

# Safe operation of escalators & moving walks

SAFed's guidelines for the safe operation of escalators and moving walks were first published in May last year. In this first of a two-part feature for Plant Engineer, Vince Sharpe reviews key elements for owners and operators

Last May, SAFed (Safety Assessment Federation) released guidelines for the safe operation of escalators and moving walks. The new publication replaces earlier HSE plant machinery documents PM34 'Safety in the use of escalators' and PM45 'Escalators: Periodic thorough examination'. As such, plant owners and operators need to know that it should be considered best practice – and that it is now central to complying with health and safety duties.

With five chapters covering everything from legal commentary to duties and responsibilities, operational guidance for owners and operators, as well as what's required for thorough examinations, there's a lot to take in. However, chapter four is most important from a design and operations perspective – providing, as it does, considerable detail on safe operation and use.

The first section deals with special conditions, covering issues that ought to be considered at design or building change of use stages. It reminds owners and operators that system design, for example, should be determined by risk assessment. Then, if an escalator or moving walk is a suitable solution, environmental conditions – such as low/high temperatures, wet conditions, hosing down and cleaning, and corrosive atmospheres – should be considered. The document also suggests that owners and others look at recommendations in BS EN115-1:2008 + A1:2010 & BS5656-2:2004.

Following that, the second section addresses potential hazards, emphasising the requirement for owners and others to carry out risk assessments not only periodically, but also after an incident

or at the request of competent persons undertaking thorough examinations. The reason: to reveal hazards and to highlight foreseeable misuse.

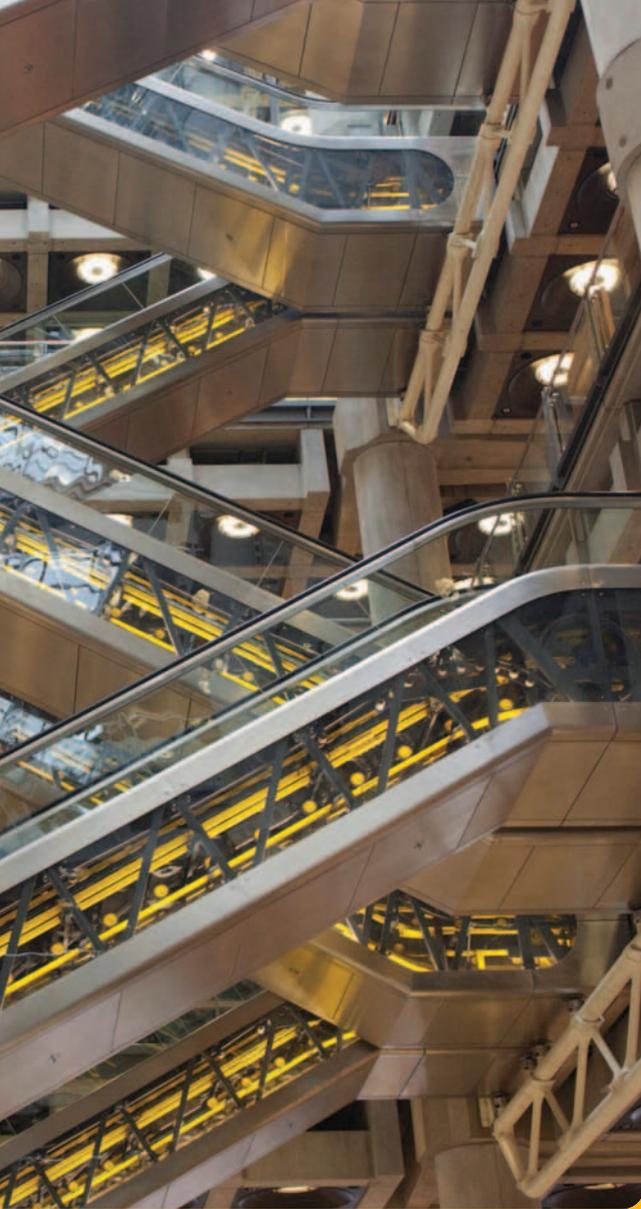
Clearly, if findings indicate previously unrecognised potential problems, control measures need to be implemented, in order to reduce risk to the lowest practical level. Relevant hazards might include voids into which people could fall, especially during foreseeable misuse conditions. Think, for example, about escalators and moving walks not bounded totally by adjacent walls or partitions.

## Handrails and guides

Also, escalator handrails normally run at 900–1,000mm height, not 1,100mm, as per other handrails, because their prime purpose is not fall protection. Accidents can be reduced by a number of means, ranging from ensuring parental control to on-site education (signs etc) and guarding the handrail from newel entry to handrail height. However, there are other potential hazards and the guidelines draw attention to solutions, such as guiding at intersections between buildings and escalators or moving walks, as well as measures to prevent entrapment between steps/pallets and skirting panels.

Another important aspect concerns pedestrian flow. For safety, boarding and disembarking landings





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should be designed such that circulation spaces can't be restricted. Remember, people are likely to make mistakes and/or behave irresponsibly. Beyond that, the use of carts and trolleys brings serious risks.

Moving on to section three, which covers signage and guarding, the new SAFed document first advises owners and operators to install warning and advisory signs, visual safety signs and audible warnings at the start and end of escalators and moving walks. It also reviews correct signage to warn people working on escalators or walkways of relevant risks.

Then, on guarding, where the principal issues concern access to machine rooms/space, the new document establishes the requirements for safe access, meaning free from trip hazards, obstructions and spills/debris, and suitably illuminated. It also indicates where hand-holds and stepping points must be provided. Then, as with all machinery, it covers guarding and identifies appropriate barriers.

Section four deals with the problems of human error and behaviour. For example, it makes the point that people with mobility impairment may require access – so is advisable to install other means of movement, such as lifts or fixed ramps. Meanwhile, it states that emergency procedures should be in place, with correctly trained staff ready to react quickly. This section also covers the importance of

reducing foreseeable opportunities for vandalism, damage and misuse. Public use areas can be designed appropriately, using environmental factors – to bear down, for example, on the craze for planking.

Taking some specifics, emergency stop buttons should be correctly sited, be clearly visible and accessible. However, note that they should also be of the correct size, colour and marked 'stop'. Further, to prevent misuse and inadvertent operation, they should be shrouded. Meanwhile, advertising and other forms of distraction must be sited and designed so as not to affect safe use, especially in the vicinity of the entry and exit points. These areas should be reserved for instruction relating to safe use.

Incidentally, note also that, as with any plant, if equipment is modified in any way to incorporate advertising, changes must be referred back to the original equipment manufacturer.

The next section deals with slips, trips and falls – looking at the main causes of incidents. It cites, for example, poor lighting, incorrect location, crowding due to poor circulation areas and distractions. It also points to problems of inappropriate footwear, poor judgement by users and escalators being misused as static staircases. The need for regular cleaning and maintenance of floorings and mats is identified, especially for wet areas. Likewise, the document recommends maintaining friction properties of steps and pallets, particularly in exposed locations.

As for lighting, the publication advises correct levels in the vicinity of escalators and moving walks – also stating that lighting needs to be properly maintained. Guidance is 50 lux at the comb intersection. However, for compliance, all signage and emergency stop facilities must also be adequately lit. Also, for new escalators, under-step lighting should be considered, as it improves visibility.

Moving on to procedures, the publication clarifies requirements for starting and stopping equipment, with step-by-step guidance for instructions and,



## Contributing authorities

SAFed's (Safety Assessment Federation) publication for the safe operation of escalators and moving walks was authored by a main review committee, chaired by the HSE and administered by SAFed and LEIA.

Contributing organisations consisted of SAFed, LEIA (Lift and Escalator Industry Association), BAA (British Airports Authority), London Underground, CIBSE (Chartered Institution of Building Services Engineers), Facilities Management Consortia, enforcing authorities, British Retail Consortium and others.

The document was compiled by two drafting committees: working group one considered operation strategy and was chaired by John Smith from BAA; working group two considered technical strategy, chaired by Derek Smith from LEIA.

The draft document was sent for external comment to all interested parties before the final version was published. The document is available electronically from the SAFed website at [www.safed.co.uk](http://www.safed.co.uk) and will be kept in electronic format to allow for quick, simple updates and alterations when necessary. Please ensure that you refer to the most recent update.

again, making the point that staff should be properly trained. Similarly, daily safety checks are detailed, along with the requirement for duty holders to carry out simple visual checks periodically, not just at start up – and the need for record keeping. Specifically, the documentation reminds owners and operators that manufacturers' instructions or recommendations should be taken into account.

Next up is cleaning, widely considered to be essential to preventive maintenance. Key advice is immediate action, particularly where spillages are concerned. Accumulation of debris is also to be avoided. As for routine cleaning, best practice is to focus on all surfaces regularly when equipment is not in use, while deep (internal) cleaning should be carried out by specialist contractors.

Preventive maintenance also sits in this section, with the document covering the importance of selecting competent maintenance firms with the right skills. Maintenance should be under formal contract, normally based on BS EN13015:2001 and A1:2008 'Maintenance for lifts and escalators'.



## Incident actions

Then, if the unthinkable does happen, this chapter covers actions required following an incident. It first makes the point that the duty holder should ensure that adequate staff are trained on safe use of equipment, hazards, emergency procedures and record keeping. As a minimum, the following actions should be undertaken: details taken of persons injured and witnesses; report under RIDDOR, if reportable; and check the plant, and, if faulty equipment is suspected of contributing to the incident, take it out of service.

The next section deals with the use of escalators and moving walks as static staircases – for example in emergencies. In brief, BS EN115-1:2008 and A1:2010 recommend that escalators should not be used as regular staircases or in emergencies. Indeed, it suggests that they should not be included when calculating the requirements for means of escape. They may, however, continue in service in areas not affected by the emergency, according to a predetermined emergency strategy.

In special cases, such as metro environments (subject to special regulations), reference can be made to BD2466: 'Guidance on the emergency use of lifts or escalators for evacuation and fire and rescue service operations'. As a result, during the design phase of a building, moving walks may be included as a foreseeable means of escape and may also be used while stationary in emergency situations.

That brings us to staff training, which must include safe use and hazards arising from unsafe operation. Staff should be trained to discourage children and young people from playing near equipment, and to

## Legislation, duties and responsibilities

The new SAFed (Safety Assessment Federation) publication on the safe operation of escalators and moving walks provides legal commentary in chapter two, as well as guidance on duties and responsibilities in chapter three.

Legislation first, and section one points to primary legislation as the Health and Safety at Work Act 1974, which puts a duty on employers to ensure the health and safety of employees and others who may be affected by their activities. The main duties of the act are imposed on a 'so far as reasonably practicable' basis. They are not prescriptive, so following the document and legal obligations outlined will normally demonstrate compliance.

Section two covers plant selection and supply, detailing the build legislation as The Supply of Machinery (Safety) Regulations 2008 and identifying the requirement that all new escalators and moving walks carry a CE mark and the associated declaration of conformity.

Next, the Construction (Design & Management) Regulations 2007 cover installation, commissioning, maintenance, repair or removal. This regulation also covers construction site hazards and associated control measures. Then RIDDOR (Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995) is covered, in terms of the relevant enforcing authorities.

Section five then reminds owners and operators in a workplace of the need to consider the Management of Health and Safety at Work Regulations 1999, the Workplace (Health, Safety & Welfare) Regulations 1992 and the Provision and Use of Work Equipment Regulations 1998. This section also mentions the Supply Machinery (Safety) Regulations 2008, the Working at Height Regulations 2005 and the Health & Safety (Safety Signs & Signals) Regulations 1996.

Moving on to duties and responsibilities, chapter three starts with those responsible for facility design, indicating that the location and surroundings for a new escalator or moving walk require consideration of several issues. Key among these are: number of users and traffic flow; depths and free spaces for circulations; attributes to users or location; alternative means of vertical/horizontal routes; and BS5656 Part 2, BS7801 and CDM (Construction, Design and Management) duties.

Section two moves on to owners and managers who control premises. Requirements include: all new equipment should be CE marked and Declaration of Conformity; safe access and egress; and no risk to persons working on the equipment, in terms of working environment, plant or substances etc. Moreover, all escalators and moving walks should be correctly maintained and have periodic Thorough Examination, with action items highlighted on the reports; sufficient staff must be adequately trained on equipment use; and accidents must be recorded, with adequate documentation kept.

warn others using the equipment in an unsafe manner. In the event of an emergency stop, they should be trained to react promptly and sensibly – and that also necessitates being familiar with the location and operation of emergency devices.

Finally, chapter four provides guidance to owners and operators with regards to selecting a competent person. Most importantly, it indicates that the selection should consider the following: practical, theoretical knowledge and experience; an ability to detect defects or weaknesses and to assess their importance, in terms of safe use; independence, impartiality and resulting ability to make objective assessments; use of an external company, although in-house organisations can be used, if criteria are met; and accreditation by the United Kingdom Accreditation Service (UKAS). 

