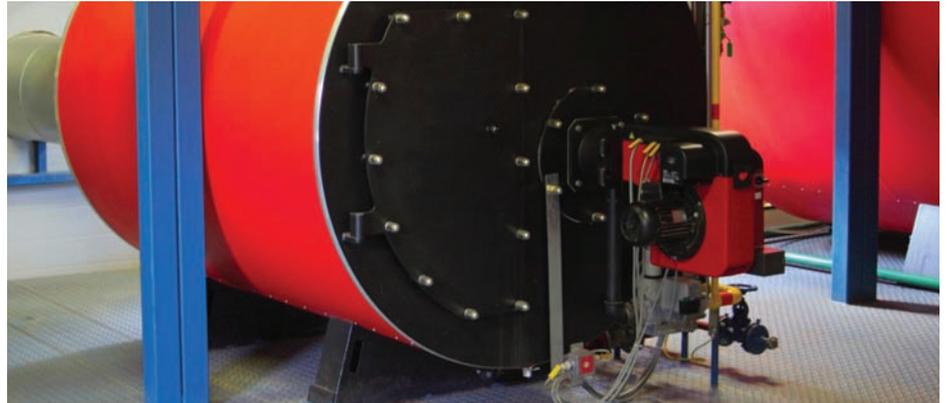


# To The Point

## Installing A New Boiler

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The successful installation or commissioning of a new boiler involves detailed planning. There's more to the process than calling in a contractor to install a new boiler. If you don't **properly plan for the installation of a new boiler**—including training staff on new procedures—you may be disappointed with the outcome. Problems can result from lack of planning, including:

- The boiler design **doesn't fit the intended application**.
- The new boiler has inadequate capacity or lacks redundant capacity.
- The boiler **doesn't achieve the efficiency gains** you intended.
- The installation fails to meet the codes and standards adopted by the jurisdiction having authority—leading to **added project costs and delays**.
- Your boiler operators are not properly trained on the new boiler operating procedures and technology—resulting in **operator error** and forced outages.
- The boiler maintenance program or water treatment program is not adjusted to meet new boiler requirements—leading to **increased operating costs** or premature need for repairs.

Avoid problems like these with pre-planning. A properly executed boiler commissioning plan comprises **four distinct phases**: design, installation, performance and testing, and project acceptance.

### **Design Phase**

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The design phase is the foundation to the success of commissioning a new boiler. A well-executed design phase should be **a collaboration** between the designer, the installer, the owner, jurisdictional authorities, and your insurance agent and insurance carrier.

In the design phase, it's important to take into consideration:

- The boiler's **intended application**
- Its capacity and redundancy requirements
- Whether it meets or exceeds **all applicable boiler construction, installation, and emission codes and standards** required by the local jurisdiction
- Whether it meets **insurance company requirements**

Risk Engineering Services

- Whether it is adapted to existing boiler room configurations and systems.

## **Installation Phase**

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The installation of the boiler should be **monitored at defined intervals**. Often, boiler installations require modifications from the original design plan and must be evaluated to avoid start-up problems, code infractions, increased costs, or delays. **Schedule regular project team meetings** to review progress and to address any necessary change orders.

Before initial operation of a new boiler, it's important to follow these procedures to ensure the boiler's operating efficiency, long life, and reliability.

- Make sure the boiler and piping systems are properly boiled out and flushed of potential contaminants; often the boiler OEM representative and water treatment consulting firm work together on this.
- Examine the boiler, as design permits, on both the waterside and the fireside to make sure that no foreign material is present. This internal inspection is often required by the jurisdiction having authority before the boiler can be placed in operation.
- Conduct hydrostatic pressure tests to make sure the boiler and associated piping systems are retaining satisfactory pressure.
- Check blow-down piping, steam piping, feedwater piping and other associated piping systems to ensure they have been installed in accordance with code requirements and are of quality workmanship.
- Check gauges, gauge glasses, and controls for damage that may have occurred during transportation or installation.
- Check pressure controls and safety devices for installation in accordance with the codes and standards adopted by the jurisdiction having authority.
- Test motors during operation to ensure proper rotation. Also check solenoid valves, interlocks, motorized valves,

and limit switches.

- Check all fuel lines for proper installation and to make sure they are equipped with combustion controls in accordance with applicable codes and standards.
- Purge newly installed fuel train piping.

Start the new boiler only after these inspection procedures have been performed thoroughly and carefully. It's a good idea to have a manufacturer's representative on site during the initial boiler startup.

## **Performance Testing Phase**

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A good commissioning plan schedules performance testing at several stages of the process. Don't wait until the boiler is installed to begin testing; it's smarter to **identify testing milestones and test them when ready**. Keep the installation on track –and costs under control– through early detection of problems.

Using simulated and actual tests as appropriate, the testing phase also **verifies proper start-up and shut-down procedures** and sequencing. It includes a thorough examination of all appropriate controls and safety devices to verify that they:

- Properly monitor and protect each associated system
- Are coordinated in proper sequence
- Provide safe levels of protection in the event of a major plant upset

Testing also ensures the boiler and associated **systems operate within design parameters** for pressure, temperature, capacity, steam quality, emissions, and other key considerations identified during the design phase.

## **Project Acceptance Phase**

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The OEM and/or general contractor should **provide a final report to the owner** that details all performance test results. Documents such as manufacturer's technical manuals, manufacturer's data reports, baseline operating and efficiency

reports, test results, certifications, and warranties should be part of a **documentation package** for the boiler owner's future reference.

It is unlikely that 100% of the project will be completed to the owner's satisfaction at this phase. More likely, the owner will present a **punch list of items that will require a plan of action** to address, until all items are signed off as completed.

Before and during the project acceptance phase, **transfer boiler plant operations** from the OEM manufacturer's representative to your own operating and maintenance staff. An important but often neglected aspect of commissioning is plant **operator training**. All operating employees should be totally familiar with start-up, shutdown, and emergency boiler procedures, and they should have access to 'as built' diagrams of all plant systems.

Finally, **establish preventive maintenance programs** and spare part inventory levels in line with OEM recommendations and accepted industry practices. Waiting until the end of the boiler's warranty period is too late and could lead to a loss in efficiency and reliability.

## **Conclusion**

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Commissioning projects can vary widely in scope and complexity. **Consult with your designer, general contractor and manufacturer's representatives** to develop a comprehensive commissioning plan that addresses your specific requirements.

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