Foster Wheeler Condensers and Feedwater Heaters
High Quality Steam Components
A HISTORY OF EXCELLENCE IN THE DESIGN AND FABRICATION OF CONDENSER AND FEEDWATER HEATER EQUIPMENT
SAFELY DELIVERING
COST-EFFECTIVE,
TECHNICALLY ADVANCED
SOLUTIONS

Foster Wheeler has been designing and manufacturing feedwater heaters and steam condensers for over a century. In fact, feedwater heaters and steam condensers were the first products offered through the Wheeler Condenser & Engineering Company, which was founded in 1891.

Today, our Company continues to offer high quality steam condensers and feedwater heaters to meet the needs of our clients in the power generation, chemical, petrochemical and marine engineering industries.

Our condensers and feedwater heaters have a track record and reputation of being well designed and highly reliable for all applications such as in combined cycle, nuclear, or thermal oil (gas/coal) steam plants.
HIGH QUALITY FW CONDENSERS - A TIME

Foster Wheeler Condenser Project Highlights

**Vung Ang**
- **Start-up Year:** 2012
- **Customer:** Lilama Corporation
- **Location:** Vung Ang, Vietnam
- **Plant Capacity:** 2 x 600 MWe
- **Plant Type:** Subcritical PC Power Plant
- **Condenser Type:** Downflow

**Samsun Power Plant**
- **Start-up Year:** 2011
- **Customer:** Metka, SA
- **Location:** Samsun, Turkey
- **Plant Capacity:** 1 x 145 MWe
- **Plant Type:** Combined Cycle Power Plant
- **Condenser Type:** Axial

**GTCC Koudiet**
- **Start-up Year:** 2011
- **Customer:** Iberdrola Ingenieria
- **Location:** Koudiet, Algeria
- **Plant Capacity:** 1 x 145 MWe
- **Plant Type:** Combined Cycle Power Plant
- **Condenser Type:** Axial

**FW Condenser Highlights:**
- Proven by over 300 Condensers
- Operating at combined cycle, coal, oil/gas, and nuclear plants worldwide
- Ranging from 50 - 1400 MWe
- Rectangular single, double or triple shell designs
- One or two passes
- Single, double, or triple pressure zones
- Down flow, axial flow or side inlet design
- 10 - 12 months D&S delivery
- Available for all types of steam turbine
**Conservative Mechanical Design Features:**

- Compensates for thermal expansion while simultaneously minimizing obstructions in high velocity steam paths
- Maintains the centerline relationship between turbine and condenser to prevent turbine damage
- Prevents destructive tube vibration by optimizing full-size tube support plates
- Prevents tube joint leakage and condensate contamination with appropriate pressure boundaries
- Simplistic design results in competitive pricing and high availability over a long and predictable service life
- Strategic pattern of the tube bundles minimizes pressure drop, while maximizing surface utilization for optimum reheating and deaeration

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**Navoi Power Plant**  
Start-up Year: 2011  
Customer: Initec Energia, S.A.  
Location: Navoi, Uzbekistan  
Plant Capacity: 1 x 160 MWe  
Plant Type: Combined Cycle Power Plant  
Condenser Type: Downflow

**GTCC Pilar**  
Start-up Year: 2010  
Customer: UTE Electroingenieria  
Location: Pilar, Argentina  
Plant Capacity: 1 x 210 MWe  
Plant Type: Combined Cycle Power Plant  
Condenser Type: Downflow

**GTCC Blenod**  
Start-up Year: 2009  
Customer: General Electric Energy France  
Location: Blenod, France  
Plant Capacity: 1 x 145 MWe  
Plant Type: Combined Cycle Power Plant  
Condenser Type: Downflow
Foster Wheeler Feedwater Heater Project Highlights

**Valle 1 & 2**
Start-up Year: 2011  
Customer: UTE Valle  
Location: San Jose del Valle, Spain  
Plant Capacity: 2 x 55 MWe  
Plant Type: Solar Thermal Power Plant  
FW Scope: Design and supply of 6 LP and 4 HP feedwater heaters

**GemaSolar**
Start-up Year: 2011  
Customer: UTE CT Solar Tres (Sener-Cobra)  
Location: Sevilla, Spain  
Plant Capacity: 1 x 17 MWe  
Plant Type: Solar Thermal Power Plant  
FW Scope: Design and supply of 2 LP and 3 HP feedwater heaters

**Samcasol I & II**
Start-up Year: 2009, 2010  
Customer: UTE Samcasol I & II (TSK + Maessa)  
Location: Caceres, Spain  
Plant Capacity: 2 x 50 MWe  
Plant Type: Solar Thermal Power Plant  
FW Scope: Design and supply of 3 LP and 2 HP feedwater heaters

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**FW Feedwater Heater Highlights:**

- Proven by over 1,000 references
- Operating at both thermal and nuclear plants worldwide
- Plant sizes from 50 - 1600 MWe plant capacity
- Vertical or horizontal designs for both LP and HP units
- ‘U’ Bent or Straight Tube Designs
- 8-10 months D&S delivery
Feedwater Heater Design Features:

- Independent desuperheating zone closures
- Baffle configuration and spacing based on conservative mass velocity criteria
- Fully enclosed self-venting drains sub-cooling zones
- Liberal sub-cooling zone entrance areas to permit low approach velocities which prevent flashing of saturated drains
- Internal, centrally located venting arrangement to provide a positive means of continuously venting condensing zone
- Channel cover configurations for all nozzle layouts
- Fully automated tube-to-tubesheet welding procedures
- Finite element stress and vibration analysis for all operating conditions
- Hydraulic or conventional tube expansion assuring consistently reliable tube joints

Andino Power Plant
Start-up Year: 2009
Customer: Cobra/Suez Energy Andino
Location: Mejillones, Chile
Plant Capacity: 2 x 165 MWe
Plant Type: CFB Power Plant
FW Scope: Design and supply of 8 LP and 6 HP feedwater heaters

Alcudia Power Plant
Start-up Year: 2009
Customer: Endesa
Location: Alcudia, Spain
Plant Capacity: 4 x 125 MWe
Plant Type: PC Power Plant
FW Scope: Design and supply of 2 HP feedwater heater

La Robla Power Plant
Start-up Year: 2009
Customer: Union Fenosa
Location: La Robla, Spain
Plant Capacity: 1 x 150 MWe
Plant Type: PC Power Plant
FW Scope: Design and supply of 1 LP feedwater heater