (UK) LTD?

"There is so much experience here. It's definitely the right company for me as I'm learning so much from everyone who works here. If I have any problems or get stuck with my university work, I can go and ask someone and they're more than happy to provide that support. People go above and beyond to help me out, whether that's learning onsite or with my university course. Recently I needed help with some maths calculations and a colleague had no hesitation in sending over everything I needed and more. I'm learning so much from everyone!"

#### WHERE DO YOU WANT TO BE IN FIVE YEARS?

"I'm really focused on getting my Masters degree and achieving all the steps I need to get there along the way. Just getting more experience, learning about the industry and getting the academic parts done so I can start putting what I've learned into practice and helping others as soon as I can. I've already learned so much from being onsite and testing, surveying and other different processes. I've worked with my dad for a while as well, and he's put me on a lot of courses, so I've got a good pile of certificates!"

#### WHAT DO YOU LIKE TO DO OUTSIDE OF WORK?

"I love live music, going to concerts with my friends. Last year I went to see JLS, this year I'm going to see Ne-Yo. I went to a lot of concerts and festivals when I was younger, although I do prefer a concert, I'm not really a fan of camping, I'd much rather stay in a hotel! Our local festival, Tramlines, I can get to easily so I can just come home to sleep, covered head to toe in mud! The best concert I've ever been to has to be One Direction – I've been to every single one of their tours."

#### WHO INSPIRES YOU AND WHY?

"My auntie Yvonne inspires me the most, she works with the family business. She's so positive, even when diagnosed with cancer, she's carried on working, going to the gym, getting on with her life. I'd love to be like her."

#### DO YOU HAVE ANY ASPIRATIONS FOR LIFE?

"I would just like to be successful. I'd like to see all my hard work pay off, enjoy life and have a great work/life balance. I never want to work so hard that I don't see my family and friends. I really enjoy travelling and I'd love to have time to see the world as well."

#### ANY CAREER HIGHLIGHTS SO FAR?

"I've done so much already, I enjoyed going to the Lift and Escalator Symposium, meeting people and learning along the way. I also got involved in the project to help the Samaritans charity in Manchester. We restored a lift for them in their offices and it was just such a great project to help with, knowing we were making a difference and providing them with what they needed. They do such great work with helping people with their mental health, it was nice to be able to help them."



**Louis Greaves joined TVC as an apprentice in September 2022 after meeting TVC at a careers fair at his college. He is currently working through an apprenticeship alongside his HNC course.**

#### **WHAT MADE YOU DECIDE TO PURSUE AN APPRENTICESHIP IN THE LIFT INDUSTRY?**

*"I went to an event at my college, Coleg Cambria, last year where I met various potential employers and TVC was there. I stopped and spoke to every stand and the only one that really interested me was TVC as I wanted to focus on the design side. Most of my friends were more hands on with maintenance, but this apprenticeship at TVC has given me the opportunity to explore design. At college I completed a Level 3 BTECH in Manufacturing Engineering which covered a lot of different aspects – electronics, CAD, bench fitting and more – there was a lot of theory that gave me a really good start when taking on the apprenticeship."*

#### **WHAT'S YOUR FAVOURITE THING ABOUT THE ROLE?**

"Every day is different, I could be working on a panel, or doing modifications. It's challenging, which I like; there's a wide variety of work that I get to experience. It's really interesting."

#### **WHAT SETS TVC APART AS A COMPANY?**

"It's the people I work with, I love working with them. The people make the job, they're so supportive and I've got colleagues that have come alongside me and are great at guiding and teaching me. I also really enjoy working in an industry that's interesting to me, and with TVC being one of the leading companies in the lift industry, it's really rewarding to be part of their success."

#### **WHAT ARE YOU WORKING ON RIGHT NOW?**

"Right now I'm working on a modification to bring a few panels into EN81-20 and 72 compliance. I'm also working on an internal demo panel that's going to be used for training and customer visits. I'm going to be the one putting the design together with my colleagues checking through it."

#### **WHAT'S BEEN YOUR BIGGEST CHALLENGE SO FAR?**

"It's actually this modification that I'm working on right now! It's got quite a lot to it – it's lengthy and complex, but I enjoy the challenge. I also know that I can always check things out with my colleagues and I really appreciate the support and guidance that I know is always there."

#### **WHAT DO YOU LIKE TO DO OUTSIDE ON WORK?**

"I like to cook and bake. I think you can't beat a classic vanilla sponge cake that you can then put whatever you want on! I prefer baking to cooking, sweet over savoury – it's always nicer!"

#### **WHEN YOU WERE YOUNGER, WHAT DID YOU WANT TO BE WHEN YOU GREW UP?**

"To be honest when I was younger I really liked dinosaurs, and I wanted to be a palaeontologist – or a bank manager, I thought that might be fun."

#### **WHERE WOULD YOU LIKE TO BE IN FIVE YEARS' TIME?**

"In five years' time I'll have finished my apprenticeship and my HNC. Hopefully I'll be doing a degree, and still be working here at TVC."

#### **WHO INSPIRES YOU MOST?**

"It has to be the people here, they are so inspiring. I really like coming to work and being encouraged to do the best I can. Everyone wants the best for me, especially my mentor Josh."





Reece Marshall has just completed his apprenticeship with **Pickerings Limited**. Having achieved his **Lift & Escalator Electro Mechanic (Lift Service & repair) Level 3** qualification, he is now working as a lift engineer, successfully gaining a role within Pickering's.

### WHAT MADE YOU DECIDE TO PURSUE AN APPRENTICESHIP IN THE LIFT INDUSTRY?

*"I went to college to do an electrical engineering degree. Work experience was required and I asked for a mixed position – office work and out in the field, and this one cropped up, that's how I got my foot in the door. I came here for a week and one of the engineers mentioned there was this apprenticeship which sounded perfect for me. They actually then approached me and asked me to take on the apprenticeship, which was great."*

### WHAT DOES A TYPICAL DAY LOOK LIKE TO YOU?

"Most days comprise of routine maintenance checks, going from location to location. I cover Cumbria, so I'll drive to the Lake District first thing, and then might get a call out to anywhere. My jobs can be quite far away from each other, so I go where I'm needed."

### WHAT'S YOUR FAVOURITE THING ABOUT THE ROLE?

"I love the hands on nature of the job, you're always learning, that's the best thing about it. Every day there's something new to learn."

### WHAT'S BEEN THE HARDEST THING ABOUT THE APPRENTICESHIP?

"There are so many different products out there, you're learning every day. You really have to use your initiative and have a good engineering brain! The learning curve never ends as things move on and develop, getting more modern and software-based. Diagnostic tools are evolving as it's a constantly evolving industry; it'll never stagnate, so you have to keep switched on and up to date."

### HAVE THERE BEEN ANY SURPRISES ALONG THE WAY?

"You deal with the customer a lot more than you realise – you're the face of Pickering's so you have to be professional. There are always queries to answer and customers to point in the right direction. It's not just an engineering role, there's a customer facing side too which is just as important."

### WHERE DO YOU WANT TO BE IN FIVE YEARS?

"I like the position I'm in, and would love to go further in the role. I'm still settling in so I'm undecided as to what my future might look like at the moment. But I love the hands-on element of it, so I can see myself developing that and just continuing to work hard."

### WHAT DO YOU LIKE TO DO OUTSIDE OF WORK?

"I love motorbikes and cars. I like to work on my own car at the weekend - a Ford Fiesta ST - I like my fast Fords! In the warmer months I'll get out there on my bike - a Kawasaki Ninja."

### WHAT INSPIRES YOU MOST?

"I've been brought up with the mindset that if you want something, you have to work for it. I've been inspired by the work ethic my parents and family have shown me. If you work hard, you'll get to where you want to be."

### DO YOU HAVE ANY ASPIRATIONS FOR LIFE?

"I'm at that time in my life where I'm really just building the foundations, so there are no big aspirations, I'm not sure exactly what my life will look like in the future, I'm only 22! I do believe though, if you really want something, go for it, be determined and put the work in. I never thought I'd be here in this position, my life's changed because of this job, it's moulded me into who I am. I wanted to be an accountant when I was younger, so that proves that nothing's set in stone, you can achieve whatever you want to, you just have to go for it."



# News from SAFed



## A look back and a look forward

**2023 was a busy year for SAFed, and we caught up with Chief Executive, Caroline Hamilton MBE, to hear the highlights and plans for 2024.**

### SAFed's year in review

In April last year we attended the Health and Safety Event at the NEC. This three day event allowed us to meet with members and their clients and help them understand why being part of a trade association such as SAFed is so important. We were there to talk to health and safety managers, facilities managers and engineering managers, explaining why it matters and how it works.

We also developed our training offering for our Technical Committee members to support them, not only to be more effective in their committee activities, but also in their day-to-day roles.

### The courses offered were:

- Chairing effective meetings
- Technical report writing
- Purposeful Participation - how to get the most out of a meeting.



Our courses were available via a mixture of virtual and in-person delivery at two points during the year. This training was designed to support our busy Technical Committees who are reviewing several of our guidance documents. This has kept our new Technical Manager, Rachel Culpan, very busy since she joined us in February.

Through 2023, SAFed continued to work with HM Government on the UK's exit from the EU, specifically regarding CE marking and the indefinite extension of the marking, which has a significant impact on our sector. This work will continue into 2024. We may well see changes to the way suppliers and manufacturers work, dependent on available materials, and so we've had a lot of interaction with government departments and UKAS.

Finally, we represent the UK on two ISO review committees which are directly relevant to our members. They work to ISO 17020 and 17024, both of which I am the UK expert representative for.

## A successful conference

Our annual member conference took place in Manchester during November, with the theme of 'Competence'. We welcomed almost 100 attendees with a full and motivating agenda. The morning session consisted of presentations from five speakers including Dominic Dawson, Chair of Bureau of Engineer Surveyors, who spoke about 'Competence and Professional Registration' and Katy Turf from the Engineering Council who looked at 'Competence and Professionalism: an Engineering Perspective'.



After lunch, Gary Banford, who served over two decades in the UK MOD, 16 of which were in the Special Forces, and Professor Martin Jones from Duratas, guided us through two more elements of competence, with a thought-provoking focus on what we could do to help ourselves become more effective; for example, are we getting enough sleep to fulfil our roles? Their sessions on 'Competence in High Performing Teams' and 'Competence and Leadership' were very well received.



Our evening speaker was Chris Cook, a double Olympic swimmer, who inspired us with his 'Two Lengths of the Pool' philosophy. This approach provides laser-sharp focus and simplifies the way in which we view our goals. We've had some incredible feedback from our delegates, and have already started planning for next year.



*The evening also saw us raise £850 from our charity raffle. The money raised will be gratefully received by Hampshire & Isle of Wight Air Ambulance and Fight All Cancers Together (FACT). Thank you to all who attended the conference and donated so generously.*

### Inspiring the next generation

SAFed worked with the Institute for Apprentices and Technical Education to create a level four apprenticeship standard and we've worked hard over the past few years to deliver the standard which relates specifically to the engineer surveyor role. This role looks at the requirements of legislation for thorough examination, inspection and testing for a variety of equipment such as lifting equipment, pressure equipment, LEV systems and machinery. This year we've seen our third cohort come onboard, and we now have around 40 apprentices working through the standard, in partnership with Fareham College. We liaise directly with the college, supporting them by finding expert resource in the industry to deliver the course material, and also help train the trainers.

This year we've seen our third cohort come onboard, and we now have around 40 apprentices working through the standard, in partnership with Fareham College

### Looking ahead

Our focus for 2024 is to encourage more of our members and associates, specifically smaller companies, to access and use this apprenticeship. I'd love to see it delivered in more locations around the country. It's great to see the energy and momentum it has gained, and we've seen the interest other companies are starting to have in it.

We'll also be back at the Health and Safety Event at the NEC. It's so important to continue to raise awareness of trade associations with clients, users and duty holders, and highlight the crucial role we play. Our annual member conference, scheduled again for November, will be a big part of our 2024 plans, and we look forward to welcoming our members again.

Our Technical Committees will continue to be busy throughout the year as we support our members and close out some of the major projects we've been working on. EU exit will remain a significant focus for us as the date for conformity to the UKCE mark still stands as December 2024. Having written to the Secretary of State, we're waiting for a meeting to provide direction, clarity and focus for our sector.

### SAFed website

<https://www.safed.co.uk/>



# LIFT & ESCALATOR SYMPOSIUM

15TH SYMPOSIUM ON  
LIFT & ESCALATOR  
TECHNOLOGIES

18 - 19 September 2024

[www.liftsymposium.org](http://www.liftsymposium.org)



# 14TH SYMPOSIUM ON LIFT & ESCALATOR

by Nick Mellor

The Lift & Escalator 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.

With more than 20 papers and a panel discussion filling the agenda for the 14th LES, it was an absolute delight to see so many industry friends and colleagues, sharing knowledge and ideas together.

With key themes of accessibility and evacuation, the symposium looked at how planning, technology and engineering can combine to create innovation in lift and escalator design.



Day One opened with an interactive keynote presentation on Accessibility from Rachel Smalley, Head of Inclusive Design at Jacobs, challenging our understanding of the term 'disabled' and highlighting that only 4% of disabled people are wheelchair users – meaning that the majority actually require alternative adjustments. We looked at accessible vs inclusive design with a focus on five elements

1. People focused
2. Welcoming
3. Usable
4. Future-proofed
5. Relevant

The second session on Planning & Design began with a fitting tribute to Dr Gina Barney who passed away in 2023 and was such a huge part of the Symposium and wider lift industry.

Jagadish Kumar (Lavenir Consultancy) then spoke on the redevelopment of buildings in India's central administrative area, many of which are nearly 100 years old – a good reminder that the car sizes (and hence structural lift cores) specified as part of a new build could be with us for a very long time. This linked nicely with the challenge of future-proofing building design raised earlier by Rachel Smalley.



We heard from Janne Sorsa (Kone) who presented on the results of a survey on the application and use of the ISO 8100-32 for planning and selection of passenger lifts to be installed in office, hotel and residential buildings. Of interest was that CIBSE Guide D was widely used in addition to the ISO guidance.

Kevin Vinson (Otis) then explored the fascinating design, manufacture and installation of the iconic 'Great Glass Elevator', Lift 109, within one of the chimneys of the redeveloped Battersea Power Station in London – a unique engineering challenge and well worth a visit, in my opinion!

Session 3 focused on IoT and Technology, with Jimmy Chan (EMSD) and Scotty Kwok (Sebit Ltd) presenting the findings of a proof-of-concept trial of a health monitoring platform for condition-based and predictive maintenance of lift installations using big data analytics.

Michele Guidotti (CEDES) looked at smart buildings including IoT traffic analysis. From manual people counters to 3D camera imaging, traffic analysis technology has come along way in the last few decades. Data is at the heart of any digital transformation and vertical transportation is an important part of this smart ecosystem.

Philip Hofer and Urs Puentener (Schindler) showed how technology could redefine the future of elevator installation methods for high rise buildings, including scaffold-less installation methods with temporary suspended platforms, and new technology which has allowed robots to become mobile, leaving the factories for robotic installation systems for lifts on construction sites.

Julio Gil (MP Lifts) then spoke on connected lifts and the value of data collection for maintenance.

This is a greater revolution than the one caused by the steam engine in the 19th century, a huge technological leap whose use necessarily involves reinventing business processes and services

Rory Smith (University of Northampton) spoke about the need for standardised metrics and KPIs for AI performance. The use of Artificial Intelligence (AI) in the lift industry is becoming commonplace. It, along with remote monitoring, is being applied to lift and escalator maintenance. The benefits of AI-augmented maintenance such as increased up time, improved first time fix rate and fewer running on arrival (ROA) calls are being touted by governments and lift companies alike. However, no standardised set of metrics exists for these benefits.

### **An interesting Q&A session followed**

Opening with a vibrant presentation from Lutfi Al-Sharif (University of Jordan), Session 4 focused on traffic simulation and dispatching, looking at enhancing the inter-linked Monte Carlo simulation method (iL-MCS) to reflect random passenger inter-arrivals. Lutfi looked at sources of randomness in calculating round trip time and touched on aspects as diverse as the clock at Bristol Temple Meads station with two minute hands.

Handling up-peak traffic has been a significant issue for group lift scheduling systems for a long time and Takahiro Ishikawa (Mitsubishi) led a detailed discussion on express zone and destination control.

Richard Peters (Peters Research Ltd) took to the floor, speaking about the different technologies for a dispatcher, before explaining more about the quest for an algorithm for a global dispatcher.

**Day Two began with a session on Evacuation. Osamu Furuya (Tokyo Denki University) presented a study on lifts and escalators in evacuation routes using fragility assessment.**

Jason Godwin (2N) then looked at a case study for the utilisation for VoIP in lift emergency communications. Continuing the theme of using lifts for evacuation, the rest of the second morning was filled with a joint presentation by Matt Ryan (Redbrick Fire), Eoin O'Loughlin (ARUP) and Nick Mellor (LEIA): "Lift evacuation: An Alternative Escape Route", concluding that the increased provision of lifts for evacuation in the built environment is a positive step. However improving evacuation provision in existing buildings was recognised as a larger challenge to be worked on and cross industry collaboration is needed.

*The following panel discussion, "Use of Lifts for Escape of People With Specific Evacuation Requirements," chaired by Nick Mellor, picked-up some of the themes of the previous presentation and allowed delegates to provide insights and questions. Themes included who would be responsible for providing capacity assessment for evacuation lifts, competence of those involved in vertical transportation design, and on the challenges with the introduction of a new standard for evacuation lifts. Resolving these challenges will need close cooperation between the groups represented on the panel and in the audience so there was a call to work together on guidance and the implementation of new standards. With significant developments expected in the next year, it would be good to revisit these issues at the next Symposium.*

The final session on engineering opened with Stefan Vöth ( DMT-LB GmbH) speaking on exploiting the capacity of industrial hydraulic buffers, the basics of hydraulic buffer technology, the question of a non-constant buffer force and the potentials arising with this option.

This was followed by a presentation by Keisuke Minagawa (Saitama Institute of Technology) which studied the activities and results of the rope vibration working group in the Japan Society of Mechanical Engineers with some fascinating information on the high incidence of seismic events in Japan.

Mateusz Gizicki (UoN) then offered insight to the classification and recognition of roller bearing damage in lift installations using supervised machine learning and vibration analysis, and Lutfi Al-Sharif presented Ali Albadri's (London Transport) paper on the temperature phase plan map and Poincare section for escalators.

The final session was brought to a close with Stefan Kaczmarczyk's (UoN) presentation on a simplified model to analyse the global behaviour of lift SWR suspension ropes passing over a traction sheave/pulley system.

The dynamic event closed with co-chairs Stefan Kaczmarczyk & Richard Peters thanking all the stakeholders who made the symposium such a success.

**If you're interested in finding out more about any of the topics covered, the full proceedings are available to download from <https://www.liftsymposium.org/resources>.**

Planning for the 15th Lift & Escalator Symposium is already underway, which will take place on the **18 – 19 September 2024 at a new venue, Kettering Park Hotel.**

**Registration for the Symposium is now open for delegates**, Speakers are invited to submit an abstract, full details can be found here. [www.liftsymposium.org](http://www.liftsymposium.org)



**The objective of The Lift and Escalator Symposium Educational Trust is to advance education in lifts, escalators and related technologies.**

The Trust is a Registered Charity No: 1170947 and is supported by **The University of Northampton, The Chartered Institution of Building Services Engineers (CIBSE) and The Lift and Escalator Industry Association (LEIA)**



# TRANSPORTATION SYSTEMS IN BUILDINGS VOLUME 5:



A peer reviewed Open Access Journal that publishes original research papers as well as review articles relating to all aspects of Vertical Transportation.

The fifth volume was published on November 2023. The journal aims to provide a forum for disseminating and for the discussion of research covering the latest cutting-edge transportation technologies in buildings and associated areas. The scope of the journal covers a broad range of scientific areas with an emphasis on balancing the fundamental theoretical advances and practical new technologies and techniques.

Two papers were featured:

## AN IN-DEPTH STUDY ON RTT-HC-MTT RELATIONSHIP FOR PASSENGER DEMAND BEYOND ELEVATOR CONTRACT CAPACITY BY SIMULATION

**Authors:** Albert Ting Pat So, The University of Hong Kong/ Bo Hai University/ Asian Institute of Built Environment/ Visiting Professor University of Northampton

Lutfi Al-Sharif, Al Hussein Technical University, Jordan

The traditional elevator system design practice is to calculate the round trip time (RTT) and associated parameters of pure incoming traffic during up-peak, followed by real-time computer simulation. Recent studies indicated that the normal traffic is much more complicated, consisting of a mixture of incoming, outgoing and interfloor patterns.

The Universal RTT, under such complicated traffic patterns, was analytically developed eight years ago based on the concept of an appropriate origin destination matrix describing the passenger transit probability and verified by Monte Carlo simulation. That model is based on the assumption that the total number of passengers demanding service within one round trip is limited to the elevator contract capacity, which is in line with the traditional up-peak incoming RTT formula. The idea of extending the consideration to beyond the contract capacity was initiated two years ago. In this article, an in-depth study on such consideration is carried out so that the performance such as RTT, handling capacity (HC) and mean transit time (MTT) etc. under different traffic patterns is evaluated and analysed with the help of Monte Carlo simulation. This article may help designers optimally size an elevator system during the RTT calculation stage without oversizing it if the prevalent traffic patterns of the building are known.

<https://bit.ly/3TyGm0k>



## UNCONTROLLED OVERSPEED

**Authors:** Phil Andrew Formerly of University of Northampton

The major part of the design and specification of equipment for the arrest or prevention of overspeed, particularly the safety gear/overspeed governor combination, concerns itself with the performance when carrying rated load, or, in the event of upward overspeed, zero load in the car. In particular, specification is concerned with performance of safety equipment in the face of suspension failure, however unlikely that might be. This paper sets out to investigate the performance of overspeed protection when there is a partial load in the car, whether with a failed suspension or not, and to discuss the opportunities in this respect provided by the introduction of the so-called rope brake.

<https://bit.ly/3vfC8Ra>

# LIFT ENGINEERING @ 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

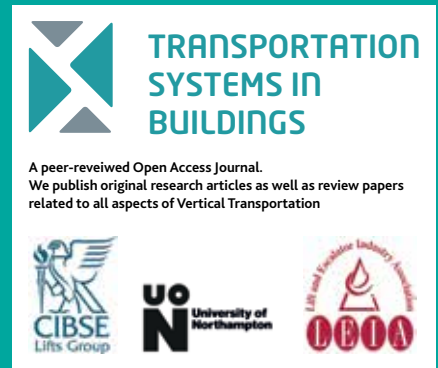
## Postgraduate Research (PGR) programme:

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



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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*This paper was first published at the 2nd Symposium on Lift and Escalator Technologies, 19 September 2012, organised by The Lift and Escalator Symposium Educational Trust. For more information see [www.liftsymposium.org](http://www.liftsymposium.org)*

# 2ND SYMPOSIUM ON LIFT AND ESCALATOR TECHNOLOGIES

## STANDARDS, WHO NEEDS THEM, WHO CREATES THEM AND HOW ARE THEY CREATED

### DEREK SMITH

Formerly Technical Director  
of LEIA UK/OTIS

**This paper was originally published in 2012 and standards will have progressed, Nick Mellor, LEIA President, gives a useful update on page 58, please refer to the British Standards group for the most up to date standards relating to the industry.**

<https://www.bsigroup.com/en-GB/standards/>

### 1. INTRODUCTION

For the professional engineer, standards can be a blessing and bane all in one, sometimes being seen as a useful guide to what is expected whilst at others seen as a block to innovation.

**1.1.** I have been in the lift industry since 1963 and spent half this time working in the field of stands development, firstly with Otis Ltd and then as Technical Director of the Lift and Escalator Industry Association. I was heavily involved with the development of many of the standards you will have heard of, such as, BSEN81 parts 1, 2, 3, 28, 58, 70, 71, 72, 73, 76, BS7255, EN13015, BS5655, BS5656, BS5588, ISO4190 - 1, 2, 3, 7, ISO14798 and many others. The process for creating standards is well defined but varies slightly with the type of standard or document being created.

**1.2.** British Standards are under the control of the British Standards Institution (BSI) and they have their own set of complex rules that have to be followed. The creation of European standards has another set of rules as does the creation of ISO standards. Before we worry about writing a standard someone must determine if a standard is required. What subject is to be addressed and who should create it?

### 2. BSI STANDARDS

#### 2.1. PARTICIPATION IN LIFT/ ESCALATOR WORK

At BSI, standards relating to lifts and escalators are under the control of a committee named MHE 4. This is a large committee with representatives from ACE Association for Consultancy and Engineering, BIS department for Business innovation and Skills, Chartered Institution for Environmental Health, Chartered Institution of Building Services Engineers, Department for Communities and Local Affairs, Health and Safety Executive, Institution of Engineering and Technology, Institution of Mechanical Engineers, Lift and Escalator Industry Association, London Underground, Safety Assessment Federation Ltd, Society of Operations Engineers, Unite Union and University of Northampton.

**2.2.** There are currently some 1350 committees within BSI with approximately 10,000 members all giving their time and expertise on a voluntary basis usually with the support of their employer. The amount of commitment varies depending on the work programme at any one time.



## 2.3. FREQUENCY OF MEETINGS

Most committees only meet a couple of times each year but some members may also agree to represent BSI on other standards work in Europe or further afield.

BSI committees have to represent the interests of users, manufacturers, government departments and other bodies concerned with the work of the main committee MHE 4.

Some organisations will have representation almost automatically. As an example the government department of Business Innovation and Skill (BIS), The Health and Safety Executive (HSE) Lift and Escalator Association (LEIA) always have representation.

## 2.4. WHERE DOES WORK ORIGINATE

Proposals for the creation of a standard can, in theory, come from almost any source but in practice, usually appear from one of the committee members such as LEIA, who through their work have realised some subject needs to be addressed or, it may be due to an accident or other reasons.

### 2.4.1. IS THE WORK JUSTIFIED

When a proposal is made it must first be determined if this is a subject that can be addressed by a British Standard (National standard) or if it will infringe on ISO or other standards such as those produced by the European Committee for Standardisation Committee (Comité Européen de Normalisation (CEN)).

### 2.4.2. AVOIDING DUPLICATION OF WORK

If the work is of European Interest, the case for a standard is put to CEN and if they agree on the need, CEN will take on the work. If CEN have no interest BSI will look to see if the need for a National standard on the subject exists. They will look to ensure the proposed standard is not just an item of interest to a single manufacturer but will be of genuine interest to consumers, industry etc. If the proposal is accepted MHE4 will appoint a convener to manage the work. Is it to be a full British Standard, Publicly Available Specification (PAS), Draft for Development (DD), Method, Guide, Vocabulary, Code of Practice (CP) or Classification? This needs to be agreed by MHE4 before work starts.

## 2.5. PUBLICATION TYPES

**2.5.1.** A Publicly Available Specification (PAS) a document developed by British Standards but commissioned by an external organization such as LEIA.

**2.5.2.** DD means Draft for Development and is used when it is thought the subject would benefit from an extended period of consultation. A DD is usually published for 2 years during which comments are invited. At the end of the period it is determined if the document should be made into a full standard or possibly withdrawn.

**2.5.3.** Method is a document that gives a complete account of the way a particular activity is performed and may include information on tools and the degree of precision appropriate for the purpose.

**2.5.4.** Guides provide general information about a subject.

Codes of Practice (CP) provide recommendations for accepted good practice as followed by conscientious and competent practitioners.

**2.5.5.** Amendments (AMD) as the name implies are used to amend existing published documents.

**2.5.6.** Classifications provide designations and descriptions of different grades of a product.

**2.5.7.** Vocabulary documents provide definitions of terms used by a particular sector of industry.

## 2.6. FORMING A WORK GROUP

Having agreed on the type of document to be produced a proposed convener will be given a scope for the work and should not step outside the scope without the agreement of MHE4. BSI may offer a secretary to support the organisation of the committee and a call for members will be sent out to MHE4 and other parties thought to have an interest. Who finally sits on the committee is usually a joint agreement between the WG convener and MHE4 with the MHE4 committee having the final say.

## 2.7. WORK SCHEDULES AND FIRST MEETINGS

BSI will set a schedule for the work and then the real work begins, usually starting with an initial meeting of members where they decide how often they need to meet, where to meet, who will provide the meeting room, if there is any research to be done and who will do it.

At meetings members are required to speak on behalf of those they are representing namely MHE4, SAFed, BIS or whoever, it's not always their employer, a point often forgotten.

## 2.8. CONTROL OF DOCUMENT FORMAT

As meetings progress draft text is produced in a BSI electronic template that assists committees in following format rules. Once the committee is satisfied with their work it is circulated to MHE4 members to gain their agreement to what has been produced.

## 2.9. PUBLIC ENQUIRY STAGE.

When MHE4 agree, the document is sent out for a public enquiry, the period of which is normally 3 months. In theory anyone can purchase the enquiry document and comment, with comments being given on a BSI standardised comment template.

## 2.10. HANDLING COMMENTS FROM ENQUIRY

At the end of the enquiry, all comments are gathered and the drafting committee that created the work must meet again and address the comments. This means they must consider each comment to determine if it's reasonable, editorial or of a technical nature. If a comment is accepted the committee has to revise the text of the draft document. If a comment is technical and sufficiently serious they will again revise the text extensively but this may drive the need for a second enquiry or they may reject the comment if justifiable. Whatever they do they must explain in the comment template so that interested parties can see why comments are accepted or rejected. Once this work has been completed the documents again returns to MHE4 to ensure they still agree with its content.

## 2.11. FINAL DOCUMENT

If MHE 4 do agree with the final proposed document it's then sent to BSI publishing that check formatting and text to ensure it follows the rule and then it's sent out for formal vote. Interested parties must either vote for the document to be published or explain why they are against its publication. Rejection must be supported by sound technical reasoning.

## 2.12. USE OF RISK ASSESSMENTS

The committee will often use a risk assessment based on ISO 14798 to determine if a particular requirements is essential. Some work will be based entirely on risk assessment especially where the proposed subject is very new to the industry and experience is limited. Members must also keep in mind the cost to society. We can all think of ways to make lifts safer but as serious accidents are few and far between, can the cost of some provisions be reasonably justified? The cost to industry must also be weighed against the improvement.

## 2.13. OFFICIAL INTERPRETATION REQUEST

When complete, good standards should be unambiguous, easy to understand and not unnecessarily complex thus possibly impeding small businesses with limited resource. These things are not easy to achieve and as with many things the proof is in the eating. Good standards are used and bad ones ignored by all however, as modern standard are performance based and do not precisely define technical detail therefore misinterpretation can occur. Where this is the case standard users can write to MHE4 requesting an official interpretation. Any correspondence relating to interpretations should reference the standard number, give its title, date and the clause number in question as well as an explanation of the problem with the particular clause or sentence.

MHE 4 will reply with an official interpretation relating to any standard they created or maintain. If the question relates to a standard outside their control such as one of the EN standards they will pass the request on to those that manage EN standards or may provide an unofficial view of their own to assist those asking the question, official answers to EN questions can take many months to obtain.

#### 2.14.

Once a standard is published it has to be maintained. MHE4 has some 106 standards at this time so plenty for MHE4 members to do with updates due to changes in other standards, legislation, technical improvements, etc. To assist with all the work MHE4 has a number of sub-committees under its control as follows.

MHE/ 4 / - / 1 Advisory panel

MHE/ 4 / 2 Domestic lifts and stair lifts MHE/4/-/5 Fire tests of lift landing doors

MHE/ 4 / 4 National work coordination and drafting MHE/4/1 Safe working on lifts

MHE/ 4 / 3 Safe working on escalators

### 3.0. EN STANDARDS

#### 3.1. MAIN LIFT COMMITTEE

The production of EN standards by CEN (Comité Européen de Normalisation) is similar but not identical to BSI. The main lift committee is named Technical Committee 10. TC10 as it's normally known. It's responsible for the maintenance and production of all Lift and Escalator standards for Europe. It's a large committee made up primarily of National committee members from 27 EU member states. Each member state nominates someone to speak on behalf of its National standards committee. This was my roles for many years. I would attend TC10 meetings and speak on behalf of BSI MHE4. So to be a member you have to be nominated by your National committee who will frequently provide a brief to be followed in relation to some aspect of standards work of UK Interest.

Other parties with a position at TC10 include inspection organizations such as TUV, Dutch Lift Institute as well as a CEN Consultant.

#### 3.2. PROPOSED NEW WORK

Proposals for new standards or the need for revision of a standard comes to CEN TC10 from many directions. It may be suggested by a National committee, may be mandated by the European Commission to support the introduction of a new directive related to lifts or, from CEN itself who inform the committee that some particular document is out of date and needs updating or withdrawal.

As with BSI work proposals they have to be justified by a business plan showing there is a real need and assuming there is a need and support within TC10 to do the work, TC 10 will look to find a convener from within its members.

#### 3.3. TC10 STRUCTURE

The current structure of CEN/TC10 is shown below and new work may fit well into the existing structure where a convener already exists or a new work group may be formed.

**Table 1 CEN/TC 10 - Structure**

Secretariat	Chairperson	Secretary
AFNOR	Mr E.Gharibaan	Mrs E.Contival

SC/WG	Title
CEN/TC 10/WG 8	Stairlifts and vertical platforms for the disabled
CEN/TC 10/WG 6	Fire fighting lifts
CEN/TC 10/WG 10	Improvement of safety of existing lifts
CEN/TC 10/WG 9	Inclined lifts
CEN/TC 10/WG 1	Lifts and service lifts
CEN/TC 10/SC 1	Building hoists
CEN/TC 10/WG 4	Data logging and remote control
CEN/TC 10/WG 2	Escalators and moving walks

### 3.4. WORK GROUPS OR WORK TEAMS

TC10 can decide if the work is to be performed by a working group (WG) ad-hoc group, work team (WT) etc but only a WG is in full control of its work. Depending on the subject, the decision related to WT or WG etc will depend amongst other thing on the type of document to be produced.

### 3.5. PUBLICATION OPTIONS

As with BSI, CEN have various publication possibilities to pick from as follows.

- 3.5.1.** European Norm (EN) a European standard that is not harmonized but must be adopted by member states who are obliged to withdraw conflicting National standards.
- 3.5.2.** European Draft standard (pr EN) these are similar to BSI draft for development. When first sent to enquiry the enquiry document will carry the prEN title.
- 3.5.3.** Ratified text is the official text sent by CEN to National bodies for publication.
- 3.5.4.** European pre standard (ENV) Similar to a draft for development (DD) by BSI. Usually used where technology is still changing. It's not necessary for National conflicting standards to be withdrawn
- 3.5.5.** Technical report (TR) document containing informative material but not suitable as a standard.
- 3.5.6.** Guide usually contain material related to standardization principles and practice Technical specification (TS) often used where a draft standard has failed to gain enough support to allow it to be ratified.
- 3.5.7.** Harmonised EN standard. An EN standard drafted in support of one or more directive introduced to remove barriers to trade. Identifiable from other EN standards by its Z Annex at the rear of the document. The annex will explain the directive it supports. It must also be referenced in the Official Journal (OJ) of the European Union.
- 3.5.8.** When required, National committees may ask for an official interpretation of a clause to TC10 for the standards under their control. Note, this is a request from a National committee so if you need an official interpretation of text, you should write to BSI MHE4 who will either answer your question or submit it to CENTC10 for reply. Official interpretations are published on a regular basis in BS CEN/TS 81-11.

### 3.6. ENQUIRY VOTING

Voting and format rules vary depending on what is to be published. A full standard must be precise in its wording and is subject to national voting where as some other documents need only TC10 approval before publication. The choice of publication type can also affect the availability of funding for participants.

### 3.7. FUNDING OF PARTICIPANTS.

BSI participants to Work Groups are usually eligible for some financial support but this is not the case for Work Team delegate or ad-hoc delegates. TC10 will provide the convener with a scope of work and it's not for the convener to stray or change the scope without TC10 approval.

### 3.8. MANDATED WORK

As previously stated, some work will be mandated by the European Commission in support of a European Directive. As an example when the Lift Directive was introduced the commission mandated CEN to produce a harmonised standard to support it and EN81 parts 1 and 2:1998 were created. In this situation the commission also appoints a CEN consultant who is responsible for keeping a watchful eye on the standard as it's developed. The consultant checks the document against the directive it supports to ensure that if it's followed compliant products will fully satisfy the legal requirements of the directive.

### 3.9. AVOIDING DUPLICATION OF WORK

CEN will notify National committees when new work is proposed to see if it will be of interest to them and remind them that if they are already working on the subject they will have to stop work.

### 3.10. CREATING A WORK GROUP OR TEAM

For work to start a call for delegates will be made to National committees and as the work is European, meetings will be conducted either in Paris at the head quarters of AFOR who publish the standards or, in another European country as agreed by the WG members at their first meeting. At the first meeting plans are usually agreed on the best way to proceed in order to meet the time table for work issued by the CEN secretary.

### 3.11. STANDARD TEMPLATES

As with BSI, a CEN template for the document type will be provided for the committee to use so as to assist them in following the rules for CEN publications. The standard has to be written so that compliance can be ensured by manufacturers and other interested parties. As an example, you should not use phrase such as, the access shall be safe it's not acceptable as everyone will have an opinion on what make safe access. Instead you have to define what safe mean in terms of step height, lighting levels, hand holds etc or whatever is agreed makes an access safe.

### 3.12. LANGUAGE OF MEETINGS

Meetings and drafting is normally conducted in English with publications of final text in English, French and German, the three official language of the EU.

### 3.13. RATIFIED TEXT

Ratified text (agreed final text for publication) is always in English and if differences are discovered the correct wording can be ascertained from the ratified text Difference between the English, French and German version are not unusual to find.

### 3.14. FIRST PUBLIC ENQUIRY

Once a draft document has been completed to the satisfaction of the WG and CEN consultant, it's circulated to TC10 members to see if they would agree with it and if accepted by TC10 it's sent to public enquiry at the level of National committees such at MHE4.

### 3.15. LENGTH OF ENQUIRY

The length of the enquiry is typically 3 or 6 months with comments from National committees being made on a CEN comments template. National committees will be asked to indicate if they would support such a standard or not. If not they must explain the technical reason why not. A typical reply from a National committee could be, Yes, we would support such a standard subject to our official comments being addressed or No, we would not support this as its in directly conflict with National legislation and in our view could create a barrier to free trade etc. Comments are returned to the WG that performed the work and like BSI the comments must be addressed by the committee with a written explanation of why any particular comment is accepted or rejected.

### 3.16. FORMAL VOTE STAGE

The revised document is usually again returned to TC10 to ask if they are satisfied and agree to the document being sent for formal vote. If TC10 agree the document is sent out for formal vote again to National committees who can only vote No on technical grounds. The voting is weighted for each member state with Germany, France, Italy and UK holding the largest vote. Voting rules vary depending on document type and what is described here assumes an EN standards is being produced not a Technical Specification (TS where a vote is not essential).

## 4.0. ISO STANDARDS

### 4.1. ISO 178 STRUCTURE

Once again the structure of ISO is not greatly different than CEN or BSI.

The main committee for lifts and Escalators being ISO178. This large committee has representative from many countries in the world such as China, Japan, Australia, France, German, Korea, Norway, Sweden, Russia, Denmark, Italy etc. Those attending represent mainly large manufacturers and lift examination bodies with occasional visits from government representatives.

### 4.2. SELECTION OF DELEGATES AND FUNDING

Delegates attend in their own right as experts in their field and normally carry the cost with the help of their company. They may receive some limited funding from their National committee who will also have a say in who attends. The costs involved for travel and accommodation can be considerable with no or a small donation from BSI so it's usually only large companies that can afford to participate.

ISO TC178 has a number of Work Groups , see Table 2.

**Table 2. ISO 178 Work Groups**

Subcommittee/Working Group Title	
TC 178/WG 2	Guide rails The convener can be reached through the secretariat
TC 178/WG 4	Safety requirements and risk assessment The convener can be reached through the secretariat
TC 178/WG 5	Escalators and passenger conveyors - Safety standards comparison The convener can be reached through the secretariat
TC 178/WG 6	Lift installation fire related issues The convener can be reached through the secretariat
TC 178/WG 8	Electrical requirements The convener can be reached through the secretariat
TC 178/WG 9	Measurement of lift quality The convener can be reached through the secretariat
TC 178/WG 10	Energy efficiency The convener can be reached through the secretariat

### 4.3. SUBJECT ADDRESSED BY ISO/TC178

The ISO/TC178 documents published and maintained are mainly to do with Electromagnetic Compatibility, Energy Efficiency, Lift sizes load and speed, Global essential safety requirements for lift, provisions for accessible lift for disabled persons, requirements for disabled evacuation using lifts, fire testing for lift doors, Escalators and moving walks

### 4.4. AVOIDING DUPLICATIONS OF WORK

Whenever possible so as to avoid duplication of work, documents are drafted with the hope or sometimes agreement they will eventually be published as a European standard and not just an ISO standard. This requires considerable effort by participant and a considerable amount of compromise to make one document fit everyone's wishes and fit ISO and CEN rules.

### 4.5. SOURCE OF WORK

Work is normally generated by members (manufacturers) who see a need for some standardization. Proposed work is studied to try and ensure it is worthwhile and is likely to be supported by members. If ISO/TC178 agree to start new work they again select a convener from ISO/TC178 with the individual's prior agreements and then send out a call for delegates. Often the work will fit into other work underway in which case it will be passed to the convener currently managing similar work.

### 4.6. FREQUENCY OF MEETINGS

Work is performed by work groups and meetings usually take place twice each year with some intermediate video conferences to move things on.

Draft documents are produced in an ISO template that establishes the format of the document. AFNOR may provide a secretary to support work groups or a National standards maker may agree to provide the secretariat.

### 4.7. CONTROLLING WORK PROGRESS

Rules will automatically set the time table for the work and meetings will be held anywhere in the world that the working group members agree to.

ISO/TC 178 will set the scope of work for the working group who will report progress to them through the secretariat. Once a draft document is completed it will be put to the ISO/TC 178 committee, to gain their agreement. If they agree the document is published in an ISO format for the document in question.

### 4.8. ISO DOCUMENT TYPES

**4.8.1.** Internationally agreed standard.

**4.8.2.** Technical Specification (TS) often used where a draft standard has failed to gain enough support to allow it to be ratified.

**4.8.3.** Technical Report (TR) document containing informative material but not suitable as standard.

**4.8.4.** DIS a Draft International Standard during its comment stage.

**4.8.5.** FDIS Final document resulting from a DIS with comment included and distributed for final voting.

**4.8.6.** Technical Corrigenda document used to correct errors in a standard.

## APPENDIX A

### EXAMPLE OF ISO25743 DEVELOPMENT

**A.1** After the disaster of 9/11 there was much debate across the globe regarding how such buildings should be designed and the role the lift could play, if any during an evacuation. Some people in the twin towers had escaped using lifts whilst other had died, trapped in lifts.

**A.2** At the time, I was convener of ISO/TCWG6 a working group with responsibilities for lift fire related issues, see Table 2 and flow chart below Reading various publications, some by lift specialist and others by fire experts, it became clear to me that no one was really thinking through all the issues that the use of lifts would bring.

**A.3** We discussed the idea of making a study into the use of lifts with my ISO working group, after lots of debate it was finally decided that as we would know more about lift capabilities than anyone else. We should study what lifts could contribute, if anything. We decided to suggest to ISO/TC178 that this was some work we should undertake that would be of use to many in year to come. After more debate with ISO/TC178 they finally agreed that we could and should at least make the study.

**A.4** WG6 proposed a scope of work and with some modification the following was agreed by ISO/TC178 Produce a Technical Report investigating and highlighting the main risks associated with using lifts for the evacuation of persons in various types of Emergencies in high rise building

**A.5** As the committee WG6 already existed we did not need to establish the convener and members, we commenced with the work. ISO set the time frame and work began. This posed a new problem, where to start?

**A.6** We decided again after considerable debate that we should chart everything that could go on in a major building emergency. This resulted in a chart that identified where issues of some kind existed. Some of the issues were clearly lift issues whilst many of them related to how the building was designed and beyond the control of lift designers. As an example, if lifts were to be used in a fire we could make the lift do anything when a fire signal was sent to it. Nevertheless we don't design or provide the fire detection system for the building or determine where fire detectors will be, other do this tasks.

**A.7** We decided that the report should point out the issue others must consider and give proposals with regards to what the lift could do if some provision was made by others.

**A.8** The significance of some risks we identified was argued, with some WG6 members thinking they were serious risks whilst others considered them minor. We used the ISO14798 risk assessment methodology to settle many of these arguments, a great tool for this purpose.

**A.9** As work progressed, we identified failings in our original scope and returned to ISO/TC178 to request change to the scope see flow chart 1 below, this happening more than once.

After much work and many meetings in places such as USA, Australia, Canada, France, UK etc, we had a draft document. The chart had gone through much iteration and identified over 40 issues resulting in 26 drafts of the TR.

**A.10** The document was sent to ISO/TC178 who made a few comments and WG6 made corresponding amendments. With the amendments made the document was sent to other ISO/TCs who would have an interest. Again a few comments came back and amendments made before the document was sent out for official comment. 50 plus comments came back and these were addressed in following meetings before the document was finally agreed for publication as a Technical Report by ISO/TC178. Being a TR a final public vote was not required. It was finally published in 2010 having started in 2002.

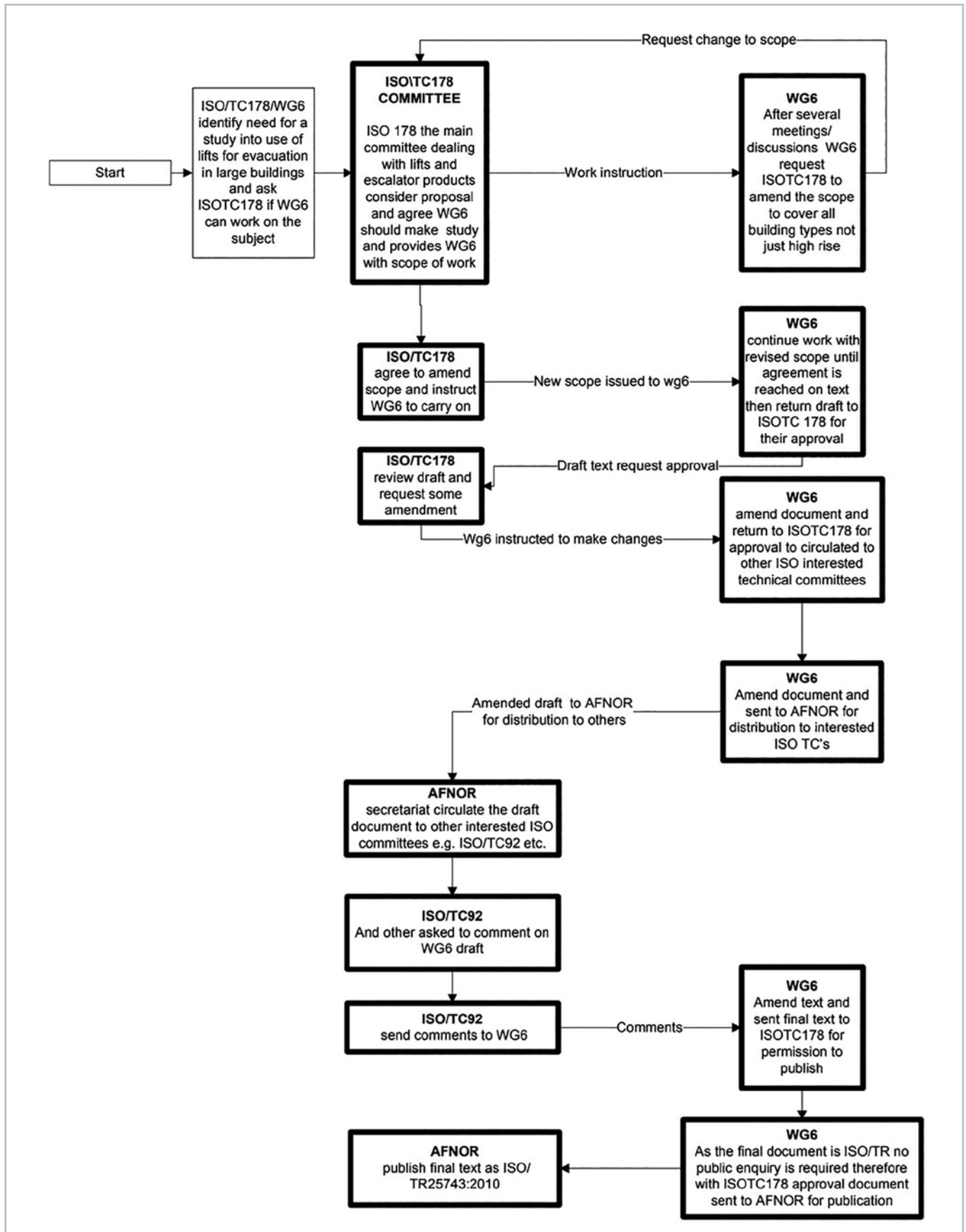
So what has been done after all this, Is the report used?

**A.11** Yes, USA has been using it in studies undertaken for high buildings and in addition other countries with similar building issues have been interested in the work.

WG6 is using it to try and develop a standard for lifts that could be used during a fire if the right building design provisions are made, so we wait to see what happens next.



Flow chart 1. Production of ISO/TR25743



**AN UPDATE FROM NICK MELLOR,  
PRESIDENT, LEIA**

**Derek's paper was an excellent introduction to standards at British (BSI), European (CEN) and International (ISO) levels. There are a few notes we can add now due to some significant changes since this paper was written.**

Since the paper, EN 81-20:2014 was introduced as the main standard for design of new lifts. In the next few years will be replaced by EN ISO 8100-1, an international standard based on EN 81-20 but with many changes reflecting new technologies, safety improvements, and learning from experience that Derek described. This will be a genuinely global standard which very large areas of the world will either implement or work on converging their own standards. This convergence has been worked on at ISO for many years not least by Derek in his time on a number of ISO working groups.

Although the UK has left the European Union (EU), BSI has remained a full member of CEN, the European standards body which is responsible for lift and escalator standards (European standards bodies are not a part of the EU). CEN harmonised standards (such as EN ISO 8100-1 when published) will continue to be adopted as British Standards.

There has been further development on standard for evacuation lifts building on Derek's huge contribution. ISO/TR 25743:2010; Study of the use of lifts for evacuation during an emergency (a Technical Report) led to work on drafting Technical Specification ISO/TS 18870:2014; Requirements for lifts used to assist in building evacuation with work now underway to draft a full standard which would be ISO 8101-1 when published.

This work will draw on experience with the forthcoming CEN standard EN 81-76; Evacuation of persons with disabilities using lifts.

From a UK context, anyone reading Derek's paper and wanting to learn more could look at the BSI webpage for the MHE/4 committee at <https://standardsdevelopment.bsigroup.com/committees/50000867> and information on standards making at <https://bit.ly/41xFStr>

This paper was first published at the 13th Symposium on Lift and Escalator Technologies, 21-22 September 2022, organised by The Lift and Escalator Symposium Educational Trust. For more information see [www.liftsymposium.org](http://www.liftsymposium.org)

**MATTHEW APPLEBY, RICHARD PETERS, NISHAD DEOKAR**

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**Keywords:** Kinematics, lift, elevator, dynamic profile, ideal lift kinematics, twin lift system, 2 cars per shaft, multi, multi-dimensional lift system, simulation

**Abstract:** Performance time is a measure of the time it takes a lift to travel between floors and is crucial to delivering the highest possible handling capacity and lowest passenger waiting times. To calculate performance time and to enable a lift to deliver a comfortable trip leads to a need to understand lift kinematics. Lift kinematics is the study of the motion of a lift car in a shaft without reference to mass or force. When generating lift kinematics, it is normal to consider the travel distance, velocity, acceleration, and jerk; these inputs can be used with well-known equations to determine the time in flight, and a reference speed profile for the lift drive. However, in advanced lift applications, there are additional requirements for the deceleration not to be the same as the acceleration. The jerks may also be different and sometimes it is desirable to change speed part way through a trip.

# GENERATION AND APPLICATION OF DYNAMIC LIFT KINEMATICS

This paper addresses the generation of dynamic lift kinematics to meet these requirements and discusses their application.

## 1. INTRODUCTION

One method of monitoring a lift is to use an accelerometer to produce a kinematic profile which will provide information on how smooth the journey is. In order to analyse the results of these monitors, reference velocity profiles are needed. Variable speed drives can be programmed to match reference velocity profiles so generating kinematic profiles is useful for driving lifts too. The more control one has over their kinematic profiles, the more accurate the measurements can be, and the more power the dispatcher has over the position of the lift car over time. This paper will demonstrate how an updated model can produce kinematic profiles with fewer limitations than previous models have offered.

In previous papers regarding lift kinematics, equations have been produced which model symmetric profiles [1] and asymmetric profiles [2]. The authors have already detailed the equations in Dynamic extension for Ideal Kinematics [3], this paper will present the same logic but at a higher level and will focus more on the implementation than on the maths.

## 1.1. DEFINITIONS

### *symmetric profile*

the profile of a journey with one target velocity, the same acceleration as deceleration and four identical jerk values. See Fig. 1

### *asymmetric profile*

the profile of a journey with one target velocity but different target acceleration and deceleration or differing jerk values. See Fig. 2

### *dynamic profile*

the profile of a journey with multiple target velocity values. Acceleration and jerk can also vary. See Fig. 3

### *period*

a section of time where the lift is at constant jerk. See Fig. 4

### *phase*

a section of time where the lift is changing from one speed to another including the time it remains at its final speed. A phase starts and finishes with acceleration of 0 and contains a maximum of four periods. See Fig. 4

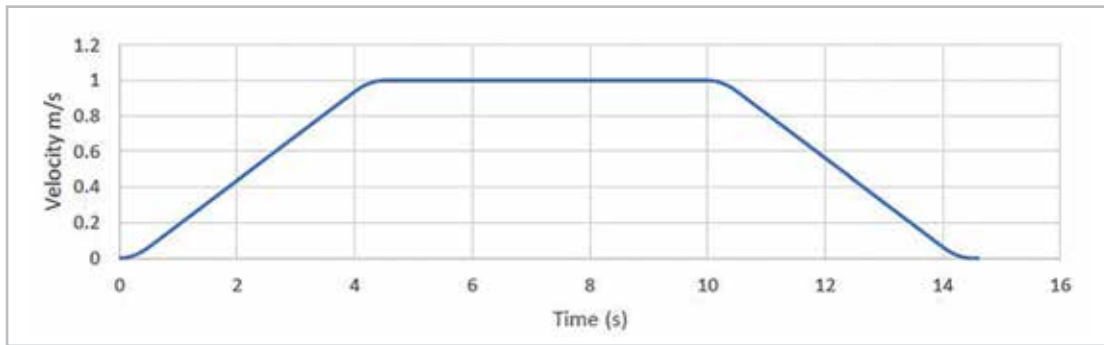
### *journey*

a section of time where the lift is changing displacement from when the lift begins to move, to when it reaches its destination. Contains a minimum of two phases. See Fig. 4

## 1.2. THREE TYPES OF PROFILE

There are three types of kinematic profile that will be referred to in this paper:

### 1.2.1. Symmetric Profile



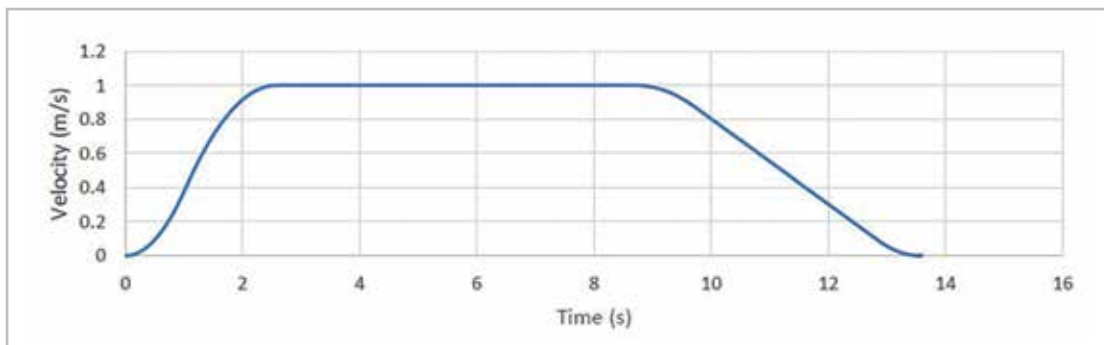
**Fig. 1 Symmetric Profile**

Fig. 1 shows a profile produced when a symmetric model has been used to plot the kinematic profile

of a lift. This assumes that the lift accelerates and decelerates at the same rate which is what most lift systems aim to do in order to provide the smoothest ride quality for the passengers.

The equations for plotting a symmetric profile can be found in 'Ideal Lift Kinematics' by Peters [1].

### 1.2.2. Asymmetric Profile



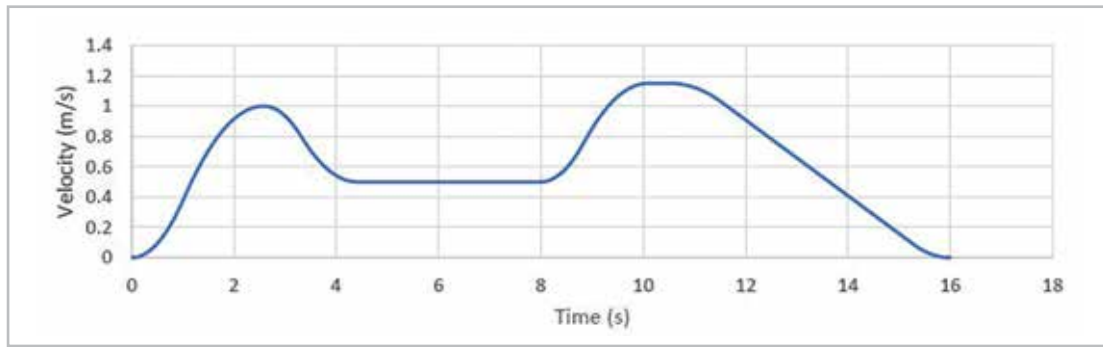
**Fig. 2 Asymmetric Profile**

Fig. 2 shows a profile when an asymmetric model has been used to plot the kinematic profile of a lift. Like the symmetric profile, this model assumes that there will only be one target velocity, however, it allows for different acceleration and deceleration values as well as differing jerk values.

Some cheaper or older lifts have asymmetric profiles due to the limitations of the drive. By being able to model profiles like this, these asymmetric lift systems can be accurately measured instead of the monitoring system attempting to best fit the data to a symmetric model. The other use of asymmetric modelling is in improving the performance of systems with two cars per shaft. For example, a lower deceleration may be used when the two cars need to be moved closer than allowed by the preferred safety distance. The safety distance between two cars is a function of the car's kinematics. By reducing the car's velocity, the cars can come closer together without compromising safety.

These profiles can be produced using the equations given in 'Quality and quantity of service in lift groups' by Gerstenmeyer [2]. The equations are an extension to the previous ideal lift kinematic equations meaning they can model symmetric and asymmetric equations.

### 1.2.3. Dynamic Profile

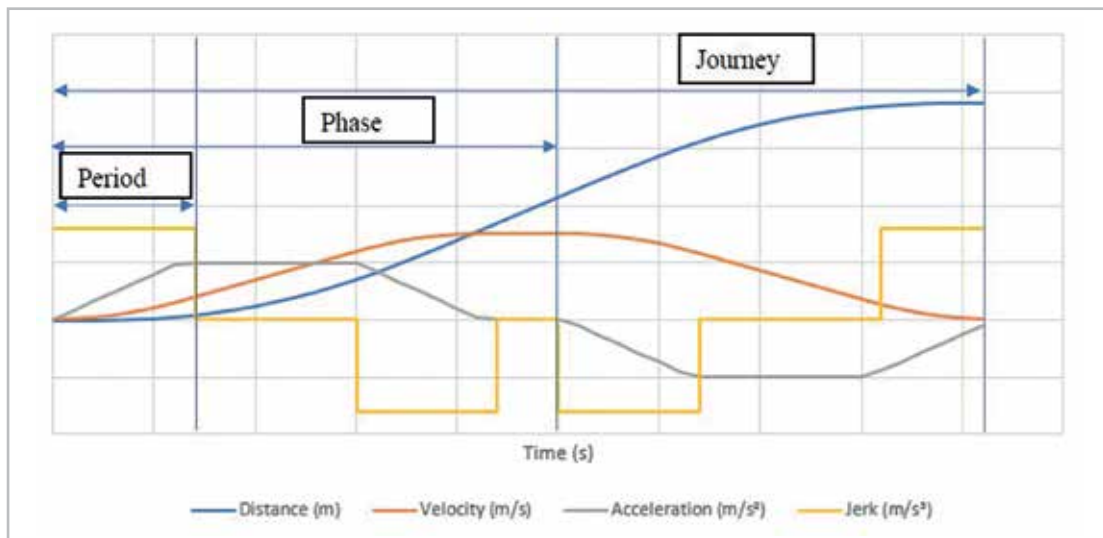


**Fig. 3 Dynamic Profile**

Fig. 3 shows a profile when a dynamic model has been used to plot the kinematic profile of the lift. This type of profile is occasionally seen in systems with a very long levelling delay where, towards the end of its journey, the lift decelerates to a reduced constant speed which it continues at until it levels with its destination floor. As is the case with lifts following an asymmetric profile, it is useful to monitor these types of systems instead of attempting to best fit them to a symmetric profile.

The dynamic model is also useful in systems with multiple cars. Reducing the velocity of a car at appropriate times can reduce the required safety distance between two cars. In instances where one car is blocking the path of another, travelling at a slower speed to allow more time for the blocking car to be moved away may be more acceptable to passengers than stopping the car completely. Gerstenmeyer states that the resulting increase in performance is particularly valuable to multi-dimensional lift systems with more than two lift cars per shaft. [2].

### 1.3. Three segments of a profile



**Fig. 4 Period, Phase and Profile labelled profile**

Fig. 4 shows the kinematic profile of one symmetric journey. The first period and phase, and the journey are labelled.

## 2. OVERVIEW OF PREVIOUS RESEARCH

### 2.1 Previous Work

#### 2.1.1. Analytical Method

Peters provided a set of equations which model the kinematic profile of a symmetric journey [1]. Each journey is divided into seven periods, each with their own set of equations. Each equation does the entire integration including the addition of the starting value at the previous period. This model provides a straightforward set of individual equations which do not approximate each integration like the computation method does. These equations are transparent and functional but very long and lack flexibility. This is also the method described in Annex 2 of Guide D [4].

Gerstenmeyer provided a set of equations which model the kinematic profile of an asymmetric journey [2]. This uses similar logic to the symmetric model however allows four different jerk inputs and two different acceleration values for the two phases involved. Whilst this improves the flexibility of the model, it also makes the equations even longer and harder to implement.

In the cases where a lift cannot reach the inputted velocity or acceleration, Peters proposed alternative models called 'case B' and 'case C' [1], Gerstenmeyer however proposed using the same equations by first reducing the velocity and acceleration to the maximum possible values that can be reached [2].

#### 2.1.2. Computational Method

Computational integration methods include quadrature rule, generalised midpoint rule, adaptive algorithms and extrapolation. These methods use calculations which approximate integration to find the profile values without long equations. This method is far more flexible than the analytical method as it does not rely on period separations. However, the approximation required in the computational method decreases the accuracy of the profile. [5]

### 2.2. Authors' contribution

The authors have derived an alternative set of equations which map onto the existing equations but allow for more flexible input parameters thus allowing the controller to have more flexibility over the shape of a lift's kinematic profile. The new equations use a combination of analytical and computational techniques and use the Gerstenmeyer method for dealing with invalid input parameters [2].

## 3. METHOD

As the dynamic model is an extension of the asymmetric model, which is an extension of the symmetric model, the dynamic method should be applicable to all profile models.

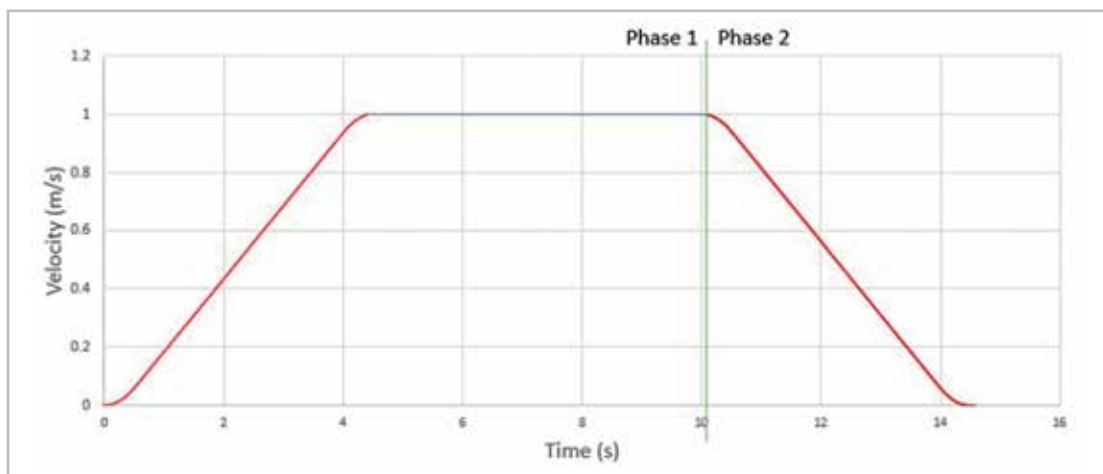
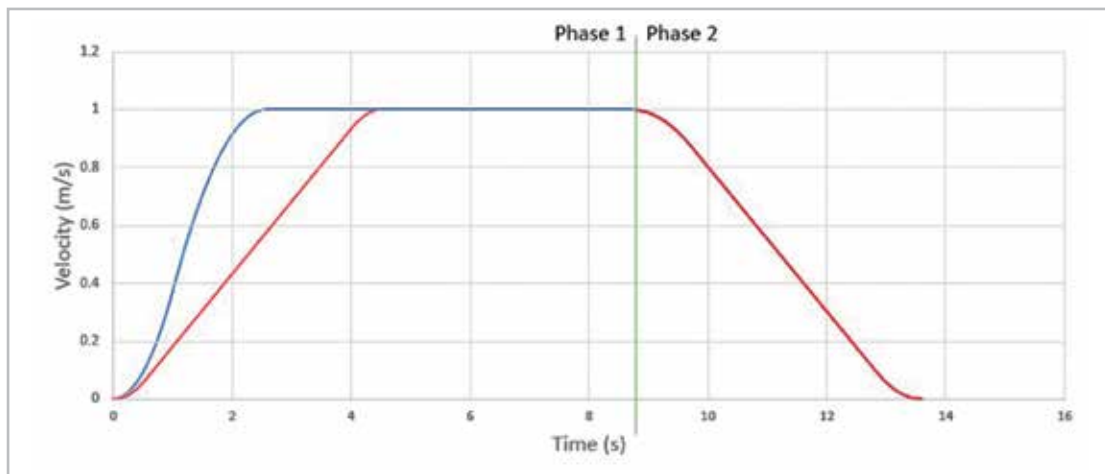


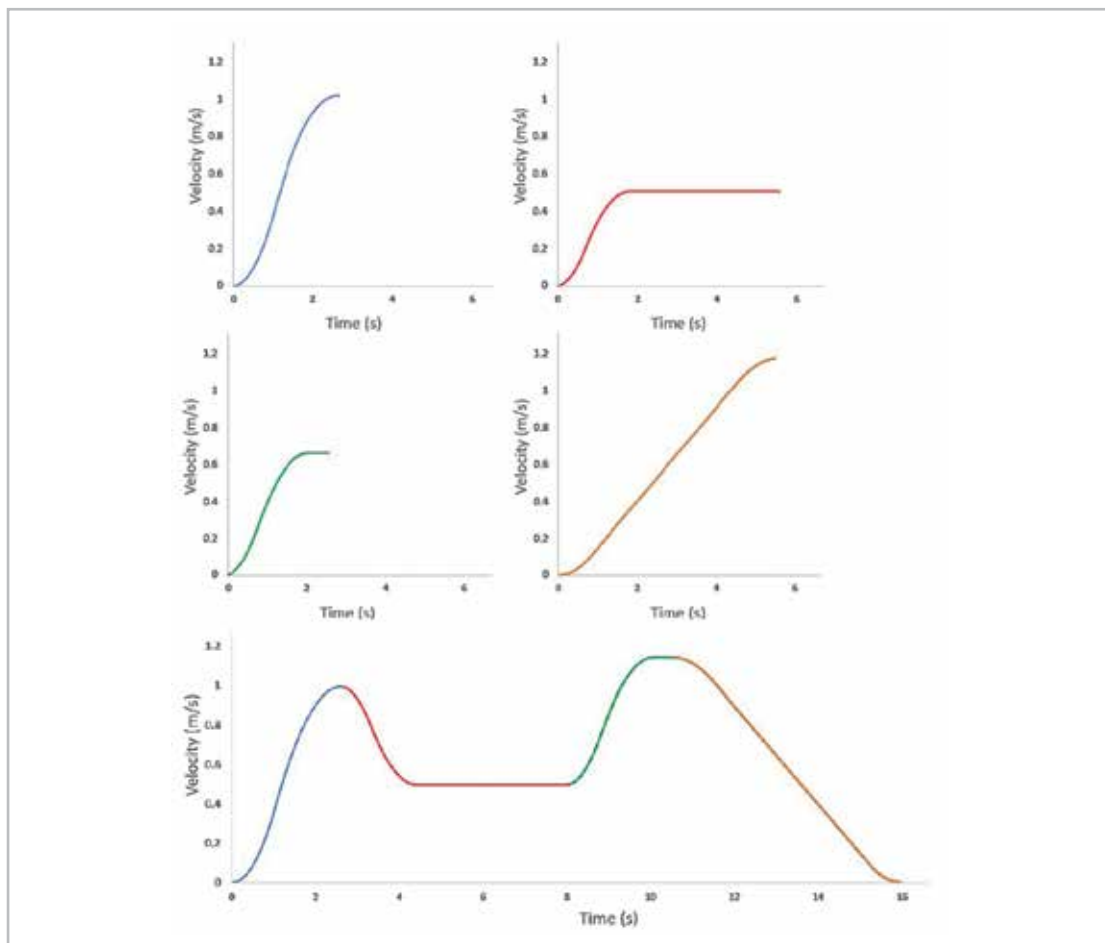
Figure 5 Symmetric phases

Each symmetric profile has two phases and the second phase mirrors part of the first phase. As seen in Figure 5, the two red sections have the same shape in reverse and thus phase 2 can be calculated using the same equation set as phase 1 after some of manipulation.



**Figure 6 Asymmetric phases**

If the acceleration and deceleration do not match, phase 2 is no longer a mirror image of phase 1 however it can still be calculated using the same equation set and then reversed as seen by the first red plot in Figure 6.



**Figure 7 Dynamic phases**

In the asymmetric profile, the two phases can be calculated separately and then appended to the same profile later. This is essential for modelling dynamic profiles as seen in Figure 7. Each phase has been plotted on a separate graph and then manipulated and appended to make the final profile.

For more detail on the method, please read “Dynamic extension for Ideal Kinematics” [3] which explains the functionality of the code, provides the necessary equations and shows some examples of the profiles the code generates.

## 4. QUICKEST STOP FLOOR

### 4.1. The problem

The quickest stop floor is the next floor a travelling lift can stop at when a new call is made. This is not necessarily the next floor that the lift passes after the call comes in as the car’s velocity might be too high to come to a stop in time.

In a symmetric system, this is easy to find with some straightforward equations as seen in [6]. These equations assume condition A, B or C and then reverse the equation for finding the time of max velocity into an equation for the minimum displacement. In the asymmetric model, condition B and C are amended into condition A by reducing the velocity or the acceleration. This means a new approach is needed to find the minimum displacement for asymmetric and dynamic profiles.

### 4.2. The solution

When using the dynamic model of kinematics, displacement cannot be found using one equation, but instead a function is required which acts recursively to find the displacement at the end of each phase. To find the minimum displacement, this function must be fed with the maximum allowed acceleration and jerk values as well as the lowest possible velocity in the final phase. To find the minimum displacement, the minimum possible velocity must be found.

#### 4.2.1. In period 0

The lift car is currently jerking towards its target acceleration. The acceleration when the call was received is the new target acceleration and the time of the call is set as period 1 and 2 start time. Period 3 start time is then calculated by finding the time taken to reduce the acceleration to zero. The maximum velocity is then calculated by rearranging the period 3 equation.

$$v = a_1 \left( p_3 - \frac{a^1(j_1 - j_1) - p_0}{-2^{j_1 j_2}} \right) \tag{1}$$

#### 4.2.2. In period 1

The lift car is travelling at a constant acceleration. The time of the call is set as period 2 start time. Period 3 start time is then calculated by finding the time taken to reduce the acceleration to zero. The maximum velocity is then calculated using equation 1.

#### 4.2.3. In period 2

The lift car is currently returning to zero acceleration so the velocity which is currently being targeted is the lowest target velocity possible.

#### 4.2.4. In period 3

The lift car is at constant velocity, so the target velocity is already achieved. The final phase can begin at the same time as the call is sent and the minimum displacement can be found.



## 5. APPLICATION

### 5.1. More accurate lift traffic analysis

When modelling lift kinematics, it is currently assumed that the acceleration is the same as the deceleration and that all four jerk values are the same. In a real lift system, due to old or inexpensive mechanics, acceleration and deceleration can vary in a single journey. This can be measured by a car mounted accelerometer and analysed to make a more accurate simulation of an existing system. To use this asymmetric data, equations which model asymmetric lifts must be used.

### 5.2. Lift systems with two cars per shaft

When two cars share a shaft, the system performance can be improved by giving each car the option to follow a deliberate asymmetric profile thus improving the performance of the system [2].

### 5.3. Multi-dimensional lift system

For multi-dimensional systems, cars can be given the option to change velocity based on the location of other cars in the system. This can prevent unnecessary stops, improving user experience, and can reduce waiting times, improving performance.

### 5.4. Improvements to monitoring

Lift performance measurement tools [7] currently try to map the lift's motion to a symmetric profile. Not only will this new model allow monitoring of deliberately asymmetric lifts, data from which will improve simulation inputs, it will also allow for the monitoring of poorly adjusted symmetric lifts thus enhancing maintenance.

## 6. CONCLUSION

This paper provides a high-level understanding of the dynamic model for plotting kinematic profiles. It explains the basic logic behind splitting a profile into phases and how this can be useful for monitoring, simulating and dispatching.

## 7. ACKNOWLEDGEMENTS

The authors acknowledge the work of Dr Gabrielle Anderson (formerly of Peters Research Ltd) and her research into the field of lift kinematics with multiple maximum velocities and with separate acceleration and deceleration.

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## BIOGRAPHY

Matthew Appleby is a Software Engineer with Peters Research Ltd and is part of the team working on enhancements to Elevate, elevator traffic analysis and simulation software, and related software projects. Matthew joined Peters Research in 2019 and is studying part-time for a Digital Degree Apprenticeship.



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 principal author of Elevate, elevator traffic analysis and simulation software.

Nishad Deokar is a Research Assistant at Peters Research Ltd on a gap year placement having studied Maths, Further Maths, Physics and Computer Science at the Royal Latin School. He is currently studying a course in Computer Science at King's College London in September 2022.

# The Lift and Escalator Library

» [www.liftescalatorlibrary.org](http://www.liftescalatorlibrary.org) «

Is an online library for the lift (elevator) and escalator industry.

It provides free access to an extensive collection of papers made available to support education and research.



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# HOW EXPENSIVE IS CHEAP?

I initially delved into this subject in the Spring 2008 edition of ELEVATION. I've been told that my article was valuable to end users, and I've been encouraged by industry colleagues to revisit this topic with a 2024 perspective.


Benjamin Franklin once said, "The bitterness of poor quality remains long after the sweetness of a low price is forgotten," but of course, quality needs to be associated with not only the product but also the workmanship and installation standard.

We can all agree that different situations call for different qualities of equipment. Nonetheless, it's disconcerting that some developers prioritise cost over the needs of their buildings.

*It's important to note that "cost" alone is an insufficient measure of quality. True professionals consider "life cost" and factors like business interruption and disturbance. "Cost" doesn't necessarily equate to "value for money", as poorly manufactured equipment sold at an exorbitant price doesn't represent an attractive proposition.*

**The ideal goal is to achieve an installation that perfectly suits the task, offering reliability and longevity at the right price. Despite the requirements for disabled access in buildings, it's perplexing that many single-lift structures often succumb to the allure of cost-saving measures.**

The life expectancy of a lift depends on the original manufacturing quality, installation standards, ongoing maintenance, and usage. The end-of-life scale is occupied by two scenarios: a high-quality, well-installed, and well-maintained lift in a low-usage environment at one end; and a low-quality, poorly installed, and inadequately maintained lift in a harsh or abusive environment at the other. The following table underscores the desired scenario:

	Product Quality <b>NOT</b> Appropriate for its Environment	Product Quality Appropriate for its Environment
Installation Quality Poor	X	X
Installation Quality Good	X	

The issue arises when people purchase properties where the developer, driven by cost-cutting, has installed subpar lifts and, I suspect, other services. They later face premature replacement costs and disruptions, which are not in line with the push for achieving net zero and reducing carbon emissions. Unfortunately, design and build contracts often prioritise obtaining the cheapest products available.

The situation became so dire that even the major lift companies went through a period where they produced low-cost, low-quality products that lasted only 5 to 10 years before requiring replacement.

In reality, the most cost-effective, long-term option is a quality product properly maintained and suited to its environment. Three compelling arguments support this stance:

1. Life cost
2. Disruption
3. Environment

For instance, if a £60,000 lift lasts for fifteen years and a £40,000 lift lasts for ten years, the actual annual cost for both products is £4,000. However, the cheaper lift, which must be assessed in terms of its manufacturing quality, will require earlier replacement, leading to building disruption, noise, carbon footprint concerns, and potential difficulties for mobility-impaired individuals if only a single lift is installed. Who would willingly endure such issues prematurely?

Naturally, a developer with no long-term stake in the building or a design and build contractor with limited responsibility may not prioritise the lift's longevity unless they are responsible developers. However, it's essential to recognise

that installing low-quality products is not environmentally friendly, as it consumes more energy to produce two lifts over the same period as one, thus raising corporate social responsibility considerations.

When booking a hotel, you know its star rating before your arrival. Why don't we have an independent body accrediting the quality of products in our industry? This way, purchasers would have a benchmark for comparison, potentially leading to the disappearance of subpar products.

*We invite you to share your thoughts and insights on the cost of quality and the value of well-chosen products and services. Have you encountered situations where prioritising cost over quality led to negative consequences? How do you think the industry can ensure the use of high-quality products in construction and other fields? Please feel free to send us an email. Your opinions and experiences are valuable to us.*

#### **BIOGRAPHY**

*Eurlng Prof. David Cooper MBE 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.*

*In 2023 David received an MBE in the Kings Birthday Honours list for services to lift & escalator engineering.*



# The *Lift Industry* Mental Health Charter

## The Lift Industry Mental Health Charter

is an initiative which is focused on bringing together the lift industry to support mental health. This includes all lift companies, lift consultants and lift suppliers across the lift industry and their employees. Working together to

support the people within the industry with their mental health will make the industry a safer and more supportive place to work.

1 in 5 have suicidal thoughts over the course of a lifetime

1 in 6 experience common mental health problems every week

1 in 4 experience mental health problems every year

Clear your mind,  
You're not alone  
Find help here!



[www.liftmentalhealthcharter.com](http://www.liftmentalhealthcharter.com)





# TED BARKS

## WITH THE LIFT INDUSTRY MENTAL HEALTH CHARTER

### BARKING ABOUT ANXIETY

*Our brand new 'Ted Barks' column focuses on the importance of prioritising our mental health. Our newest columnist, Ted, will look at the various mental health conditions and struggles that many of us will recognise, and how we can start to address them.*



### WHO IS TED?

I am a French Bulldog who loves to spend time with my owners, and has anxiety when left alone or I find myself in a new place. Us French Bulldogs are often referred to as 'Velcro dogs', as we like to stick to those we love and require attention 24/7, as it should be! Our owners leaving or even popping into a shop can cause great anxiety, although these feelings do subside pretty quickly when I realise they are buying me food. Then it's back to the business of getting up to my normal trouble!

**In my first column, I thought we'd look at some of this anxiety that can occur in many different situations.**

### WHAT IS ANXIETY?

Anxiety is a perfectly normal body response, and we all experience anxiety at different times in our lives. I recently went out to dinner in a pub restaurant - a new environment can often cause anxiety. Where am I sitting? What am I eating? Will I like it? What drinks do they have? Who's going to be there?

However, some can find it very difficult to control their worries, and feelings of anxiety start to impact their every day lives. Anxiety can come in many different categories and forms, and these are only some of the different types:

- **GAD – Generalised anxiety disorder** – Struggling with raised anxiety on a daily basis of various levels.
- **Panic Disorders** – An anxiety disorder presenting as a sudden panic attack or fear of a situation. This can happen at any time for no apparent reason.
- **Acute Stress disorder** – This can be shorter term and can last 3-4 weeks. Acute stress can happen after a traumatic event and may include flashbacks and significant anxiety.
- **PTSD – Post-traumatic stress disorder** – This is similar to acute stress disorder but the symptoms persist for longer and can significantly impact a person's life.
- **Phobias** – These can be overwhelming to a point it prevents a person from moving or carrying out a task. You can have a phobia of anything from an object, place, situation, feelings or an animal. The list is not exhaustive.

## WHAT ARE SOME OF THE SIGNS AND SYMPTOMS OF ANXIETY?

They often cross over with other mental health conditions and some of these you will see listed against stress or depression as well.

- Panic attacks
- Dry mouth, feeling sick and headaches
- Lack of energy with muscle aches and pains
- Excessive sweating and shortness of breath
- Shaking or trembling uncontrollably
- Fast heartbeat
- Tiredness or dizziness
- Seeking lots of reassurance from others around
- Withdrawing from social situations
- Irritability and difficulty concentrating
- Unable to relax or a sense of dread and being 'on edge'



## HOW CAN WE HELP OUR ANXIETIES?

We are all different, and what may work for one person may not work for another. Because I experience everyday anxieties, I often find that completing a task or going into the situation I do not like actually helps me to combat these fears and anxieties. I recently went on the train for the first time, and I didn't want to enter the station and had to be helped on the train. Once on the train I had a great time and enjoyed leaving my mark! Not everyone can leave their mark in this way, of course, but there are many ways to help combat your anxieties:

- Talking to another person. They say it's good to talk, but it really is true.
- Change of location. Moving to a new space may help move your mind too.
- Breathing exercises. These help you feel more in control.
- Mindfulness. Focus on the present moment.
- Regular exercise. Moving your body can boost your wellbeing.
- Healthy foods. Getting a good range of nutrients can improve how you feel.
- Reading. This can reduce stress, relax your body and lower your heart rate.
- Writing. Get those thoughts out of your head.
- Meditation. A sense of peace and balance by focusing on something calming.
- Avoid caffeine, alcohol or smoking, where possible. Reducing anxiety symptoms.

It may surprise you, but I am not a medical professional, so when tackling your anxiety, it's always good to get professional help. Here are some useful places to gain that help:

[National charity helping people with Anxiety - Anxiety UK](#)

[Lift Industry Mental Health Charter - Mental Health Support, Virtual Mental Health Services \(liftmentalhealthcharter.com\)](#)

[Anxiety Care UK](#)

[We are Rethink Mental Illness](#)

If you know of someone who has anxiety, be kind and let them know you're there for them. Ask how you can help – I like a hug when I'm feeling anxious. You could even recommend some of my helpful tips listed above.

In the next edition we'll look at the benefit of animals and mental health. I'm sure you have some furry (or not so furry) friends that I'd love to meet, so please send in your pictures of you and your pals to [help@liftmentalhealthcharter.co.uk](mailto:help@liftmentalhealthcharter.co.uk).

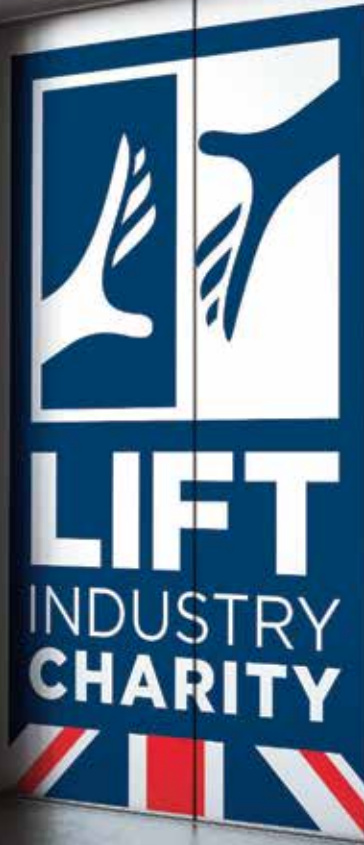


## Can we help...

Are you employed in the Lift industry?

Have you, or someone you know, had a works related accident?

Did you know there is financial help available?



# The UK Lift Industry Charity

Run by Lift People for Lift People

**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.

Can we help you, can you help us, would you like to join in the next **2023 Cycling Challenge** just email [reiss.stygal@aa-electrical.com](mailto:reiss.stygal@aa-electrical.com) [www.liftindustrycharity.co.uk](http://www.liftindustrycharity.co.uk)

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.

**Thank you** to all The Lift Industry Karting Challenge sponsors, donors & participants



Charity Registration No. 1119434



# ELEVATOR PITCH

Making it a little tricky to share our vertical journey today, we're meeting Clare Gant, Associate Lift Consultant at ILECS at the Paternoster lift at Essex University. The lift became TikTok famous in 2023, and it's one of only a handful of remaining Paternoster lifts in the country. I think we'll just watch it for a while!

**NO DOORS TO CLOSE...!  
GOING UP...**

**TELL US BRIEFLY ABOUT YOUR  
JOB, WHAT DOES IT INVOLVE?**

I'm an Associate Lift Consultant at ILECS, an independent consultancy providing advice for all aspects of the lift and escalator industry.

My main job is learning from the other consultants who have decades of technical knowledge of different lifts, so I spend a lot of time going out and about with them, learning about their different specialties and meeting clients. Initially with ILECS I was involved in the office-based management side of things - callouts, invoicing, checking quotations - I'm currently transitioning from being office based to being out and about,

learning the more technical side of the role. I'm also in my second year of an HND at the University of Northampton, which ILECS has been really supportive of, giving me time to study alongside this great career opportunity.



**OUTSIDE OF WORK, WHAT DO YOU ENJOY DOING?**

I've just bought my dream motorbike, a Triumph Street Triple in a really hideous slime green colour! I've always wanted a Triumph, so I'm looking forward to taking it out on some countryside backroads in the spring. I also have a husky called Peter, so I spend a fair amount of time being walked by him!

**IF YOU COULD BE SOMEONE OR SOMETHING ELSE FOR THE DAY, WHAT WOULD IT BE AND WHY?**

Honestly, I'd love to be a hippopotamus for the day, just wallowing in hot mud! With all the learning I do, I'd quite like to simply wallow in mud for the day.

**WHAT IS YOUR FAVOURITE SNACK AND PLACE TO EAT IT?**

I'd pick some pork scratchings with a pint, in a pub, by the fire, with my dog and partner. The perfect combination.

**WOULD YOU RATHER READ YOUR FAVOURITE BOOK OR WATCH YOUR FAVOURITE MOVIE?**

It would have to be my favourite book, *Down and Out in Paris and London* by George Orwell. It's semi-autobiographical of George Orwell, stories about people he bumped into when he tramped around London and Paris, so it's just really interesting.

**AND FINALLY, IF YOU HAD TO CHOOSE YOUR FAVOURITE LIFT, ANYWHERE IN THE WORLD, WHICH ONE WOULD IT BE?**

Funnily enough, the paternoster lift in the University of Essex is my favourite. Technically interesting and one of only three in the UK, it's brilliantly antiquated and holds lovely memories of exploring it with colleagues at the start of my lift career.

**And with that, I think it's time to try it out...**

**WHAT IS THE MOST IMPORTANT ELEMENT OF YOUR ROLE?**

Studying! Endless learning at the moment, including the technical aspects and seeing the wide range of people we work with – maintenance providers, residents, clients, property managers and more. There's a huge array of different types of people. Being in consultancy, managing clients is crucial; explaining things well according to your audience – it's not always the technical side, there's so many aspects to consultancy.

**WHAT DOES A TYPICAL DAY LOOK LIKE FOR YOU?**

There's no such thing as a typical day! It could be anything from carrying out site visits, writing documents, chasing for works or meeting clients. I'm also often involved in representing ILECS at events, attending to talk to visitors about what we do. ILECS was a platinum sponsor of ARMA's annual conference (Association of Residential Managing Agents), which was an excellent event to attend - we've been working with them for over 20 years. I also attended The Workplace Event last year, which was a great event showcasing innovation in workplace and facilities with

professionals from many different areas attending. It's great chatting to people about what we do, highlighting that we're independent and have each customer's unique goals and objectives at our heart.

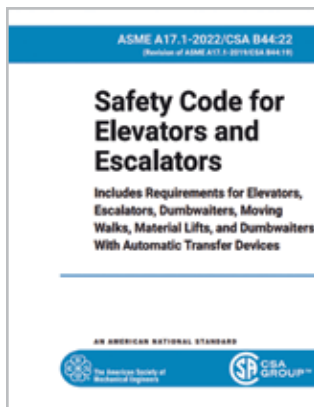
**WHAT DO YOU ENJOY MOST ABOUT YOUR JOB?**

Talking to so many different people is something I really enjoy. I do like the technical side of it, but I love finding common ground with people, you hear some very interesting stories!

**CAN YOU TELL US ABOUT A RECENT ACHIEVEMENT YOU'RE PROUD OF?**

I recently carried out over 25 surveys for a client, covering a range of locations, and completed successfully to schedule. It was the first large set of work I've accomplished by myself so it was an achievement to take that next step forward. My work is, of course, always checked by another qualified consultant, but it was really lovely taking that responsibility. Passing the first year of my HND was a great achievement too!

# LETTER FROM AMERICA



## The ASME A17.1: 2022 Code and IoT

The ASME A17.1: 2022 Code was recently published, and one of the most significant changes in this edition is the inclusion of Remote Interaction Operations (RIO).

Remote Interaction Operations are operations such as remotely entering car calls and remote controller resets. Whilst such operations are common outside the USA, within the USA there have been so many concerns about the safety of these operations that very few lifts have this capability.

The safety concerns are well founded. Imagine resetting a control system whilst it is in fire service operation or placing a car call for a secure floor. What is significant about this new code is that when and how RIOs can safely be executed are well defined and ensure that the RIOs will not create a safety hazard.

## Safety Solutions

The following are a few of the safety solutions required by this code:

1. Most RIOs can only be conducted when the lift is in Automatic Operation. This prevents interference with other operating modes such as emergency power, fire service and hospital service.
2. RIOs are not permitted to override or reset any device that is required to be manually reset, such as an overspeed switch on a governor.
3. Motion control parameters cannot be modified remotely.
4. Any operation established by a non-momentary switch cannot be modified or overridden remotely, such as a car top inspection switch.

## Cybersecurity

Once a lift is connected remotely, it can be hacked. The computer industry tells us it is not a matter of **IF** you will be hacked but **WHEN** you will be hacked. They also tell us that the best defence is to make a computer or lift so difficult to hack that a hacker will look for an easier target.

The 2022 edition of the ASME code requires lifts with Remote Interaction Operations to be built in accordance with BS EN IEC 62443-2-4, 62443-3-3, 62443-4-1, and 62443-4-2 which are cybersecurity standards.

## THE EFFECT ON THE US LIFT INDUSTRY

There have been extensive discussions throughout the lift industry about the benefits of IOT, Remote Monitoring, and Machine Learning. To understand how these code changes affect these benefits we need to understand what the customer wants and what the lift companies want.

### The customer point of view

From IoT remote monitoring the customers want to know the following:

1. Are my lifts running or not?
2. If not running, then is there anyone trapped inside?
3. If passengers are trapped in the lift, how quickly will they be rescued?
4. If no one is trapped, how quickly will my lift be back in service?

### The lift company's point of view

Aside from the obvious desire to reduce costs and increase customer satisfaction, the lift companies want to know the following:

1. Machine learning sent an alert advising that a lift MIGHT be out of service. How can I be sure?
2. A lift is out of service. How quickly can I get it back in service?
3. Can IoT get the lift running without the need to dispatch a technician?

### WHAT RIOs CAN DO

Is the lift running? If traffic is heavy, then it is easy to see if all the cars are moving. However, if traffic is light, a lift might not move very often. If a car appears to be out of service because it has not moved for a while, remote car calls can be placed at the top and bottom floors. If the car responds to the calls, it is probably running. If the car does not move, then the car is probably not running.

### Are passengers trapped?

Algorithms exist that can detect trapped passengers. If the car is at floor level with the doors closed, a remote Door Open command can sometimes free trapped passengers.

### Can we get the lift running without sending a technician to the site?

A remote controller reset can often get a lift running.

### RIOs can help predict when a car can be returned to service

If the RIO cannot return a unit to service, then more is known about the complexity of the breakdown. This information can help the dispatcher, human or virtual, to select the proper technician to attend the call. Once the technician is selected, his ETA at the site can be predicted.

## MARKET IMPACT

Ultimately, the additional capabilities made possible by Remote Interaction Operations will increase the attractiveness of IoT Remote monitoring and therefore the demand for the product.

However, The ASME A17.1 is not truly a national code. In the USA there are over 100 Authorities having Jurisdiction (AHJ). Each AHJ can adopt their own code. For example, some AHJs have adopted the 2019 edition of the A17.1 others are using the 2013 edition. Still others are using even older editions. One AHJ is responsible for the State of California, whilst another AHJ is responsible for the City of Los Angeles. There are effectively over 100 lift codes in the USA.

The lack of a national standard such as BSEN 81-20 will impede the use of AI and Remote Interaction Operations.

### 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.*



# DIGITAL SWITCH



## Network upgrade threatens emergency call systems

**In 2025 the UK will switch from its 150 year-old analogue telephone infrastructure to a new digital network. Although a beneficial advancement which will increase connectivity, the switchover will cause disruption for those industries that rely on analogue for their emergency communications systems, resulting in businesses risking falling foul of regulations. Jay Birch, founder of Blend Telecom looks at why the lift industry in particular should be proactive about the digital switchover and the options available to ensure services remain compliant.**

Since 1875, the Public Switched Telephone Network has hosted telecommunications across the UK, facilitating both residential and business voice calls through copper wires. In 2025 the country is switching from the antiquated copper lines to a digital network, creating a better, more modern provision and giving 25 million properties access to ultrafast full fibre broadband.

The UK's network provider, Openreach, is switching off the copper-based provision by December 2025 and although this innovation will improve connectivity across the country, it will cause disruption to broadband and phone services operating on the existing network.

Specifically, in lifts where the copper lines are used for the emergency call function to contact emergency services in line with alarm device requirements under The Lifts Regulations 2016 to avoid injury or death.

Many providers are unaware that their systems will be unusable after the upgrade, creating connectivity issues during critical situations, limiting accessibility and putting them at risk of falling foul of the law. Replacement systems must be in place prior to the switch so that emergency lift services can adhere to industry safety standards requiring two-way communication.

Lift maintenance companies should consider alternative methods of hosting these communications within the next two years to prepare for the upgrade and avoid liability which could result in penalties such as fines or even imprisonment.

There are two potential solutions to help those responsible remain compliant. The most reliable and cost effective being installing a roaming SIM auto dialler that uses the strongest available mobile network to host passenger calls to support, even during network outages. The SIM card hosts the call to support services, bypassing both the analogue and digital networks and can also be monitored remotely, ensuring any complications are dealt with efficiently.

The other option is to connect a broadband line for each lift in the property, equipped with a Voice over Internet Protocol (VoIP) line that runs calls via the internet.

Both options can be installed with a UPS (uninterrupted power supply) as a battery backup.

By acting early, lift manufacturers and maintenance companies can ensure that they can continue to offer quality services to passengers, comply with the latest safety standards, and honour their duty of care.

**Jay Birch is Managing Director of Blend Telecom** which specialises broadband, mobile, VoIP management, Internet of things (IoT), energy and Microsoft 365.

For more information on the upcoming digital switch in 2025 visit:

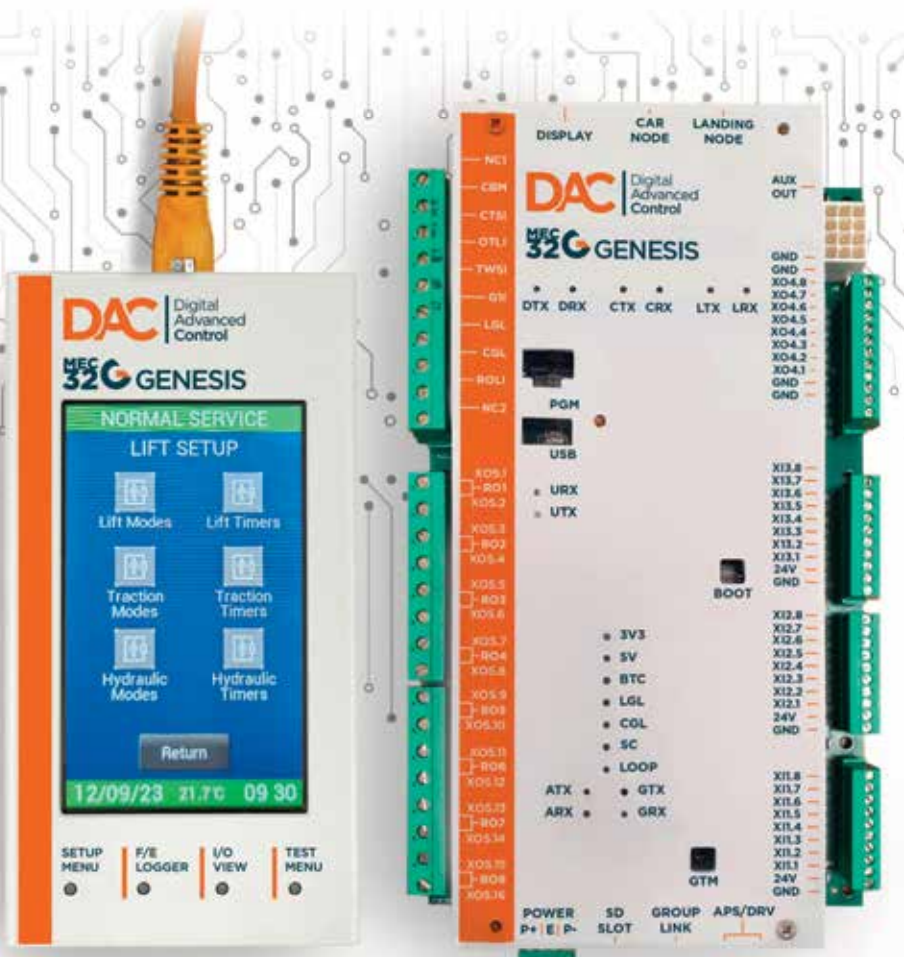
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