Boiler

Doosan owns core technologies and carries out ongoing development with extensive boiler portfolio that includes conventional PC, oil/gas, down-shot and fluidized bed models for thermal power plants.

We boast the technology to design eco-friendly models with:

**HIGHER BOILER EFFICIENCY**
Doosan supplied best-in-class 274 atg, 613/624°C USC boiler. Doosan boiler provides the lowest OPEX to customers with the highest steam condition and boiler efficiency.

**WIDER FUEL FLEXIBILITY**
Doosan has an extensive line up of boilers and burners, which enables flexible responses to various needs of customers.

**FLEXIBLE & RELIABLE OPERATIONS**
Doosan’s state-of-the-art boiler technologies allow stable boiler operation even at low and medium loads. In addition to this set of technologies, Doosan’s digital solutions reinforce the flexible and optimized operation modes.

**ECONOMICAL CAPEX**
Doosan supplies best-quality boilers at the most competitive prices in the industry to meet customer expectations with its advanced technologies, smart manufacturing facilities and global supply chain.
Doosan is a total solution provider with extensive project experiences in all types of fuel, including a wide range of coals and other fuels such as oil & gas and biomass.

In particular, we are a specialist in providing the right solutions for special coals, such as low volatile matter coal (anthracite), high moisture (e.g. HMC) coal, and high ash (e.g. Indian Coal).

Doosan is a pioneer in the technologies and trusted partner for the delivery of reliable and efficient steam production. We are also able to undertake a full range of projects, from retrofits and upgrades to a full boiler new build.

Based on a profound understanding of the mill industry, Doosan offers a full range of mill types, including vertical spindle, tube and hammer mills, along with classifier options. This enables to meet customer requirements with higher efficiency and wider fuel flexibility. We handle all types of solid fuels and fuel blends used in power generation.

Key Features
- Fuel Range: A variety type of coal, wood pellet
- Capacity: 8 ~ 240 t/h
- Fineness: 70 ~ 90% pass through 200 mesh screen
- Classifier Type: Static, dynamic, and dynamic + static
- Rated Motor Capacity: 50 ~ 1,800 kW

Advantage of Dynamic Classifier
- Rotor + swirl vanes
- Control of speed of rotation to control
- High separation efficiency of coarse

References of wood pellet project with vertical spindle mill*:
- Ameigen, Denmark – 810MW, Straw pellet / Wood pellet
- Avedøre, Denmark – 210MW, Wood pellet
- Yeongdong, Korea – 255 MW, Wood pellet

*Doosan licensed with Loesche in Vertical Spindle Mill
**Conventional PC Boiler**

Conventional pulverized coal (PC) boilers are used in most thermal power plants with a variety of fuels. The latest trend is to use different types of fuels. Market requirements higher values in conditions in order to increase IHR. Conventional PC boilers have high efficiencies due to a high fuel-to-air ratio. The precursors of modern boilers are the ones that used coal as the main fuel. Conventional boilers are the most efficient for high steam pressures and high steam temperatures at which they are designed. They offer customers high quality, low prices and fast delivery in markets where the boiler is sold. The sale of such boilers is typical for power plants which require a lower degree of emission reduction for a low price. Conventional PC boilers have a higher degree of optimization and are suitable for medium-sized power plants.

**Oil/Gas Boiler**

Oil-fired boilers are primarily used for the generation of electricity, especially in countries where natural gas is not available. They are more flexible in terms of fuel availability compared to other types of boilers. Oil-fired boilers are characterized by high efficiency, low emissions, and cost-effective operation. However, they require careful handling and maintenance to ensure optimal performance.

**Downshot Boiler**

Downshot boilers are popular in power plants with lower steam conditions, typically below 160 bar and 540°C. These boilers are designed to achieve the highest efficiency and reliability at lower steam conditions. They are highly efficient and reliable, offering clients high quality, low prices and fast delivery.

**CFB Boiler**

Circulating fluidized bed (CFB) boilers are popular in power plants with higher steam conditions, typically above 160 bar and 540°C. CFB boilers are designed to achieve the highest efficiency and reliability at higher steam conditions. They are highly efficient and reliable, offering clients high quality, low prices and fast delivery.
Doosan Heavy Industries & Construction

Worldwide References

Conventional Boiler

- 140GWe (643 units)
  - Subcritical boilers
  - 103GWe (190 units)
  - Supercritical/USC boilers

Total
- 243GWe (733 units)

CFB Boiler

- 22GW (113 units)

MAJOR REFERENCES

Conventional Boiler

- 1 Libya
  - Al-Khalij / Oil & Gas (350MW x 4 units)
  - Tripoli West / Oil & Gas (350MW x 4 units)
- 2 Egypt
  - Ain Sokhna / Oil & Gas (650MW x 2 units)
- 3 Saudi Arabia
  - Rabigh PP2 / Oil (700MW x 4 units)
  - Marafiq #5,6 / Oil (275MW x 2 units)
  - Yanbu 2 / Oil (276MW x 3 units)
- 4 India
  - Sipat / Coal (660MW x 3 units)
  - Raipur / Coal (685MW x 2 units)
  - Kudgi / Coal (800MW x 3 units)
  - Lata / Coal (800MW x 2 units)
  - Mundra / Coal (800MW x 2 units)
  - Harda Gayanji / Coal (660MW x 1 unit)
  - Obra-C / Coal (660MW x 2 units)
  - Jawaharapur / Coal (660MW x 2 units)
- 5 Thailand
  - Gheco-one / Coal (700MW x 1 unit)
- 6 Indonesia
  - Cirebon / Coal (700MW x 1 unit)
- 7 Vietnam
  - Nghi Son 1 / Coal (665MW x 2 units)
  - Vinh Tan 4 / Coal (600MW x 2 units)
  - Song Hau 1 / Coal (600MW x 2 units)
  - Vinh Tan 4 Ext. / Coal (600MW x 1 unit)
- 8 South Korea
  - Younghung 8,6 (870MW x 2 units)
  - Shinboryeong #1,2 (1,000MW x 2 units)
  - Gangneung #1,2 (1,040MW x 2 units)
  - Pospower #1,2 (1,050MW x 2 units)
- 9 USA
  - Trimble County 2 / Coal (800MW x 2 units)
  - Montville / Subbit. Coal (95MW x 2 units)
  - North Mahony (100MW x 2 units)
  - Robertson / Lignite (175MW x 2 units)
  - Panama / Subbit. Coal (100MW x 4 units)
  - Warrior / Bit. Coal (210MW x 1 unit)
  - Red Hills / Lignite (250MW x 2 units)
- 10 Chile
  - Nueva Ventanas / Coal (240MW x 1 unit)
  - Angamos / Coal (240MW x 2 units)
  - Campiche / Coal (240MW x 1 unit)
  - Red Dragon / Coal (375MW x 1 unit)
- 11 France
  - Carling / Coal (250MW x 1 unit)
  - Gardanne / Bit. Coal (250MW x 1 unit)
- 12 Germany
  - Duisburg / Bit. Coal (100MW x 1 unit)
  - Berlin / Subbit. Coal (100MW x 1 unit)
- 13 Czech Republic
  - Tisova / Lignite (100MW x 1 unit)
- 14 Botswana
  - Moponpe / Bit. Coal (150MW x 4 units)
- 15 India
  - Surat / Lignite (125MW x 2 units)
- 16 South Korea
  - Tonghae #1,2 (200MW x 2 units)
  - Yeosu #2 (340MW x 1 unit)
  - Yeosu #1 (350MW x 1 unit)
  - Saemanguem (150MW x 2 units)
- 17 Thailand
  - Gheco-one / Coal (700MW x 1 unit)
- 18 Indonesia
  - Cirebon / Coal (700MW x 1 unit)
- 19 Others
  - Vojany / Slovenia (120MW x 2 units)
  - Zonguldak / Turkey (160MW x 1 unit)
  - Starobei / Ukraine (200MW x 1 unit)

CFB Boiler

- 1 USA
  - Montville / Subbit. Coal (95MW x 2 units)
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  - Nueva Ventanas / Coal (240MW x 1 unit)
  - Angamos / Coal (240MW x 2 units)
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