If you are making boilers or associated components to ship and sell in the Indian market, you need to make sure they are certified to the Indian Boiler Regulations (IBR).

The Indian Boiler Authorities strictly enforce the requirements of IBR, refusing site installation or assembly of any materials that are not correctly certified to the Indian Boiler Regulations.

Compliance with IBR is confirmed via certification on relevant IBR forms issued and/or endorsed by Competent Persons of an Inspecting Authority recognized by the Central Boilers Board - India.

This guide provides a general overview of what is involved in IBR certification through a format of questions and answers.
IBR: A brief history

A tragic boiler explosion in Calcutta in 1863 was the origin of the Indian Boiler Regulation. A bill was passed by the Bengal Council in 1864 calling for the inspection of steam boilers in and around Calcutta. Other Indian provinces followed, and eventually the country decided on one uniform set of regulations and passed The Indian Boilers Act in 1923. The regulations would cover not only inspections, but also the conditions for material procurement. The Central Boilers Board was formed as a result of an amendment in 1937. The latest version of the law is known as the Indian Boiler Regulation, 1950. Amendments are issued from time to time.

Key terms used in this guide

**IBR:** Indian Boiler Regulations. The Act means the Boilers Act, 1923 as amended from time to time.

**CBB:** Central Boilers Board - India

**Competent person:** A person recognized in such a manner as may be prescribed by regulations for inspection and certification of boilers and boiler components during manufacture, erection and use.

**CIB:** Chief Inspector of Boilers. This is a government official in each Indian state in which the boiler or component will be installed.

**Inspecting authority:** An agency recognised by the CBB as an IBR certifying authority.

IBR certification process

A typical IBR inspection includes three stages:

01 **Design review**

1. Manufacturer contacts Inspecting Authority for approval of boiler or boiler component design.

2. Inspecting Authority provides feedback and guidance on the design, calculations and drawings to ensure they meet the IBR Regulations.

3. After both manufacturer and the Inspecting Authority are satisfied, the documents are to be sent by the manufacturer to the CBB New Delhi and CIB of the Indian state in which the boiler or components will be installed.

02 **Material Inspection**

1. Inspecting Authority inspects pressure part materials (plates, pipes, tubes, castings, forgings fittings, standard parts, etc.) and signs the relevant certificate forms.

03 **Pressure parts inspection**

1. The Inspecting Authority carries out stage inspections during the manufacture of a boiler or boiler components per Appendix J of the IBR Regulations.

2. Typical stages are:
   a. Design review
   b. Material identification
   c. Review of material certification
   d. Witness/review NDE
   e. Review heat treatment records
   f. Witness production test coupons testing
   g. Witness pressure test
   h. Carry out visual and dimensional examination
   i. Endorse manufacturer’s certification and issue inspection authority certification

04 **Qualification Tests for Welders**

1. Welders engaged in the manufacture and site welding connected with erection and fabrication and repair of boilers shall be qualified by a Competent Authority.

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The content contained herein is summary in nature, subject to change and intended for general information only.
**What does the IBR cover?**
The IBR covers the design, fabrication, inspection, testing and certification of:
- Boilers or any boiler part including feed piping and fittings or vessels attached thereto
- Boiler components, meaning
  - steam piping
  - feed piping
  - economizers
  - super heaters
  - valves, including safety valves
  - any mounting or fitting or any external or internal part of a boiler which is subjected to a pressure exceeding one Kg/cm square gauge
  - steam receivers, separators, steam traps, accumulators and similar vessels
- Heat exchangers, converters, evaporators and similar vessels in which steam is generated
- Materials, e.g. forgings, castings, tubes, pipes, plates, welding consumables

**Who needs to receive IBR certification for materials?**
Any manufacturer of boiler or boiler components wishing to send them to India needs IBR certification. This includes manufacturers in India as well.

**What is an Inspecting Authority?**
An agency recognized by the Central Boiler Board as an IBR certifying authority. Inspecting Authorities are required to sign off on many parts of the IBR certification process. They are heavily scrutinized by the Indian government. Inspecting Authorities are issued certificates indicating their approval; always ensure that a Competent Person is approved by the CBB. Not all Inspecting Authorities are authorized to inspect in all countries. For example, Lloyd’s Register Verification Ltd. (LRV), a subsidiary of Lloyd’s Register Group, is recognized as an Inspecting Authority globally. For operations in six Indian states, Lloyd’s Register Asia has CBB approval. Our Competent Persons in India can undertake inspection as per IBR during site installation and assembly of boiler or boiler components.

**What is a Competent Authority?**
An institution recognized in such a manner as may be prescribed by regulations for issue of certificate to the welders for welding of boilers and boiler components. LRV is also recognized as a Competent Authority outside of India.

**IBR Basics**

### IBR material certification

**What kind of boilers and components need certification?**
A boiler is a pressure vessel in which steam is generated for external use. Vessels that need inspection:
- have a capacity of more than 25 litres (capacity is measured from the feed check valve to the main steam stop valve)
- have more than one kilogram per centimetre square design gauge pressure and working gauge pressure

Boiler components that need certification include:
- steam piping
- feed piping
- economizers
- super heaters
- any mounting or fitting
- any other external or internal part of a boiler which is subject to a pressure exceeding one kilogram per centimetre square gauge

**What kind of steam or feed pipes need certification?**
Steam pipes need certification if:
- the steam pressure exceeds 3.5 kilograms per square centimetre above atmospheric pressure or
- such pipe exceeds 254 millimetres in internal diameter and;
- pressure of steam exceeds 1 kilogram per square centimetre above the atmospheric pressure and
- includes in either case any connected fitting of a steam pipe

Feed pipes: Any pipe or connected fitting including heaters wholly or partly under pressure through which feed water passes directly to a boiler and which does not form an integral part. The requirements for feed piping are similar to steam piping.

Any reference to “boiler” in the regulations will apply equally to any of these boiler components.

### IBR certification procedures

**What needs to be done before boilers and/or components are manufactured?**
Manufacturing drawings and particulars of the material, design and construction need to be submitted to the Inspecting Authority for examination and approval.

After approval by the Inspecting Authority, the manufacturing drawings are sent to CBB, New Delhi and CIB of the state by the owners/users where the boiler will be installed. The CIB will examine them and give final approval. No manufacturing should begin before the CIB gives final approval.

**What kind of documentation needs to be provided for certification of a completed boiler?**
To register a completed boiler, the owner must provide the following to the state’s CIB:
- an approved plan showing the general arrangement of the boiler. It should also contain details of the principal components and methods of manufacture, inspection and testing.
- a certificate issued by the Inspecting Authority certifying that the materials were tested and the boiler built under their supervision. In the case of a boiler on site, either representatives of the Chief Inspector of Boilers or LR Asia Competent Persons in six Indian states can undertake the site inspection, testing and certification.

Individual components manufactured outside of India require certification of construction and hydraulic test witnessed by the Inspecting Authority.

**What forms are needed for IBR boiler or component certification?**

<table>
<thead>
<tr>
<th>Form Name</th>
<th>Issued by</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form IIB</td>
<td>Inspecting Authority</td>
<td>Describes the materials, design, method of manufacturer and testing of the boiler for which variations from standard conditions have been permitted.</td>
</tr>
<tr>
<td>Form III</td>
<td>Boiler manufacturer</td>
<td>Certifies the manufacturer and test of the completed boiler. This form needs to be countersigned by the Inspecting Authority after satisfactory inspection.</td>
</tr>
</tbody>
</table>

**Economiser certificates:**

<table>
<thead>
<tr>
<th>Form Name</th>
<th>Issued By</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form VII</td>
<td>Inspecting Authority</td>
<td>Issued upon completion of economizer construction.</td>
</tr>
<tr>
<td>Form VIII</td>
<td>Boiler manufacturer</td>
<td>Certifies the manufacturer and test of completed economizer. Form must be countersigned by Inspecting Authority.</td>
</tr>
</tbody>
</table>

**Component certificates:**

<table>
<thead>
<tr>
<th>Form Name</th>
<th>Issued by</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form III A</td>
<td>Pipe manufacturer</td>
<td>Countersigned by Inspecting Authority.</td>
</tr>
<tr>
<td>Form III B</td>
<td>Tube manufacturer</td>
<td>Countersigned by Inspecting Authority.</td>
</tr>
<tr>
<td>Form III C</td>
<td>Fitting manufacturer</td>
<td>Countersigned by Inspecting Authority.</td>
</tr>
<tr>
<td>Form III D</td>
<td>Well-known pipe manufacturer</td>
<td>Issued by well-known pipe manufacturer designated as such by the evaluation committee of the CBB.</td>
</tr>
<tr>
<td>Form III E</td>
<td>Well-known tube manufacturer</td>
<td>Issued by well-known tube manufacturer designated as such by the evaluation committee of the CBB.</td>
</tr>
</tbody>
</table>
Boiler material requirements

What boiler materials are approved?
It is easiest to use materials from a list of well-known steel makers. This list can be provided by Lloyd's Register upon request during the inspection process.

Important: Materials ordered from any other manufacturer not on the list need to be delivered with relevant IBR forms and inspection by Inspection Authority.

Does the material for the boiler need to come from India?
No – the material for your boiler does not need to be sourced from India to meet IBR requirements. International material manufacturers can meet the certification requirements with correct guidance and compliance to IBR rules and regulations.

Materials need to be produced under the inspection of the Inspecting Authority and relevant IBR forms to be endorsed by material manufacturer and Inspecting Authority.

What forms are needed for IBR material certification?

<table>
<thead>
<tr>
<th>Form Name</th>
<th>Issued by</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form III F</td>
<td>Well-known foundry or forge manufacturer</td>
<td>Issued by well-known foundry/forge as designated as such by the evaluation committee of the CBB</td>
</tr>
<tr>
<td>Form III G</td>
<td>Foundry or forge shop for forgings/castings in semi-finished condition</td>
<td>Not a well-known manufacturer, form must be counter-signed by inspection authority</td>
</tr>
<tr>
<td>Form IV</td>
<td>Steel manufacturers</td>
<td>Indicates the method of steel manufacturing, physical and chemical tests</td>
</tr>
</tbody>
</table>

Welding

Are there any special requirements for welders working on boilers and components for IBR certification?
Yes. All welders working on boiler or their components for IBR must be certified to the IBR Regulations.
- The CBB does not accept the work of welders qualified to any other code or standard.
- Welder qualifications must be done as per IBR Chapter XIII. Written and practical examinations are required, as well as mechanical testing. Please note that IBR stipulates different requirements for qualification of welders and the range for qualifications are also quite different when compared to any other international Boiler Codes.
- The Competent Authority can witness the welder qualification tests and qualify the welder. The qualification is good for two years, provided that the welder has been employed with continuity on class and type of work for which he is qualified.

What is involved in welder theoretical examination?
A welder examined for IBR certification must answer questions on the following subjects, either orally or otherwise:
- weld preparation
- elementary knowledge of welding equipment
- an understanding of properties of material to be welded
- welding techniques
- welding defects and their prevention
- proper selection of filler metals

How does a welder get a certificate?
When the Competent Authority deems the welder has satisfactorily qualified, it then issues certification on the IBR Form XII and XIII indicating the class and type of welding in which the welder has qualified.

Common problems

What are some common issues with IBR certifications?
Lloyd's Register Competent Persons often see problems with:
- Design calculations not meeting requirements of IBR
- Specific IBR requirements concerning production test coupons
- Blend test requirements for materials
- Incorrect test pressures
- Failure to involve an Inspecting Authority in the case of deviations resolution
- Material sourcing with relevant IBR forms appears to be the major issue
- Incorrect/incomplete filling of relevant IBR forms
- Welder qualification and certification as per IBR 1950

What is a typical delay for dealing with an IBR-related issue?
Delays can vary anywhere from weeks to months. It is crucial for a manufacturer to know all the common problems and issues up front when constructing a pressure vessel or boiler, so as to reduce these costly delays. Engaging Lloyd's Register at the feasibility study of the project will show manufacturers where the bottlenecks are and what to do to get past them.

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Our wider network

The Lloyd’s Register Group is dedicated to helping industry meet increasingly complex challenges and to making the world a safer place.

Our other businesses – marine, transportation and management systems (LRQA) – serve a wide range of industry sectors around the globe.

Our clients typically manage large-scale, valuable assets where the cost of mistakes can be very high, both financially and in terms of the impact on local communities and the environment. Organisations need advice and support they can trust. Lloyd’s Register’s reputation is built on more than 250 years of protecting life and property.

As an independent body, we are uniquely placed to offer expertise free from shareholder influence and focused on improving safety and quality. We are also committed to advancing education and understanding ways to improve how businesses operate, whether by carrying out our own research, funding others or providing training.

Contact us

If you would like to speak to a member of our Inspection team to find out how we could support your project, asset, operations or business, visit www.lr.org/inspection for details of your local office or contact one of our regional offices:

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