



Energy Technical and Safety Regulation

Discussion Paper – Harmonisation of Energy Supply Industry Technical and Safety Regulation

Submission by Standards Australia

April 2009

Introduction

Standards Australia (SA) understands the importance of putting in place best practice regulation to ensure public and workers safety. SA also recognises the necessity to facilitate a common Energy Network Safety System (ENSS) standard for network operators.

SA has worked in collaboration with the energy sector (oil, gas and electrical) for a considerable period of time and we would like to bring our expertise in managing processes such as this to the attention of the Energy Technical and Safety Leaders Group (Leaders Group).

SA is aware that there is a need to harmonise state and territory electricity and gas supply industry technical and safety regulation and we are currently working on a range of initiatives and standards to ensure Australia remains competitive and sets best practice guidelines in this field. This is in accordance with the signing of an Intergovernmental Agreement for Regulatory and Operational Reform in Occupational Health and Safety, on 3 July 2008 as prescribed by the Council of Australian Governments (COAG).

Some of the advantages of partnering with SA include alignment with existing gas transmission and distribution with SA. We have an existing infrastructure namely SA Committees. We also have a well established reputation and acceptance of Australian standards along with an already accredited system and processes of standards development.

Standards Australia and Australian Standards™

The Federal Government recognises Standards Australia as the nation's peak non-government standards development organisation. Standards Australia prepares voluntary, technical and commercial standards for use in Australia and accredits other Australian Standards Development Organisations (via the Accreditation Board for Standards Development Organisations (ABSDO), a separate entity within Standards Australia). It meets national needs for contemporary, internationally aligned standards and related services that enhance Australia's economic efficiency and international competitiveness.

To ensure this, a Memorandum of Understanding has existed between Standards Australia and the Commonwealth Government since 1988. Among the principal accords,



are that no Australian Standard will contravene the World Trade Organisation's requirements that national standards should not be used as non-tariff barriers to free trade; and agreement that no new Australian Standard will be developed where an acceptable international standard already exists.

Standards Australia is also Australia's member of the International Organization for Standardization (ISO), the International Electrotechnical Commission (IEC) and the International Council of Societies of Industrial Design (ICSID), providing a direct link to international best practice and creating further standards development efficiencies.

Australian Standards™ are developed by Standards Australia via voluntary participation from industry, government and other interested parties via technical committees. They are living documents that reflect progress in science and technology and encourage innovation.

They are voluntary documents (mechanisms for self-regulation) with which compliance is not mandatory unless the standard is incorporated into law (quasi-regulation or co-regulation) or called up in contractual arrangements. The decision on whether a standard will be given regulatory effect is usually made at the commencement of the standards development process and this may be due to regulatory arrangements managed by various Commonwealth, State and Territory government bodies.

Standards are developed according to due process which provides them with their authority and widespread acceptance, and that due process is centred on two main pillars:

- *Consensus*: meaning general agreement, characterised by the absence of sustained opposition to substantial issues by any important part of the concerned interests, arrived at by a process that takes into account the views of all parties concerned while reconciling any conflicting arguments
- *Transparency*: meaning that notification and all information on current work programs and proposals is available to all interested parties. Transparency also includes the concepts of openness, participation on a non-discriminatory basis and impartiality.

Standards Australia has well-established links into all areas of Australian business, professions, academia and the community with more than 9,000 experts drawn from over 1,000 nominating organisations. It has developed standards across most sectors of the Australian economy, in traditional industries such as goods and services, engineering and construction; in other technical areas such as health and food; in emerging new areas of technology such as e-health; as well as in less technologically based subjects such as complaints handling and risk management.

Standards Australia: Our business model

Standards Australia has undertaken a significant business transformation in order to ensure that its activities and those of its technical experts on standards committees can sustainably continue well into the future to serve the Australian community at large.

With effect from October 2008, Standards Australia implemented its New Business Model. The central concepts to the new model are Net Benefit and choice of alternative pathways. Net Benefit can be summarised as 'having a positive effect on relevant communities'. Quite simply, all projects now developed under the Standards Australia banner must deliver demonstrable Net Benefit to the Australian community.

All project proposals are assessed by the same criteria. Delivery of standards and related consensus documentation into the marketplace can be fast-tracked by adopting one of the five 'Alternative Pathways' now available to stakeholders.

It is the opinion of Standards Australia, based on the potential work program of the Leaders Group and implication on its resources, that the effective option would be the 'collaborative pathway'.

This pathway is a customised solution which will provide flexibility and choice, acknowledging that stakeholders will be in a position contribute the resources required to develop standards expeditiously.

The model ensures that the limited resources of both stakeholders and Standards Australia are utilised to the very best effect. This is consistent with our status as the peak standards body and the Memorandum of Understanding that we hold with the Commonwealth.

Standards Australia's current collaborative relationships

Examples of Standards Australia's current collaborative relationships include:

- The Department of Health and Ageing (DoHA) – Health Informatics (IT14);
- Department of Environment, Water, Heritage and the Arts (DEWHA) – Energy efficiency standards; and
- The South Australian Government – Environmental Protection Authority (EPA) – Greywater treatment for river vessels.

International Policy

Standards Australia has a policy of adopting International Standards wherever possible. This policy is in line with Australia's obligations under the World Trade Organization's Code of Practice, which requires the elimination of technical Standards as barriers to international trade. As a result approximately 33% of current Australian Standards are fully or substantially aligned with International Standards.

The principal benefit to Australia of basing Australian Standards on the equivalent International Standards is the benefit to the Australian economy by facilitating the international exchange of goods and services. Other benefits include the following:

- International (IEC and ISO) Standards generally reflect the best experience of industry and regulators worldwide and cover conditions in a variety of countries.
- Australia's obligations under the WTO TBT Agreement are supported.
- Participation in international certification schemes is facilitated.

IEC (International Electrotechnical Commission)

The IEC is the world's leading organization that prepares and publishes International Standards for all electrical, electronic and related technologies — collectively known as 'electrotechnology'.

The IEC supports safety and performance of the environment, electrical energy efficiency and renewable energies.

The IEC also manages conformity assessment systems that certify that equipment, systems or components conform to its International Standards.

Standards Australia is currently a participant on 81 IEC committees and an observer on 75 committees.

ISO (International Organization for Standardization)

ISO (International Organization for Standardization) is the world's largest developer and publisher of International Standards.

ISO is a network of the national standards institutes of 157 countries, one member per country, with a Central Secretariat in Geneva, Switzerland, that coordinates the system.

ISO is a non-governmental organization that forms a bridge between the public and private sectors. On the one hand, many of its member institutes are part of the governmental structure of their countries, or are mandated by their government. On the other hand, other members have their roots uniquely in the private sector, having been set up by national partnerships of industry associations.

Australian Standards are voluntary (unless they are referenced in regulation) and they are intended to apply across the nation.

Standards Australia and the development of electrical standards

Standards Australia can facilitate the process of amalgamating the relevant gas and electrical standards in to one generic standard covering management systems.

Standards Australia is already in the process of developing safety related standards in various sectors of the electrical industry, the following committees are either in the process of or considering developing respective standards:

- EL-44: Working on low energy voltage
- EL- 42: Renewable energy
- EL- 52: and it's subcommittee - Electrical energy networks construction and operation
- EL10: Overhead lines
- EL- 01: Wiring rules
- EL- 15: Energy efficiency
- EL-54: Remote demand management

Standards Australia has existing expertise in this area and well capable of addressing current industry issues.

A generic or common set of network operator standards for gas and electricity will reduce overall cost to industry in terms of testing, training, compliance and maintenance.

Standards Australia and the development of gas standards

AS/NZS 2885 covers transmission pipelines i.e. pipelines for high pressures > 1050 kPa.

AS/NZS 4645 covers distribution pipelines i.e. lower pressures. This Standard was recently published and has 3 parts.

Part 1 contains the performance-based requirements for gas network management while

Parts 2 'Steel pipe systems' & 3 'Plastics pipe systems' contain the 'deemed to satisfy/comply' requirements pertaining specifically to steel pipe networks and plastics pipe networks. Their scopes are as follows:

Part 1 Scope

Except as provided in Appendix A, this Standard specifies requirements for safe management of a gas distribution network operating at less than or equal to 1050 kPa, throughout the life cycle of all elements of that network.

The requirements apply to the life cycle of new assets in new or existing networks, whereas the Sections on operations, maintenance, repair, decommissioning, gas quality and risk assessment may be suitable for application to existing assets in existing networks.

Gas distribution networks within the scope of this Standard comprise all facilities between the outlets of all city gates, supply points or equivalent, or for an LP Gas network, the point of entry to the gas distribution network, and the outlet of the consumer's meter assemblies, as detailed in Figure 1.1.

Additional requirements for steel gas distribution networks at MAOP greater than 1050 kPa under this Standard are identified in Appendix A. Appendix A is applicable in New Zealand and where explicitly adopted by legislation in Australia.

Part 2 Scope

This Standard specifies materials, design, construction, installation, testing and maintenance requirements for steel piping systems and shall be used in conjunction with AS/NZS 4645.1, for the distribution of fuel gas suitable for domestic, commercial or industrial uses, where:

(a) the pressure of the gas is not greater than 1050 kPa and the operating temperature range of the materials is from -30°C to 120°C ; operating pressures above 1050 kPa are covered by AS 2885; and

(b) where the hoop stress level is not greater than 20% of the Specified Minimum Yield Stress (SMYS) of the pipe used in that system.

NOTE: The relevant statutory authority may regard this standard as appropriate for other than fuel gas.

The requirements apply to the life cycle of new assets in new or existing systems, but the Sections on materials and components, welding, pressure testing and maintenance are suitable for application to existing assets in existing systems.

Part 3 Scope

This Standard specifies materials, design, construction, installation, testing and maintenance requirements for below ground plastics gas distribution networks and are used in conjunction with AS/NZS 4645.1, for the distribution of fuel gas suitable for domestic, commercial or industrial uses, where—

(a) plastics gas distribution networks include those constructed from materials including polyamide (PA), polyethylene (PE) and polyvinyl chloride (PVC-HI); and

(b) the maximum allowable operating pressure (MAOP) of the gas distribution network is not greater than 700 kPa except for plastics mains and services with a DN greater than 200 mm where the MAOP is limited to 600 kPa.

It should be noted that 1) the diameter and pressure limitations are to limit potential consequences from failure in those systems and 2) Although Standard is restricted to less than 700 kPa, sections of this Standard may be useful as guidance for plastics systems with an MAOP greater than 700 kPa. The relevant statutory authority may regard this Standard as appropriate for other than fuel gas.

Standards Australia oversees the management of the following committees:

- AG-001: Gas Appliances;
- AG- 006: Gas Installation;

- AG-008: Gas Distribution;
- AG-010: Natural Gas Quality Specifications;
- AG-11: Industrial and Commercial Gas-fired Appliances;
- AG-12: Gas Appliances – Quality of Servicing; and
- AG-13: Components used for Gas Appliances and Equipment.

Gas and Liquid Petroleum Standards

| Publication Title | Designation | Year |
|--|--------------------------|------|
| Pipelines—Gas and liquid petroleum - Design and construction | AS 2885.1-2007 AMDT 1 | 2009 |
| Pipelines - Gas and liquid petroleum - General requirements | AS 2885.0-2008 | 2008 |
| Pipelines - Gas and liquid petroleum - Design and construction | AS 2885.1-2007 | 2007 |
| Pipelines - Gas and liquid petroleum - Welding | AS 2885.2-2007 | 2007 |
| Pipelines - Gas and liquid petroleum - Offshore submarine pipeline systems | AS 2885.4-2003 | 2003 |
| Pipelines - Gas and liquid petroleum - Welding | AS 2885.2-2002 | 2002 |
| Pipelines - Gas and liquid petroleum - Design and construction | AS 2885.1-1997 AMDT 1 | 2001 |
| Pipelines - Gas and liquid petroleum - Operation and maintenance | AS 2885.3-2001 | 2001 |
| Pipelines - Gas and liquid petroleum - Welding | AS 2885.2-1995 AMDT 2 | 1999 |
| Guide to pipeline risk assessment in accordance with AS 2885.1 | HB 105-1998 | 1998 |
| Pipelines - Gas and liquid petroleum - Design and construction | AS 2885.1-1997 | 1997 |
| Pipelines - Gas and liquid petroleum - Operation and maintenance | AS 2885.3-1997 | 1997 |
| Pipelines - Gas and liquid petroleum - Welding | AS 2885.2-1995 AMDT 1 | 1996 |
| Pipelines - Gas and liquid petroleum - Welding | AS 2885.2-1995 | 1995 |

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|---|------------------------|------|
| Amendment 1 to AS 2885-1987 | AS 2885-1987 AMDT 1 | 1987 |
| Pipelines - Gas and liquid petroleum known as the SAA Pipeline Code | AS 2885-1987 | 1987 |

Occupational Health and Safety (OHS) Standards

| Publication Title | Designation | Year |
|---|--------------------------|-------------|
| National Guidelines for Contractor Occupational Health and Safety Management | ENA NENS 10-2005 | 2005 |
| OHS Risk Management Handbook | HB 205-2004 | 2004 |
| Occupational health and safety management systems - A guide to AS 4801 for small business | HB 211-2001 | 2001 |
| Occupational health and safety management systems - General guidelines on principles, systems and supporting techniques | AS NZS 4804-2001 | 2001 |
| Occupational health and safety management systems - Specification with guidance for use | AS NZS 4801-2001 | 2001 |
| Measurement of occupational health and safety performance - Describing and reporting occupational injuries and disease - Workplace injury and disease recording form (Supplement to AS 1885.1-1990) | AS 1885.1 SUPP 1-1991 | 1991 |
| Register of work injuries | AS 1885 B- 1976 | 1976 |
| Register of work injuries (modified) | AS 1885 C- 1976 | 1976 |

International Committees

Performance of household and similar electrical appliances (IEC TC 59)

Standards Australia is a participating and voting member on the International Electrotechnical Commission Committee (TC 59), namely, Performance of household and similar electrical appliances.

The purpose of this committee is to prepare International Standards on methods of measurement of characteristics which are of importance to determine the performance of household and similar electrical appliances and are of interest to the consumer. This may include associated aspects related to the use of the appliances and aspects such

as the classification, accessibility and usability of appliances, ergonomic characteristics and conditions for the information provided at the point of sale.

Projects currently being undertaken by this committee include:

- Household and similar electrical appliances - Test code for the determination of airborne noise - Part 1: General requirements; and
- Household electrical appliances - Measurement of standby power.

Working groups/subcommittees include:

Working Groups:

WG 2 - Acoustical noise of household appliances

WG 8 - Hairdryers

WG 11 - Accessibility and Usability

WG 12 - Testing and rating of household refrigeration appliances with two task-force-groups

Maintenance Team:

MT 9 - Household electrical appliances - Measurement of standby power

ad-Hoc Working Group:

HWG 1 - Panel Testing

HWG 2 - Reproducibility

Subcommittee:

SC 59A - Electric dishwashers

SC 59C - Heating appliances

SC 59D - Home laundry appliances

SC 59F - Floor treatment appliances

SC 59K - Ovens and microwave ovens, cooking ranges and similar appliances

SC 59L - Small household appliances

SC 59M - Performance of electrical household and similar cooling and freezing appliances

Gas turbines (TC 192)

Australia is an observer on the International Standards Organization Technical Committee 192, namely Gas Turbines.

This committee addresses standardization in the field of all aspects of gas turbine design, application, installation, operation and maintenance, including simple turbine cycles, combined cycle systems, definitions, procurement, acceptance, performance,

environment (on the gas turbine itself and the external environment) and methods of test.

ISO / TC 192 is responsible for preparing horizontal standards for all types of gas turbines. Work on aero gas turbine engines shall be undertaken in liaison with those technique committees having the primary responsibility.

ISO / TC 20 has the primary responsibility of preparing standards relative to the specific application of gas turbines to aerospace.

There are several Subcommittees/working groups under this committee namely:

- TC 192/WG 3: Combined cycles
- TC 192/WG 4: Joint TC 192-TC 67/SC 6 WG : Gas turbine
- TC 192/WG 7: Fuels, environment
- TC 192/WG 8: Trend monitoring systems
- TC 192/WG 9: Electric power applications
- TC 192/WG 10: Gas turbine safety
- TC 192/WG 11: Acceptance tests
- TC 192/WG 12: Microturbines
- TC 192/WG 13: Cogeneration systems

Projects currently being undertaken by this committee include:

Gas turbines -- Acceptance tests; and
Cogeneration systems -- Technical declarations for planning.

Conclusion

It is the goal of Standards Australia and its underlying technical committees to understand and manage the risks and constraints of safety regulation in the energy and gas industries and produce standards to assist in creating and maintaining successful enterprises.

Standards Australia is proud of its work to date in the field of gas and electricity standardisation and the role it has played in contributing to international standards.

Standards Australia has the existing infrastructure and processes to develop robust standards that are recognised both nationally and internationally. This is achieved by a consensus based, transparent and open process where stakeholders are engaged in 'around the table' discussions.

The benefits of this process are:

- Rigour;
- Inclusiveness;



- Trust by the
 - Australian public;
 - Consumers;
 - Government;
 - Business; and
 - Industry.
- Openness;
- Brand recognition and
- Standards Development expertise to name a few.

In line with our business model, Standards Australia reasonably requests all stakeholders to contribute to the real costs of standards developed. Please contact Standards Australia to understand more about the benefits of our new business model.

Standards Australia looks forward to working collaboratively with State and Commonwealth agencies, organisations and industry groups towards utilising these standards as a benchmark for best practice.

Standards Australia appreciates the opportunity to participate in this consultation process and we look forward to contributing to the process of harmonisation and producing OHS outcomes.

Appendix A Current Electrical Standards Underway

| Project number | Title | Committee | Committee title |
|-----------------|--|-----------|--|
| 000000000006946 | <i>Insulator and conductor fittings for overhead power lines, Part 3: Performance and general requirements for helical fittings (Revision of AS 1154.3-1985)</i> | EL-010 | Overhead Lines |
| 000000000007239 | <i>Electrical installations-Patient treatment areas of hospitals, medical and dental practices and dialyzing locations (Revision of AS 3003-2003)</i> | HT-021 | Wiring of Medical Treatment Areas in Hospitals |
| 000000000007241 | <i>Commissioning and in-service testing of electrical installations in medical treatment areas of hospitals</i> | HT-021 | Wiring of Medical Treatment Areas in Hospitals |
| 000000000007383 | <i>High voltage live line working Part 1: General</i> | EL-052 | Electrical Energy Networks, Construction and Operation |
| 000000000007384 | <i>Polarity testing in electrical networks</i> | EL-052 | Electrical Energy Networks, Construction and Operation |
| 000000000007513 | <i>Insulator and conductor fittings for overhead power lines Part 1: Performance, material, general requirements and dimensions</i> | EL-010 | Overhead Lines |
| 000000000008269 | <i>Dimensions of ball and socket couplings of string insulator units</i> | EL-010 | |
| 000000000008270 | <i>Locking devices for ball and socket couplings of string insulator units- Dimensions and tests</i> | EL-010 | Overhead Lines |
| 000000000008271 | <i>Dimensions of clevis and tongue couplings of string insulator units</i> | EL-010 | Overhead Lines |
| 000000000008276 | <i>Insulators - Ceramic or glass - Station post for indoor and outdoor use - Voltages greater than 1000 V a.c. - Characteristics</i> | EL-010 | Overhead Lines |
| 000000000008326 | <i>Overhead electrical line design, Part 1: Detailed procedure</i> | EL-052 | Electrical Energy Networks, Construction and Operation |

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|-----------------|--|--------|--|
| 000000000008327 | <i>Overhead electrical line design, Part 2: Simplified procedure</i> | EL-052 | Electrical Energy Networks, Construction and Operation |
| 000000000008328 | <i>Overhead electrical line design - Handbook</i> | EL-052 | Electrical Energy Networks, Construction and Operation |
| 000000000008379 | <i>Powerline waterways crossings</i> | EL-052 | Electrical Energy Networks, Construction and Operation |
| 000000000008543 | <i>Safe working on low-voltage electrical installations</i> | EL-044 | Safe Working on Low-Voltage Electrical Installations |
| 000000000008745 | <i>High voltage live line working Part 2: Glove and barrier work</i> | EL-052 | Electrical Energy Networks, Construction and Operation |
| 000000000008746 | <i>High voltage live line working Part 3: Stick work</i> | EL-052 | Electrical Energy Networks, Construction and Operation |
| 000000000008747 | <i>High voltage live line work Part 4: Bare hand work</i> | EL-052 | Electrical Energy Networks, Construction and Operation |