



Safety Lines



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Boiler Fires

Engineering Safety has been advised that wood waste-fired boilers have recently been involved in major plant fires. In some instances, several fires have occurred in the same plant over a two- to three-year period.

This is potentially a serious problem for boilers and, in particular, unattended or limited attendance boilers that do not have effective fire protection systems. A fire in these plants could be well established before it is detected and firefighting initiated.

A surveyor familiar with wood waste firing has identified three main problem areas. These are:

- Gravity-fed wood waste boilers. In these units wood waste has a tendency to hang up in feed chutes. The furnace fire may then burn back up the infeed system and set fire to waste in the feed hopper.

He believes a major contributing factor to hang ups is wood waste that has not been properly hogged (broken down to manageable size) catching in the feed control gates or other projections in the waste feed system. He also notes that in other instances fires have occurred, even though waste has been well hogged, when a boiler has been on low fire and the furnace fire has burned back to the feed hopper.



Aftermath of a boilerhouse fire

- Pneumatically-fed wood waste boilers. The problem observed with these systems is that leaks can occur in the pneumatic feed ducts near hot parts of a boiler. Fine waste particles will escape, build up and catch fire.
- Hydraulic systems on wood waste boilers. Oil leaking from hydraulic systems can accumulate on hot parts of a boiler and catch fire.

In addition to taking all practicable steps to eliminate the cause of these fires, controllers must ensure that effective fire protection systems are provided for their

boilers. The surveyor commenting on these fires has noted that some fire protection systems on boilers involved in fire incidents have been inadequate while in other instances apparently satisfactory installations have failed to activate.

Fire protection specialists contacted by Engineering Safety have recommended sprinkler systems as the primary firefighting system for wood waste-fired boilers. They advise that for a typical wood waste unit these will be a combination of:

- Proprietary systems, designed and installed by the manufacturer, for protecting the waste hopper and feed systems, and
- Conventional sprinkler systems protecting the boiler ancillary equipment. These systems being designed in accordance with internationally recognised Standards such as those of NFPA or Factory Mutual and installed by a specialist contractor.

Depending on a particular boiler's requirements, these systems may be conventional sprinklers with each head individually activated by fusible bulb, or sprinklers used in conjunction with heat detectors and deluge valves. When activated these latter systems set off all sprinkler nozzles connected to an associated deluge valve. Another measure recommended by both firefighting specialists and boiler manufacturers, is the installation of heat detection/temperature monitoring devices in the wood waste infeed system to the boiler.

The surveyor commenting on these fires has also observed that while a boiler house fire will not necessarily cause major structural damage to a boiler, the unit may nevertheless be out of service for a lengthy period because of damage to its control systems. In particular, microprocessor systems appear very susceptible to damage from the smoke and fumes produced by a fire.

He notes that the effects of boilerhouse fires could, in some instances, be greatly mitigated by locating control processors in a building separate from the boiler house.

Engineering Safety recommends that:

- Wood waste systems are inspected, serviced and maintained in accordance with the manufacturer's recommendations.
- Fire protection systems are designed by competent persons.
- Fire protection systems are regularly serviced, inspected and tested by competent persons.
- Consideration be given to passive fire protection measures such as isolation of the control processors from the boiler/waste handling areas.

*Engineering Safety acknowledges the assistance given by M&I Safety Inspection Services Ltd., Rotorua with the preparation of this article. **Ed***

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The following is a preliminary announcement about ICPVT-10 provided by the conference organisers. Further notices will be published as they become available. Ed.

Tenth International Conference On Pressure Vessel Technology

The Tenth International Conference on Pressure Vessel Technology ICPVT-10 will be held from July 7-10, 2003, in Vienna, Austria.

The local organising committee is supported by international experience and technical guidance from the Americas Regional Committee, the Asian and Oceanic Regional Committee and the European African Regional Committee.

Language: Presentations and conference proceedings will be in English.

ICPVT-10 provides an international forum to update knowledge of pressure vessel technology. The main purpose is to bring together engineers, scientists, and others interested in:

- Design, manufacture, testing and operation;
- The advancement of codes and standards; and
- The exchange of research results, experience and technical information,

for pressure equipment, including boilers, vessels, piping, pipelines and gas cylinders.

Venue: Vienna University of Technology, within walking distance of the centre of Vienna. A technical exhibition and social programme are part of the conference.

Preliminary Key Dates:

Submission of synopsis 1.5.2002
Draft papers for review 1.11.2002
Receipt of final text 1.3.2003

Plan ahead: To make sure you receive further information, please contact:

Mail: Institute for Pressure Vessel & Plant Technology,
Gusshausstr. 30/329,
A-1040 Vienna,
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New AS/NZS ISO 9001:2000 Standard

Engineering Safety has had enquiries about the timing of the introduction of the revised standard AS/NZS ISO 9001: 2000 *Quality Management Systems - Requirements* to boiler operation and in-service inspection and manufacture of pressure equipment.

In Australia and New Zealand, AS/NZS ISO 9001, AS/NZS ISO 9002 and AS/NZS ISO 9003 have been superseded but will remain available until December 2003, to assist organisations in making the transition to AS/NZS ISO 9001: 2000.

Accordingly, Engineering Safety has adopted the following policy for organisations applying these management systems to plant covered by the PECPR Regulations.

- An existing Quality Management System (QMS) based on the 1994 series may be used until the end of the year 2003.
- Any new QMS approved during the year 2001 may be based on either the 1994 series or the 2000 series.
- After the year 2001, every new QMS approved must be based on the 2000 series.
- After the year 2003, every QMS must be based on the 2000 series.

These guidelines are consistent with the transition arrangements noted in AS/NZS 9001: 2000.

Controllers have also queried whether the revised standard requires a management system to cover the whole of an organisation's business. This being of particular interest to those who apply certified management systems to only part of their business, e.g. The operation of unattended or limited attendance boilers.

Engineering Safety has checked with a certification body and been advised that under ISO 9001:2000, certification can still be limited to part of a business by applying clauses *1.2 Application* and *4.2.2 Quality Manual*. The certification body also advised that where certification is limited in this way an explanatory statement should be entered in the organisation's quality manual. e.g. The Quality System is designed for the boiler system in compliance with the *Approved Code of Practice for the Design, Operation, Maintenance and Servicing of Boilers*.

Engineering Safety recommends that controllers and others with an interest in this matter contact their certification body for further advice.

The following article was supplied by the Certification Board for Inspection Personnel. Ed.

Testing the Pressure

With the deregulation of statutory inspection of boilers and pressure vessels by Marine Division of the Ministry of Transport, and the review of the Boiler Lifts and Cranes Act, came a new Pressure Equipment, Cranes and Passenger Ropeways Regulation (PECPR).

The Certification Board for Inspection Personnel (CBIP) is New Zealand's recognised certificate issuing agency for inspection personnel under this regulation. Peter Hayward, Technical Manager of CBIP, introduces the certification scheme and describes recent developments.

CBIP was created at the request of industry in 1983 to meet industry's needs for competent non-destructive testing personnel to carry out inspections on high profile projects initiated as part of New Zealand's 'Think Big' strategy.

Today CBIP offers personnel certification in many inspection disciplines such as non-destructive testing, limited and specific inspection, coating inspection, welding inspection, lift inspection, crane inspection, passenger ropeway inspection and pressure equipment inspection.

One of the board's responsibilities is to appoint examination panels. One of these is the Boiler and Pressure Vessel Examination Panel, which is responsible to the board for the examination of personnel who inspect pressure equipment.

In the early 1990s, CBIP introduced a single level of certification under a grandfather clause for pressure equipment inspectors following the deregulation of statutory inspections by the Marine Division. The practising surveyors who worked for the Marine Division were granted certification under this clause. This was later revised into 3 levels of certification using a qualification and examination route.

In 1999 it was recognised that the system was aimed at qualifying inspectors to work on all types of pressure equipment including complex petrochemical and process vessels and large pulp and paper and power station boilers. In practice very few inspectors interfaced with such equipment. It was therefore decided to focus a qualification on the majority of the work undertaken by inspectors i.e. the Pressure Equipment Inspector (PEI). For those inspectors who were required to work on large process,

petrochemical or powerplant a second qualification was introduced, the Senior Pressure Equipment Inspector (SPEI), intended to specifically focus on the areas they would meet in their day-to-day work.

It was considered that over 85% of the inspection work in New Zealand would be met by people with the skills provided by the PEI qualification and that those holding SPEI qualifications would meet the remaining industry needs.

During the drafting of the new Standard of Proficiency, considerable difficulty was experienced in defining the interface between the two qualifications. It was also recognised that this would have to be defined over time. Therefore as an interim measure, it was decided to separate the two qualifications by material type, thickness and operating criteria.

In order to meet the CBIP entry requirements to progress towards qualification new candidates have to meet the criteria laid down in the Standard of Proficiency.

For the PEI certification, the candidate needs to qualify for 6 credit points based on his or her experience and qualifications. In addition, the candidate must pass four examination modules and an oral interview covering the range of knowledge expected of a PEI.

Those inspectors wishing to work in large process, petrochemical or power plant can progress towards the SPEI qualification. Two years experience at PEI level is required and a pass in two additional modules and a further oral interview. The modules relate specifically to the above plant.

It was the objective of the new Standard of Proficiency that all inspectors holding existing certification would be evaluated based on the scope and categories of work in which they had been involved during the last five years. As a result of the work patterns and requirements, the bulk of the currently certified inspectors would satisfy the PEI requirements of the new standard and those with more extended range, SPEI.

Should you be interested in obtaining the CBIP Standard of Proficiency or any further information covering the PEI and SPEI certification or any other certifications please contact:

Peter Hayward
Technical Manager
Certification Board for Inspection Personnel
Ph: (09) 262 2885 Fax: (09) 262 2856
Email: cbip@hera.org.nz

Certification of Previously Exempt Equipment

Engineering Safety has had enquiries about certification of pressure equipment that did not previously require certification under the Boiler, Lifts and Cranes Act but which now comes within the scope of the PECPR Regulations.

In particular, there is concern that such equipment needs to be retrospectively design verified and tested in accordance with the requirements of a recognised standard.

It is not the intention of the Regulations that this level of conformity assessment be performed. However, what the Regulations do require is that, where appropriate, such equipment should be periodically inspected and issued with a certificate of inspection.

Engineering Safety recommends that the following guidelines be followed when arranging certification of the above equipment. (These guidelines apply only to equipment which existed at the time the Regulations came into effect.)

1. First, check AS/NZS 3788 - Table 4.1, to determine whether the equipment requires inspection by an inspection body (and hence certification under the PECPR Regulations). Much of the equipment that was previously exempt will be relatively low hazard level, viz. Hazard level D or E and will not require inspection. Also, other equipment containing “non-harmful” or “harmful” fluids, which satisfies the pressure/temperature relationships given in Table 4.1, will not require certification.

2. Where Table 4.1 requires inspection then the equipment may be issued with a certificate of inspection provided:

- (a) The inspector is satisfied that the equipment has been manufactured to an appropriate standard.

For hazard level C this may be covered by an assessment by the inspector and any testing the inspector considers necessary.

For hazard level B equipment this may be covered by a manufacturer’s statement certifying compliance with an appropriate standard and any testing the inspector considers necessary. Alternatively, where a manufacturer’s certificate is not available

then the inspection body must be satisfied by other means that the equipment has been designed and manufactured to an appropriate standard.

- (b) An in-service inspection has been performed in general accordance with AS/NZS 3788.
 - (c) The inspector recommends the issue of a certificate of inspection.

An appropriate standard for the above equipment would be:

1. A standard that is currently recognised.
2. A standard that was acceptable at the time the equipment was manufactured. e.g. *New Zealand Boiler Code* and *Fusion Welded Pressure Vessel Code*.
3. A proprietary standard of design and manufacture that the inspection body is satisfied ensures the safety of the equipment concerned.

New Inspection Bodies

Engineering Safety is pleased to advise readers that the following overseas inspection bodies have been recognised by the Secretary, Department of Labour.

They are:

Factory Mutual Insurance Company
1301 Atwood Avenue
Johnston, RI 02919
United States
Telephone: (401) 275 3000
Fax: (401) 944 7269
Email: arthur.spencer@fmglobal.com
Contact: Arthur J. Spencer, Manager - ASME Codes and Standards

And a Factory Mutual subsidiary inspection body based in Germany:

FM-TUV-BV Technische Inspektions GmbH
Steubenstrasse 53
D-45138 Essen
Germany
Telephone: 49 201 8 900 900 Fax: 49 201 28 88 13
Email: michael@fmtuevbv.de
Contact: Horst Michael - Managing Director

A list of recognised inspection bodies can be obtained by contacting Engineering Safety.

Approved Code of Practice for Cranes

The *Approved Code of Practice for Cranes* is now available from OSH. The cost is \$25.00 (incl. GST) plus postage and packaging; it can be purchased by contacting:

Julie Watterson
Marketing and Communications Unit
OSH, Dept of Labour
4th floor, Unisys House
56-62 The Terrace
PO Box 3705
Wellington
Phone: (04) 915 4317
Fax: (04) 915 4640
Email: julie.watterson@osh.dol.govt.nz

The Power Crane Association also has copies available for its members. These are available from:

Ian Grooby
Power Crane Association of New Zealand (Inc.)
2nd Floor
15 Daly Street
PO Box 30 074
Lower Hutt
Phone: (04) 569 9799
Fax: (04) 569 6969
pca@xtra.co.nz

OSH Approved Codes of Practice Available on the Internet

Readers are advised that OSH approved codes of practice are available on the OSH internet site.

www.osh.dol.govt.nz

They may be downloaded free of charge using Adobe Acrobat Reader. Hard copies of the codes are also available from OSH at a cost, depending on the code, of between \$10.00 to \$25.00 (incl. GST) plus postage and packaging.

Update On Other "Lifting" Approved Codes of Practice

The draft *Approved Code of Practice for Loadlifting Rigging* is expected to be available for public comment by the end of March. Submissions on this draft are required by 30th April 2001.

The draft *Approved Code of Practice for Handling, Transportation and Erection of Pre-Cast Concrete Panels* is in preparation. This should be available for public comment in about one month.

Readers wishing to get more information on these draft codes should contact:

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