WCB ENGINEERING BULLETIN

The Institution of Certificated
Mechanical and Electrical Engineers
Western Cape Branch (WCB)
P.O. Box 504, Rondebosch 7700

December 2002
Vol. 8 no. 6

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 Western Province Technical College through its branches at Pinelands and Thornton and centres throughout the Western Cape offers the subjects required for the Engineers' Certificate of Competency (Factories and Mines). This issue provides some information but details can be obtained from the Pinelands branch of the College. Our local branch of ICMEE is proud to remind you that two of our members are engaged in lecturing the two final subjects that are written after acceptance as a candidate for the Ticket. They are:

Adrian Wyntje - Occupational Health & Safety Act No 85 of 1993 and
Jorge Pereira - Plant Engineering
both at the Pinelands college.

Also in this issue is information for persons who would like to obtain a recognised qualification in Air Conditioning and Refrigeration. More detailed information can be obtained on request.

ICMEE Council is considering putting out a quarterly news sheet for all members. It is hoped that this idea will be pursued with energy and will be of an enduring nature.

THE EDITOR WISHES HIS (AVID) READERS A BLESSED CHRISTMAS WHICH CAN ONLY ENRICH AND A NEW YEAR WHERE GOOD PUTS BAD TO SHAME.

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Local Branch News

Hello once again everybody.

On 17 October a rather disappointing number of members enjoyed a most interesting visit to the two campuses of the W P Technical College. It was certainly of interest how the training of our future artisans has changed and what the College is doing to continue with training.

On 23 October the Technical College held their annual prize giving for their achievers. We awarded our prize to the most promising student taking GCC related subjects and likely to study further.

This year the award went to Mr. Keith Hair. The College also handed out a certificate to those candidates who attended Plant Engineering and Law classes and who obtain their Government Certificates.

One of our members, Enrico Anelli, who obtained his GCC in 2001, was awarded the Principals Trophy. This was a great achievement Enrico, well done!

We held our annual dinner dance at the River Club on 25 October. It was a well attended event and most enjoyed by all!

Finally, your committee and I would like to take this opportunity to wish every one of our members and friends a Merry Christmas and a Prosperous New Year!

Best regards to you all!

Chris Schnehage

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ADRIAN'S COLUMN

Simple solutions

Often considered the most effective ones. Take switch boxes as an example. Seldom are these found to prevent the ingress of dust or moisture which affects the inside parts. Continuous tripping of switches as a result of flashover across contactors caused by fine dust in a large feedmill was easily solved by connecting all 8 boxes to the supply of air from a common line connected to a blower fan.

The small over-pressure in the boxes did prevent dust to enter and the flash-overs were effectively stopped. A similar solution was found in a dye house where the high humidity caused the sensitive electronics to shut down the process cycle just too often.

A similar recommendation was made. A fan was fitted in a hole in the wall and air was taken from an area where the air was invariably warm and dry. No more unscheduled shut-downs.

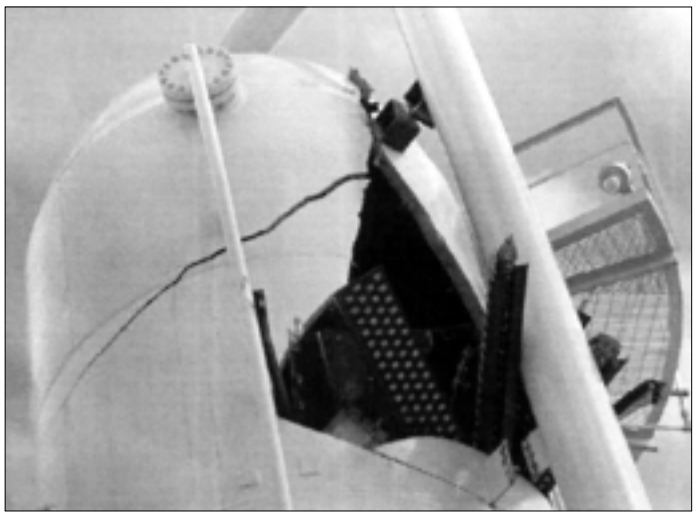
Pressure vessel failure during test

Water temperature appears to be critical when performing a hydraulic pressure test.

The vessel shown in the picture fractured as result of the temperature of the water used, and consequently the temperature of the metal, being too low.

ASME VIII Code, Div 1, recommends that:
'the metal temperature during hydrostatic or pneumatic test to be maintained at least 16 degrees C above the *minimum design metal temperature* but need not exceed that temperature by 50 degrees C'. The National Board Inspection Code requires the metal temperature to be in *accordance with the original code of construction*, but not less than 15 degrees C, in the absence of information permitting a lower test temperature.

It would be unwise for any person not possessing all relevant information pertaining to the above codes to perform tests on vessels under these specific cold conditions without the assistance of an AIA, as required by the Code of Ethics and signed by all registered persons.



You and the OHS Act

What action should an employer take when his newly appointed competent person reports to him that no records could be found of 50 pressure vessels and 2 boilers. The recently resigned competent person, who was responsible for these records denies any knowledge about the disappearance. Does the Act make provision for legal recourse or should it simply be treated as a case of theft and reported to the Police? Consider also the legal and cost implications for the employer if an inspector would require the employer to comply with the Act within 60 days!

Cricket and 'The Ashes'

CT (Charlie) Studd, English cricketer and missionary, was involved in the story behind the way in which the rivalry in cricket between England and Australia caused 'the ashes' to be transferred from one country to the other.

The three Studd brothers – Kynaston, George and Charlie – were enthusiastic cricketers. They played cricket for their school Eton and for Cambridge University.

In 1882 the Australians were in England for their third visit and England had never been beaten. The Australians had a very strong team and were doing well in their matches. They asked to play Cambridge and the match was arranged with CT Studd who was captain. With the three brothers playing the Australians were beaten by six wickets. But later in that season for the first time Australia beat England by 8 runs in spite of the three Studds.

A few days after the match the Sporting Times published an epitaph:

In affectionate remembrance
of
English Cricket,
Which died at the Oval on
29th August, 1882,
Deeply lamented by a large circle of
Sorrowing friends and
Acquaintances.
R.I.P.
N.B. - The body will be cremated and
the ashes taken to Australia.

That same year CT was invited to tour Australia with the English team. England won two of the three Tests. After the third match some Melbourne ladies put some Ashes in a silver urn and gave it the team leader Ivo Bligh. The urn had the inscription:

When Ivo goes back with the Urn, the Urn
Studds, Steel, Read and Tylecote return, return!
The welkin will ring loud,
The great crowd will feel proud
Seeing Barlow and Bates with the Urn, the Urn,
And the rest coming home with the Urn.

This was the origin of the historic Ashes.

Information taken from C.T. Studd Cricketer and Pioneer by Norman P Grubb. First published 1933.

Launch of Technician Registration will Set New Standard

The poor standard of technical skills in our industry is well known. Owners of air conditioning and refrigeration plant constantly complain about excessive charges for maintenance and repair work and the fact that even these high charges do not produce quality and reliability.

Suppliers of refrigeration equipment are concerned about selling sophisticated equipment to installers whose lack of expertise may result in abuse, leaving them exposed to the risk of having to honour warranty claims on equipment rendered defective through no fault of the supplier or the manufacturer.

Shortage of Skills

The entire national training programme for our industry has been restructured. New national qualifications have been registered on the NQF (National Qualifications Framework) and forms part of the government's skills development strategy. The new outcome based training is aimed at providing more people with marketable skills and to improve the level of expertise of the South African work force.

To place all hands-on personnel on a basic equal footing of competency, ACRICSA has developed a minimum set of qualifying requirements based on the British City & Guilds Code 2078, tailored to South African conditions.

The ACRICSA test of competency requires that the candidate be assessed as competent in the safe handling of refrigerants. The assessment for ACRICSA certification has two parts. Assessment A is of a theoretical nature and B a practical test.

Items to be Assessed

Assessment A has four specific requirements:
- A basic academic equivalent of ABET Level 4 or school grade 9 (standard 7)
- A basic knowledge of commonly used refrigerants and their identification
- An understanding of the safety practices and legislation in handling of refrigerants
- An understanding of cooling systems, their refrigerants and lubricants

Assessment B requires that the candidate demonstrate six specific skills:
- Transfer of refrigerants to service containers
- Recover refrigerant from a system.
- Leak test a system
- Evacuate a system
- Charge a system
- Handle recovered refrigerants and oils

Requirements

To be assessed, the candidate will need to make an appointment for such with the centre of his or her choice. In preparation, the candidate will need to take along:

(1) ID document.

(2) Two recent colour passport type photographs of self.

(3) An amount of R228.00 (if payment by cheque, this should be in favour of ACRICSA).

(4) Fee for assessment, payable to the centre. The fee should be confirmed with the assessing centre at the time of making the appointment.

(5) Refrigerant recovery unit, if available. By taking along ones own recovery unit, the candidate will be very familiar with its working. If the candidate does not have a recovery unit to take along, the centre will provide such and a brief instruction given as to its working, if unfamiliar to the candidate.

Preparation

An additional fee will be charged by the training centre for the course in the safe handling of refrigerants and such fees will vary from centre to centre. Generally, all courses will follow the ACRICSA handbook "Safe Handling of Refrigerants" and will cover more detail than that needed for the assessment.

Certification will be valid for a period of three years, current advances in technology, refrigerants and applications demand that a technician should demonstrate his understanding of new developments by being subjected to a re-assessment of competency after three years.

Footnote:
Assessment A, covers all refrigerants, including ammonia and hydro carbons.

Assessment B, excludes ammonia and one specific for ammonia, will be introduced in the near future.

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Joke . . .

Tit for Tat

When my three-year-old son opened the birthday gift from his grandmother he discovered a water pistol. He squealed with delight and headed for the nearest sink. I was not so pleased. I turned to Mom and said, "I'm surprised at you. Don't you remember how we used to drive you crazy with water guns?"

Mom smiled and then replied, "I remember".

Readers' Digest June 1991:'Life's like that'

A bi-monthly column on Project Management

Caesar Alexandre

PART 3 : Where problems come from

- Most of the existing problems emanate from inappropriate, structures and cultures within the organisations and the operating environment.
- Lack of accountability and responsibility throughout the project cycle, deriving in part from inadequate role definition and hence ambiguity and mismatches between responsibility and authority.
- Slow process of project execution, a greater focus on inputs then outputs and remote links between staff and projects.
- Inability to innovate in key project areas (for example, design specification and procurement option).
- Inefficient lines of communication with intensely centralised decision-making structures and a high incidence of decision referral, leading to imbalances in work loading and deferral of responsibility.
- Inadequate quality assurance management and insufficient post-occupancy project appraisal.
- An inappropriate departmental structure and management approach, which empowers administrative staff to determine project briefs, thus denying professional development and client satisfaction, and inappropriate use of administrative staff to make expert decisions.
- Inappropriate location of staff relative to each other and to projects, resulting in a poor climate for learning, inadequate identification with projects, and a lack of integration of professional functions.
- Inability to attract and retain staff due to non-competitive reward system and poor performance / reward linkages.
- Lack of client financial control and on-going fiscal responsibility for the assets acquired or built.
- Cost overruns only reported retrospectively (typically at the time of the project final account), making it impossible to take corrective action at the appropriate time.
- Inadequate dispute resolution.
- Organisations structured in accordance with functional principles, defined by disciplines of architecture, engineering, quantity surveying, and so on. It fails to provide single point responsibility and to develop the total project vision.
- Lack of a common developmental vision and resistance to change.
- Inadequate reporting lines, and absence of a formal Project Charter/Mandate.

Success in Project Management is like a three-legged stool. The first leg is the Project Manager, the second leg is the Line Manager, and the third leg is Senior Management. Remove one of the legs and the stool will topple down. Therefore it is critical that Senior and Line Managers understand and support Project Management, as building blocks in the Strategic Management of organisations. If there are cracks in this foundation, every project effort will fail. Without a sponsor there should be no project. The project structure's key success variables turn out to be "outward focus", "autonomy/accountability" and "dependence".

It must be "focused on the customer", "unmistakably accountable", and "each member depends upon the other" for personal and overall success.

That's no Committee!

Successful project teams are characterised by a clear goal – though the path from here to there is not specified, to induce creativity.

Most projects aimed at improving quality of life in developing nations are designed around the requirements of a granting agency, not around the actual requirements of the population it served.

In project management terms, this would be like asking the bank to draw-up the specifications for a road, or the accounting department to specify the requirements for building a hospital.

To paraphrase Samuel Johnson's famous quip, when such a project design process pretends to yield a success, it's like seeing a dog, walking upright on two legs – its not so much that it's well done, but that you are surprised to see it done at all.

Projects have been designed backwards, supply — driven ... you have a project and you persuade a beneficiary to accept it.

The introduction of demand-driven client centered project design has been a puzzle for most development agencies but they must understand that it's not useful to bring in foreign project managers to do these projects because the benefits have to be sustainable beyond the end of the project: it has to be maintained by the local communities and social groups.

So the project methodology has to be put in the hands of the beneficiaries, and for this it is crucial to train the borrowers.

We should not make decisions because they are easy; we should not make them because they are cheap; we should not make them because they are popular, we should make them because they are right. That is Project Management.

Most development projects are in chaos.
We can no longer imitate the three monkeys: Hear no failures; See no failures; Speak no failures.

Continued in the next issue of Engineering Bulletin