

EN81-20 & 50

LESA Melbourne – June 2014

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Development of ISO Global Code

ISO prescriptive code strategy

- EU expanded – EN81 dominant in Europe
- Asia Pacific largely harmonised on EN81
- South America harmonised on EN81
- Japan harmonising with EN81
- USA and Canada harmonised (A17.1/B44.1)
- Process driven by ISO, PALEA and others
- Has resulted in three major codes
 - CEN – JIS – A17.1
- Objective – Develop single global ISO lift code - based on EN81.

New Harmonisation Thrust

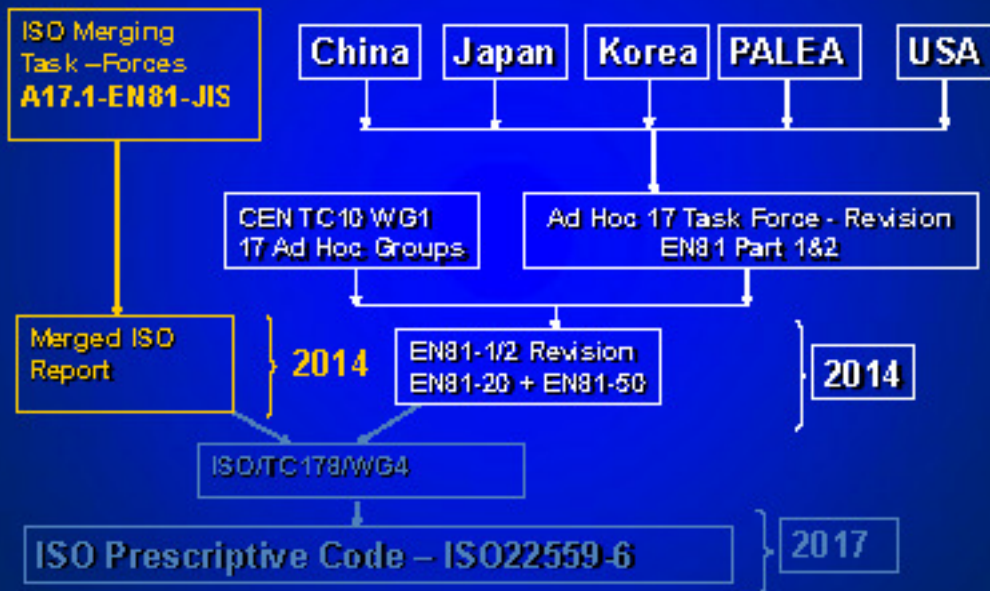
- **CEN Initiative**
 - Develop new version EN81 Parts 20 & 50 with international input
 - Target publishing date 2014
 - Formed International Cooperation through ISO/CEN Agreement
 - China – Japan - Korea - USA – PALEA
 - Allows participation in revision
 - Comments may be submitted and must be reviewed
 - First draft issued in 2012
 - Comments received from 15 EU countries and 14 Non EU countries- Achieving International Standard
- Will be issued in August 2014

New Harmonisation Thrust

- **ISO Initiative**

- Agreement to develop ISO prescriptive code based on EN81-20 & 50
- Implemented ISO/CEN agreement allowing four members of ISO to work on CEN committees
- Current work is to merge three major codes
EN81 – A17.1 - JIS
- Target date for Completion 2014
- Then combine merged document and EN81-20 & 50 to single ISO prescriptive lift code
- Target date – fourth quarter 2017

Global Harmonisation Plan



Revision of EN 81-1 and EN 81-2

- EN 81-1 and EN 81-2, have been revised
- The result; two new standards
 - **EN 81-20:** Requirements for complete passenger or goods passenger lift installations independent of the driving system
 - **EN 81-50:** Description of the examinations, calculations and tests of lift components used in any type of lift (passenger, goods passenger, goods only lift, etc.)
- Many aspects of the standards have been changed and safety provisions improved

EN81-20 & 50 v AS1735

- **Revision is based on EN81:1998-A3:2009**
- **AS1735.1 Refers To EN81:1998**
- **There have three major amendments since then**
 - Amendment A1 - Includes PESSRAL
 - Amendment A2 - MRL Requirements
 - Amendment A3 - UCM Requirements
- **Due to the requirements of new CEN new clause numbering system – Up to six or more digits e.g. 5.1.2.3.4.5**

Lift Well

- **General**
 - Wherever glass is used it must be laminated
- **The Well.**
 - The ventilation of the well is now considered as an architectural issue rather than a concern of the lift designer.
 - The strength the well has been altered to give limits to permanent and elastic deformation under defined forces.
[1000 N – 300x300mm ≤ 1mm Permanent 15mm elastic]
 - Glass wells must be laminated throughout their full height
 - Where lift cars have no balustrades there must be no ledges in the well greater than 150 mm to prevent persons stepping off the car.
 - The option to use a solid pier under a counterweight to protect accessible spaces below the well is now deleted.
 - Top and bottom clearances revised
 - Stopping and re-leveling accuracy (+/-10mm & +/-20mm)

Lift Well

- Pits deeper than 2.5 m must have an access door
- Access ladders to pits less than 2.5 m now fully defined in EN 81-20.
- Counterweight screens are redefined in strength, prevent access from behind, have a label indicating buffer/car clearances. (300N x 5cm² –Ht 0.3 to 2.0m above pit floor)
- Pits are to be fitted with inspection control stations (0.3m from refuge)
- Refuge spaces above and below the car are redefined
 - There must be one refuge space for each person working in that area. Refuge spaces are defined as standing (2.0H x 0.4 x 0.6m), crouching (1.0H x 0.6 x 0.7m) and lying (0.6H x 1 x 0.7)
- There is an addition of an emergency light on the car roof.
- Sprinklers are now allowed in the well, but before they discharge the lift must be sent to a landing and parked with main switch and lights off.

Machinery Spaces and Entrances

- Machinery Spaces.
 - Clear heights of entrances to these areas and the working space within have been altered to 2.0 m and 2.1 m respectively.
 - Where working areas are from the car roof and blocking devices are used to prevent car movement there must be a permanent means of escape to prevent entrapment.
 - Access to working areas is now allowed via private premises on agreement with the building owner.
- Entrances (Car and Landing).
 - Car and landing doors have increased strength and retainers. Subject to pendulum impact testing. (+1000N x 100cm²)
 - Glass doors are provided with increased protection for the “drawing in” of children’s hands. (frosted to 1.1m or sensor)
 - Fire rated to EN81-58

Entrances and Lift Car

- Entrances (Car and Landing). Cont.
 - Power doors must be fitted with monitored non-contact protection devices, if not able to detect persons, must reduce the door impact force or remove lift from service. (4J)
 - Limits have been placed on the height of the emergency unlocking mechanism (2m vert -2.7m hor– max key 0.2m long)
 - Lowest door lock reachable from pit ladder or permanent release provided
 - Car doors must be fitted with a “restrictor” which prevents opening of the car door by more than 50 mm when outside the unlocking zone.
- Lift Car.
 - The measurement of the floor area has been re-defined in terms of overall car floor area consistent with ISO 4190 car dimensions.
 - Materials used inside the car are subject to fire rating classifications.

Lift Car

- Decorative mirrors are to be made from safety glass.
- Cars have increased normal and defined emergency lighting levels. (100 lux - 5 lux for 1hour)
- The requirements for goods lifts concerning loading devices have been clarified (Transported loading device included in rated load sill loading 85% rated load)
- New requirements for the strength of the car apron and car roof balustrade. (300N x 5cm²)
- Minimum balustrade height 1100mm if gap greater than 500mm
- Car roofs must be provided with a toe board to protect against objects falling from the car roof and support persons according to refuge spaces but min. 2000N (0.3m x 0.3m)
- Panels must withstand 1000N x 100cm²
- Glass panels subject to hard and soft pendulum tests

Safeties Governors Buffers

- Safety must be able to be released at all load conditions
- Deleted note that safety should preferably be bottom of car
- The speed governor must activate the safety gear within 250mm of downwards movement of the car or counterweight.
- Deleted requirement for 10% difference between car & CWT tripping and min requirement of 6mm for governor rope.
- Energy accumulation buffers with buffered effect deleted
- Buffers fixed to car or CWT shall strike pedestal of minimum height 300mm
- A limit of 6g has been placed upon the peak deceleration of buffers at time intervals less than 0.04 s. (PU buffers)
- Reduced stroke buffer above 2.5m/s min stroke 420mm
- Type testing of UCM means at component level, rather than complete systems, is allowed and the provision for lifts with means of re-levelling clarified.

Lift Machine & Electrical

- Must be possible to check function of each brake set, from outside the well.
- The lift must be able to be slowed and stopped with one set inoperative; down rated speed and rated load – up empty car
- The brake must be able to be released manually from outside the well even under failure of the main power supply.
- When machine brake used for UCM or ACOP must be monitored either by checking open or close function or brake torque
- With brake open and car loaded to $\pm 10\%$ of balance the car must move under gravity or by manual means or electromechanical means with backup supply, available at site.
- Shall not be possible to raise empty car or CWT if either is stalled- ropes shall slip or machine stopped by electric safety device
- Electric installations and appliances.
 - This has changed which now requires the installation to conform with EN 60204-1 and national requirements



Electric Installations and Control

➤ Electric installations and appliances Cont.

– Other areas have been added, such as

- requirements for RCD protection, (30mA sockets & >50V AC
- protection from heat emitting components (hand held, touched and not touched and
- the requirements of other EN standards for basic electrical protection and the design and use of contactors, etc.

• Controls.

- New requirements for control buttons for the inspection stations (run button, button marking and colour, etc.)
- New requirements for protection of maintenance operations (prevent landing calls, remote commands etc)
- New requirements to reduce speed under inspection control when less than 2m clearance.
- New requirements for landing and car door by-pass
- Docking operations deleted.

Result of Public Enquiry

- **Total comments received**
 - EN 81-20 = 2564
 - EN 81-50 = 456
- **Comments from PALEA**
 - Total comments received from PALEA: 284
 - Comments accepted: 219 (77%)
- **Implement EN81-12 To Deal With National Differences**
- **Issue date for EN81-20 & 50 mid August 2014**
- **Standard implemented in EU with period of grace until August 2017**

Result of Public Enquiry

- Enquiry was launched on 23rd November 2011
- Comments received from 29 countries

European Countries (15)	
Austria	Netherlands
Belgium	Norway
Denmark	Portugal
Finland	Spain
France	Sweden
Germany	Switzerland
Ireland	United Kingdom
Italy	

Other Countries (14)	
AH-17	PALEA
China	Australia
Japan	Hong Kong
Korea	India
United States	Indonesia
	Malaysia
	New Zealand
	Singapore
	Taiwan
	Thailand
	Vietnam

Many thanks for your attention

