

# **HSB Global Standards**

## **Pressure Equipment Directive (PED) & Other International Codes**

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# Introduction

- Largest Authorized Inspection Agency (AIA) accredited by ASME
- Design Offices in France and USA
- Worldwide Reputation of Codes and Standards Group
  - Leadership and largest ASME Code Committee representation among all accredited AIA's
  - ASN Agreed Notified Body Forum
  - Members of PED Notified Body Forums (CABF) in Brussels, Germany and UK
  - ESPN Technical Committee (COLEN)
- Notified Body for the European Pressure Equipment Directive (PED) 97/23/EC
- Agreed Notified Body for ESPN
- Internationally Accredited by ANSI-ASQ and KAB to provide ISO 9000, ISO 13485, AS-9000, and ISO 14000 Registration Services
- Accredited as a recognized third party inspection agency for all major boiler and pressure vessel codes, standards, regulations globally

# Agenda

- Provide a summary of boiler and pressure fabrication requirements for the following International Codes.
  - Europe
    - Pressure Equipment Directive (97/23/EC)
  - China
    - Special Equipment Licensing Office of General Administration of Quality Supervision, Inspection and Quarantine (SELO)
  - India
    - Indian Boiler Regulations (1950 thru 2008 2 Amendment)
  - Brazil
    - NR-13
  - Malaysia / Singapore
    - Department of Occupational Safety and Health (DOSH)
    - Ministry of Manpower (MOM)
- The Global Marketplace

# Europe – Pressure Equipment Directive

## The Pressure Equipment Directive is a law!

- Its main objectives are;
  - To eliminate technical barriers to trade within the European Union (EU)
  - Harmonize national laws of Member States regarding
    - Design, manufacture, testing and conformity assessment
  - Is flexible, does not impose detailed technical solutions
  - Is one of a series of “New Approach to Technical Harmonization Standards”
    - Machinery, electrical equipment, medical devices, simple pressure vessels, watertube boilers, gas appliances, etc.

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# Europe – Pressure Equipment Directive (Cont.)

- Applies to all pressure equipment and assemblies with a maximum allowable pressure PS greater than 0.5 bar
  - Certain scope exemptions - nuclear
- The essential safety requirements are mandatory
  - Apply if the hazard exists under conditions foreseen by the manufacturer
- The manufacturer shall analyze the hazards
  - Design and construction taking account of analysis:
    - Eliminate or reduce hazards
    - Apply protection against hazards which cannot be eliminated
    - Inform users of residual hazards and indicate any special measures
    - Designed to prevent danger from such misuse or give warnings



# Europe – Pressure Equipment Directive

- **Design**
  - To ensure equipment will be safe throughout its intended life
- **Manufacturing**
  - The manufacturer must ensure the competent execution by applying the appropriate techniques and procedures:
    - Including preparation of components, permanent joints, NDE, heat treatment, and traceability
- **Materials**
  - Must be suitable for such application during the scheduled lifetime
  - Three choices for compliance:
    - Harmonized standards, give greatest degree of presumption of conformity
    - European approval of pressure equipment materials (EAM)
    - Particular material appraisal (PMA) lowest degree of presumption of conformity

# China – Manufacturing License

- Boilers and pressure vessels, which are manufactured and/or used inside the territory of P. R. China, shall be subjected to the manufacture licensing system and mandatory supervision inspection for the safety performance of the product.
  - Applies to domestic and foreign manufacturers
- Obtaining the manufacture license
  - Defined in the “Procedures for Manufacture Licensing of Boiler and Pressure Vessel”
    - Submission of the application
    - Application acceptance
    - Survey and Assessment
    - Approval, Issuance and Renewal of Manufacture License

## China (Cont.)

- Special Equipment Licensing Office (SELO) is responsible for receiving, arranging and transmitting application documents & audit reports to General Administration of Quality Supervision Inspection and Quarantine, P.R.C. (AQSIQ), establishing licensing data base, printing and mailing licenses, and harmonizing manufacturer surveys for the special equipment licensing.



# India - Indian Boiler Regulations (IBR)

## (1950 thru 2008 2 Amendment)

- The Regulations generally apply to;
  - All boilers, including those working on the principle of natural circulation, forced circulation and forced flow with no fixed steam water line, and
  - Steam pipes
- Pressure vessels, unless part of the boiler “system” are not considered part of the Regulations.
- Boilers, are defined as
  - Any closed vessel exceeding 22.75 liters (5 gallons) in capacity which is used expressly for generating steam under pressure and includes any mounting or other fitting attached to such vessel, which is wholly or partly under pressure when steam is shut off.
- All boiler construction shall be under the supervision of an Inspecting Officer and shall be inspected as prescribed in Appendix J of the Regulations.
- Welders engaged in the welding of boilers, steam pipes, economizers, and superheaters shall process and produce a Welders Performance Qualification Certificate issued by a Competent Authority.

## India (Cont.)

- Inspecting Officer is defined as;
  - An Officer appointed by and acting on behalf of an Inspecting Authority, who shall provide;
    - Approval of boiler design, drawings or parts thereto,
    - Inspection activities during construction, and
    - Verify compliance of materials
- Inspecting Authority is defined as;
  - An authority recognized by the Central Boilers Board to perform the inspections prescribed in Regulations 4A to 4H, and
  - Grant (as applicable) certificate's in Form II, II-A or II-B
- Competent Authority is defined as;
  - An authority recognized by the Central Boilers Board as competent to issue certificates for welders.

### Regulations Interpreted Regionally

# Brazil NR-13

- NR-13 is a Regulation that establishes the minimum conditions for the installation and operation of boilers and pressure vessels in Brazil.
  - There are requirements related to:
    - manufacturing, installation & training of operators.
- ASME is generally recognized as an acceptable design and construction code provided the requirements of NR-13 are also met.
- A Brazilian Registered Engineer (BRE) must perform a review of the complete technical package, including;
  - Design/construction drawings and calculations,
  - Fabrication documents/records for materials, welding and testing, and/or a Manufacturers Data Report (MDR) in the case of an ASME Stamped vessel or boiler.
  - An initial inspection at the place of installation shall also be performed by the BRE, including internal and external examination and hydrostatic test.

**Good market opportunity for US manufacturers due to lack of ASME stamp holders in Brazil**

# Malaysia - Department of Occupational Safety and Health (DOSH)

- Regulations for boilers and pressure vessels are covered by the Factories and Machinery Act 1967 (Act 139) & Regulations and Rules (as of April 2005).
- Machinery is divided into certificated and non-certificated categories.
  - Certificated machinery is separated into three classes: boilers, unfired pressure vessels, and passenger lifts and hoisting machines.
  - ASME is a satisfactory design code for boilers and unfired pressure vessels with the following additional requirements:
    - Design review is required by an approved agency (Fourth Schedule)
    - Approved agency shall verify that all required material properties, tests, and examinations meet the material specification referenced in the Material Test Report
    - Three copies of the design package shall be submitted to DOSH by the equipment Manufacturer for permission to install and operate.
  - A Fifth Schedule shall be provided by the approved agency

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# Singapore – Ministry of Manpower (MOM)

- Workplace Safety and Health Act 2006 (replaced Factories Act).
  - The subsidiary legislation: WSH (General Provisions) Regulations 2006 contains the information for pressure equipment.
- Approved Inspection Agencies must provide fabrication surveys and certification of pressure equipment during construction.
  - The survey shall include:
    - engineering design review and approval,
    - materials identification,
    - welder qualification,
    - welding specification approval,
    - welding procedure approval,
    - weld quality checks, and
    - witnessing/reviewing of all tests and their results required by the design/construction Codes used.

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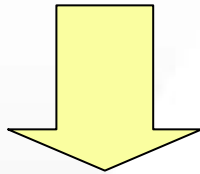


# Global View for US Demand

- Demand for more energy/power plant construction continues to drive the Boiler and Pressure Vessel Markets
- ASME Boiler and Pressure Vessel Code Services growing on a global basis:
  - Latin America and Asia have been highest growth
    - Expected to continue
  - US and Europe flat
    - Latin America growth will drive ASME demand in US shops short term
- Other International Boiler and Pressure Vessel Codes (Sourced from US)
  - Fastest growing portion of our US business at ~ 40% AAGR for past 4 years
    - HRSG and Power Plant construction in European driving more than 60% of our growth
    - Current strong demand from India, Brazil, Japan, Australia for key components sourced from US (safety concerns, trust)
    - Exchange rate contributing to US manufacturing competitiveness

# Summary

- ASME basis for most International Codes
- Europe change from individual country codes to PED in 2003
- China will standardize on a code
- Opportunities exists in many of the other International Codes



- Critical components continue to be sources from the US
- US no longer the highest cost producer

Thank you  
*HSB Global Standards*

# International Code Summary

Region	Regulatory Body	Jurisdictional Requirements	Services
Australia	Local Jurisdictions	Australian Standard	Design Verification, Inspection & Registration
Canada	Transport Canada	Transportation of Dangerous Goods CAN/CSA-B338-96	Independent Inspections & Quality System Assessments
Canada	Provincial Jurisdictions	Canadian Standards Association	Inspection and Audits to CSA B51 requirements
China	Special Equipment Licensing Office	Regulation for the Supervision of the Manufacture of Boiler & Pressure Vessels	Consulting on Manufacture Licence & Inspection of boilers/pressure equipment
Europe	European Standards Committee	Pressure Equipment Directive (PED)	Notified Body & Consulting
Europe	European Standards Committee	Transportable Pressure Equipment Directive (TPED)	Product, Design & Quality Management System Certification
India	Dept. of Industrial Development (CBB)	India Boiler Regulation	Inspection of boilers, boiler parts, components, materials or other components of a boiler and its system
Int'l	Int'l Organization for Standardization	ISO 9000, ISO 14000	Audit & Registrar Services

Region	Regulatory Body	Jurisdictional Requirements	Services
Japan	The High Pressure Gas Safety Institute of Japan	High Pressure Gas Control Law	Witness testing for closed loop Refrigeration Systems
Japan	Ministry of Health, Labor & Welfare	Construction Code for Boiler & Pressure Vessel	Design Review & Inspection
Malaysia	Dept. of Occupational Safety & Health	Malaysia Factories & Machinery Act	Design Review & Inspection
New Zealand	Occupational Safety & Health (OSHA)	Health and Safety in Employment Act	Design Verification & Inspection
Singapore	Ministry of Man Power	Ministry of Man Power Factories Act	Design Review & Inspection
USA	US DOT - Pipeline & Hazardous Material Safety Administration	CFR 49 Transportation	Gas Cylinder Inspection
USA	US DOT - Pipeline & Hazardous Material Safety Administration	CFR 49 Transportation	UN Portable Tank Design Approval & Inspection
USA	Local Jurisdictions	ASME Boiler and Pressure Vessels	Design Review & Inspection

# Questions/Answers

