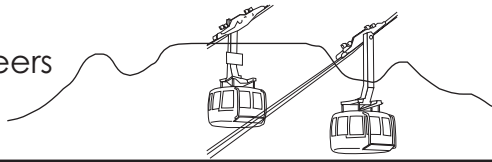


WCB ENGINEERING BULLETIN

The Institution of Certificated
Mechanical and Electrical Engineers
Western Cape Branch (WCB)

P.O. Box 504, Rondebosch 7700



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MISSION STATEMENT: 1. To uphold the image & status of the Certified Engineer. 2. To represent the Certified Engineer at ECSA and other decision-making bodies concerning legislation, safety & health standards, the environment and machinery regulations. 3. To promote continued education & training of its members and future engineers. 4. Promote fellowship in the engineering profession

Editorial

The Professional Certificated Engineer

The tragic incident described in this issue involved a goods hoist in which persons do not travel. These hoists do not need to be registered by the Department of Labour and the onus is entirely on the user (owner) to ensure that the regulations are complied with. Passenger carrying installations which include lifts, escalators and passenger conveyors (travelators) do have to be registered but here too the onus is entirely on the user to see that the regulations are complied with. Both goods hoists and passenger carrying lifts have had their horrible accidents. The principle of self-regulation pervades the health and safety regulations. Whether or not this is a good thing remains to be seen. The inspection of passenger elevators and goods lifts (which carry goods and passengers) have been taken out of the hands of the Department of Labour inspectors and have been put into the realm of specialist lift inspectors registered by ECSA.

The DoL will register a lift, escalator or passenger conveyor, but it is up to the user (owner) to see that it is constructed and inspected in accordance with SABS specifications. The user is required to obtain a 'comprehensive report' (as defined in the SABS specifications) for the initial and 3 yearly inspections by a registered lift inspector. A 'competent person' as defined or firm must be appointed in writing to carry out monthly inspections and the DoL advised of the name of the person or firm. Any change of this appointment must be notified to the DoL. In the event of a defect in the installation the competent person and the user must advise the department and not use the lift until it has been repaired. Certain failures affecting the safety of the public must be reported to the DoL. These comprehensive reports and maintenance reports must be stored in the machine room or compartment for at least ten years. One anticipates that these reports will be periodically examined by departmental inspectors otherwise the user would be honour bound to keep his installation in a safe and sound condition. One wonders how the insurance companies feel about the changed regulations.

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Local Branch News

Hello once again everybody.

Please note that an "ECSA arrears fees" list has been posted on their web site. I believe that the fees for this year will be increased by 10% for members of Institutions such as ours and 25% for those persons not members of Institutions. This shows the value of being a member of ICMEESA, don't you think?

There has also been a noted increase in the applications for registration as Pr Cert Eng since the beginning of this year.

A new branch of the Institution has been formed in Mpumalanga – the center being Middelburg. A further new possible branch is the Messina area, as there are increasing mining activities in the area. The possibility is being investigated.

Due to the large number of public holidays in March we did not arrange any meetings. Subsequently, the programme has been moved back by a month.

The programme for the next few months is as follows. (Note that these are subject to confirmation)

April: Talk on Productivity management.
May: Canal network & CBD development
June: Wind project visit – near Darling

Best regards to you all!

Chris Schnehage

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New affiliate members

Welcome to the following new Affiliate members:

Riedwaan Hassiem

Tel 021 401 1272

email address riedwaan@siemens.co.za
Business Development Manager with Siemens

Brian Phillips

Tel 021 987 3426 & 082 878 1217

Own business in electrical Circuit Breaker Solutions.

Goods hoists must be kept safe

On 21 April 1976 at about 16:30 an accident occurred on a goods hoist in the basement of a building in which a youth of 17 was killed. The youth, whom we shall call Kevin, was a messenger in the company which dealt in office equipment and stationery. One of his functions was the delivery into and collection of goods out of the stores. He was authorised to use the goods hoist via which the stationery and equipment was transported. He had been engaged in this work for 5 months from the time of his employment at the company. The stationery was stored in the basement of the building.

At about 16:30 a representative of the company arrived at the office and was informed by an employee that an accident had occurred in the basement. He went down and found Kevin with his head trapped between the hoist and the top of the framework of the landing door in a gap of about 200 mm. His legs were in a collapsed position, his arms were hanging at his sides and he was virtually hanging by his head which was trapped sideways. He was facing towards the control buttons on the left side of the door frame. There happened to be a medical doctor on the premises at the time and he was called down to the scene. He made a cursory examination and found that Kevin was dead. In the meantime an ambulance had been called and arrived shortly afterwards. With the assistance of the two ambulance men the representative, who was familiar with the controls, lowered the hoist and the body was caught and placed on a stretcher. It was taken to a local hospital where the youth was pronounced dead.

No one witnessed the occurrence. Kevin had loaded envelopes into the hoist which stood at the basement level. It is assumed that he closed the door and pressed the "up" button. The car may have moved and then stopped because a door further up the shaft was opened. He may then have opened the basement door, put his head into the shaft to see where the trouble was, while depressing the electrical interlock (which is normally operated by the landing door in its closed position) with his right hand and the "up" button with his left. Without being aware of what was happening in the basement someone above closed an open door higher up the shaft. The cage started to move upwards and there was no time for Kevin to move clear.

The goods hoist served five floors. The landing door frames were 1465 mm in height and 1200 mm wide. Each landing door was provided with an electrical interlock, but in all cases, apart from the top floor, the mechanical locks had been removed at some stage during the life of the hoist, as revealed by screw holes. The removal of the mechanical locks created the dangerous condition that the doors leading into the shaft could be opened without the car being at the landing. The electrical door lock ensured that the car could not move until all doors were closed. No door closers were fitted to any of the doors to ensure that the doors closed when released, so if the car could not move under power because a door was open the location of the open door would need to be ascertained and closed to enable the lift to operate.

The hoist could be operated illegally from any landing by opening the door, depressing the electrical interlock plunger inside the shaft with one hand and the operating button on the left hand side of each landing door frame with the other hand. The car would move if all other doors were closed.

The official investigation found that the hoist did not comply in all respects with the regulations in force at the time. The hoist was serviced over a period of four and a half years by a contractor who condoned the absence of the mechanical

locks and did not inform the owners of the contravention of the regulations, if indeed he was aware thereof. He had been appointed as the competent person to service and maintain the hoist in a safe condition in accordance with the regulations.

The owner (user) contravened the regulations which required the fitting of "a mechanical lock so arranged that the door or gate cannot be opened unless the conveyance is at that landing". The purpose of the mechanical lock was to ensure that the door could only be opened when the cage was at that landing. Otherwise a door could be opened into an empty shaft with the danger of someone falling down the shaft. The owner relied on the "competent" person to know the requirements of the regulations but that knowledge was not forthcoming from this person.

COMMENT.

Driven Machinery Regulation 17 covers the safety aspects of a goods hoist. This is a lift for goods only and persons may not ride on it. There are no control buttons inside the car or cage. The car cannot be sent to a floor, only called to a floor by pressing a button on that floor. There would need to be some form of communication between floors for the effective use of the hoist. In this particular case someone on a higher floor must have been calling the cage after Kevin had loaded the envelopes. The calling floor would have to close its gate and press the control button. All other gates would need to be closed for the hoist to move. When the car did not move Kevin might have thought that the gate switch was sticky and he would close it by hand at the same time looking to see if the calling floor gate was closed. The enquiry did not reveal any information on this detail, even though a second person must have been involved. The present Act places the onus on the employer/user of machinery to make it his business to know the regulations and abide by them. He cannot place the onus on the contractor unless it is clearly stated in the contract that the contractor knows and will comply with the legal requirements applicable to the contract. In the absence of such a contract the contractor as a mandatory could be charged for the same offences as if he were the user, in terms of section 37(3) of the Act.

Occupational Health & Safety Act - update

The Minister of Labour has, under section 43 of the OH&S Act, 1993, after consultation with the Advisory Council for Occupational Health and Safety, promulgated Asbestos Regulations in Government Gazette No 23108 and Government Notice No 155 of 10 February 2002.

Copies can be obtained from:
the Government Printing Works
Private Bag X85
Pretoria, 0001

The scope of application of these regulations covers the employer and the self-employed who carry out work that may expose any person to asbestos dust.

These regulations are aimed at protecting people at work and people other than people at work, where asbestos and asbestos containing materials are manufactured, produced, processed, used, handled, stored or transported.

Legal knowledge examination

Occupational Health & Safety Act No 83 of 1993 November 2001 Question 2 (20 marks)

In terms of the Driven Machinery Regulations answer the following questions on machine guarding:

(i) What type of cutter block is allowed for an overhand wood planing machine, which is not mechanically fed?
Ans: DMR 5(1) The cutterblock must be cylindrical. A square cutterblock could knock the workpiece back to the operator.

(ii) Name the guard prescribed for an overhand planing machine and briefly describe its requirements.
Ans: DMR 5(2) A bridge guard covering the full length and width of the slot and adjustable vertically and horizontally.

(iii) When planing flat pieces of wood on an overhand planing machine which is not mechanically fed, what is the minimum length allowed?
Ans: DMR 5(3): 300 mm UNLESS a safe holder is used.

(iv) What precautions are prescribed by the regulations to keep dangerous moving parts of mixing and agitating machines beyond the reach of persons?
Ans: DMR 11(1) Doors, covers, guards or other means to be provided.

(v) What are the requirements in respect of the doors or covers of mixing and agitating machines which are not bolted down to prevent exposure to dangerous moving parts?
Ans: DMR 11(2) If the doors, covers, guards or other means are opened, unlocked or removed the machine must come to a stop. These guards must be electrically and/or mechanically interlocked with the moving parts. The inertia of moving parts must be taken into account when designing guards.

(vi) What are the regulation requirements before a user may permit the use of refrigeration and air-conditioning plants?
Ans: DMR 15: SABS Code of Practice 0147 to be complied with.

(vii) What are the regulation requirements in respect of the muzzle and firing mechanism of an explosive powered tool which is not fitted with an intermediate piston to transmit energy?
Ans: DMR 20(1) The muzzle must be protected by a guard to confine flying fragments or particles. The firing mechanism must be designed so that the tool must be held against the surface with a force at least twice its weight at an angle not more than 15 degrees from a right angle.

(viii) Name the FOUR optional methods of guarding mentioned in the regulations to protect against the danger of rotating rolls of a power-operated machine and briefly state the operational requirements. Ignore the exclusions.
Ans: DMR 12: Rolls which are less than 75 mm apart and rotating in opposite directions must be guarded to their full length at the in-running nip by means of: a fixed guard or a trip bar or a cable or an electronic sensing device not more than 300 mm from the nip which will stop or reverse the rolls when touched or the area invaded.

Do you remember

some of our early committee members? Here is a look back at activities of the “Western Cape Branch” in 1975

The Branch Committee for the year 1975 consists of messrs W C Weckesser (Chairman), M Jaffe (Vice Chairman), A Marent (Hon, Sec/Treasurer), J E Stade (Programmes Officer) and Committee Members J Horne, W Neumann and R Q Wakfer (ex officio). Mr B Haynes might be called a “co-opted consultant” to the Committee.

The Chairman of the branch attended the AGM of the Institution in Johannesburg on the 20th February and appreciated the opportunity to make personal contact with the office bearers and members of the Council.

The first meeting of the new Committee took place on 4th March, when, in addition to routine matters, considerable time was devoted to discussion of the item relating to the Federation of Societies of Professional Engineers in the Annual Report of the Institution; the Committee strongly disapproved of the proposal being investigated by sub-committee of FSPE to obtain complete exemptions from the Certificate of Competency examination through Technician examinations.

The General Meeting of the Branch held on the same evening and attended by 28 persons was a great success. The main business of the evening was a talk and demonstrations of “The Calculator and its application in Engineering” given by Mr Zahnd (ex Switzerland), assisted by Mr R Dekker, of Hewlett-Packard.

Mr Zahnd traced the history of calculators from the earliest times to the present day and outlined the operating principles and features of modern pocket calculators. Examples of these were on display, including programmable pocket calculators for specialised purposes. The method of operation was described using block diagrams supplemented by demonstrations. Following a short break to allow the speaker to catch his breath, a desk top Data Processor with Alphanumeric display was explained and a demonstration programme fed into the machine. The performance of the machine was fascinating, particularly the manner in which any error in programming or calculation would be picked up by the machine and the operator warned. The demonstration was so absorbing that taking of tea was twice postponed.

The lecture ended with a programmed cassette describing first a nude and then a locomotive on the graphical plotter. This demonstration was very well received. The meeting was then reluctantly and formally closed, but informal discussions carried on until a late hour.

Occupational Health & Safety Act (no 83 of 1993)

Issue no 30 Environmental Regulations for Workplaces (ERW)

ERW 8 Precautions against flooding

Employers must ensure that their staff are aware of risk of flooding and that they will advise him of imminent danger. Where a dam or similar water storage device is to be constructed persons living in the vicinity must be advised of the possible danger of flooding. Burst dams have swept away properties and caused fearful loss of life.

EWR 9 Fire Precautions and means of egress

- Escape doors to open outwards
- Exits to be kept clear and to be easily and quickly opened from the inside. How often these exits are blocked, padlocked or never been checked for ready functioning.
- Staircases and steps to be provided with handrails
- Staircases to be made of non-combustible material, to be kept clear, and to terminate in a open area
- Exit passages to be wide enough and easily graded for convenient escape
- For the size and complexity of a situation two exits may be required. These must be separated as far apart as practicable.

COMMENT:

A case was reported in recent times of employees locked into a factory presumably for security reasons, but when a fire occurred they could not get out and eleven persons died. This would have been a case of culpable homicide as well as contravention of the OH&S Act. Negligence could probably also have been proved which could lead to claims for increased compensation.

Employees need to be aware of their rights when it comes to personal safety.

Continued from page 1

It is a relief to know that most of the passenger carrying installations have been installed by well-known and reputable firms who also maintain the equipment. It is hoped that the registered inspectors are well qualified and experienced because the safety of the public who use these installations is very much in their hands. But oh, to have a government body with legal bite and independent of commercial considerations to administer the safety regulations without fear or favour so that the user will operate with care and caution.

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Design your future!

Responsible for the ongoing stimulation of design excellence coupled with an entrepreneurial spirit, the SABS Design Institute will once again host the Design Achievers Awards. The Design Achievers Awards involves all design disciplines, and students and lecturers from all tertiary design schools in South Africa are invited to nominate a final year student for this prestigious initiative.

Adrienne Viljoen, manager of the SABS Design Institute, says that the Design Achievers Awards has, from the outset in 1987, set itself aside from other design award schemes by emphasising entrepreneurship and leadership among design students. This design initiative has had a major impact on the local tertiary design institutions and last year saw a total of 16 nominations being received. The 2002 event has been opened for participation of students from other African countries.

Adjudication of the final nominees will culminate on Youth Day in mid June 2002, and during this programme nominees will visit leading design and technology facilities and participate in presentations and forums addressing topical issues. The 2002 Design Achievers Award winner will attend an international design workshop.

The closing date for nominees is May 17, 2002, and entry forms are available directly from the SABS Design Institute by calling (012) 428 6326.

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