

FLEXBIO BOILER ISLAND

Complex and mixed biomass fuels

» FLEXBIO: advanced European combustion system customized to Asia biomass fuels and market standards

Besides offering a project delivery solution in Asia, AREVA Renewables has developed its boiler technology: FlexBio. This highly flexible boiler meets customer expectations regarding its reliability and efficiency when burning mixed and complex biomass.



FlexBio boiler is a flexible technology specifically designed for complex and mixed biomass: straw, palm empty fruit bunch or coconut husk and

shell and fibrous biomass.

Based on a robust and reliable European design, AREVA Renewables' experienced R&D and engineering teams adapted FlexBio to Asian market characteristics.

FlexBio major features

- 1 Fuel flexibility to face variations in supply
- 2 Reliable boiler with continuous high availability
- 3 European design & guarantees within Asian economics constraints
- 4 Guaranteed efficiency performance (80 - 90%)
- 5 Proven performances of step grate technology

» **FlexBio** offers **fuel flexibility** and optimizes conversion efficiency to lower biomass consumption for power production.

» **FlexBio** offers industrial players a cutting-edge step grate technology to **maximize steam and electricity production** through valorization of complex and mixed biomass residues.

AREVA assets

- A bankable company and a solid network of investors
- A local presence in Asia through recognized partners and offices
- A performance guarantees scheme
- Operational excellence methodologies to deliver customized projects to its clients
- Best-in-class engineering and project execution capabilities

AREVA teams have built outstanding knowledge in combustion systems through international cross-fertilization and synergies.

Worldwide biomass specialist



Bagasse

Wood, waste wood

Complex biomass, rice husk

> 2500 MWe ↔ >100 power plants

AREVA values proximity with its clients to deliver the best-in-class engineering expertise and the most reliable boiler technology at a competitive price

Specific design for complex biomass



Complex biomass is considered as difficult to burn because of its heterogeneity, and its propensity to corrosion, fouling and ash melting. These properties result in operational difficulties, reduced efficiency and downtime. FlexBio brings a series of technical features specifically engineered to overcome these difficulties:

- Reduced superheated steam temperature
- Precise control of furnace outlet temperature
- Adaptable zone temperature at grate level

Adaptable modules for higher flexibility

Each module is designed according to the type of biomass fired:

“AREVA engineering team designed a modular boiler to provide our clients with flexibility in processing variety of complex biomass while delivering optimal combustion rate”

Ramesh Chivukula, Head of Engineering, AREVA Renewable Energies India.

- Handling system
- Three path boiler
- Step grate combustion
- Flue gas treatment

A modern manufacturing facility opened in Chennai (India) in 2011 to ensure proximity with Asian clients and production of affordable boilers compliant with European quality standards.

Key figures

Design fuel

Complex biomass (rice straw, palm EFB, ...)
Mixed biomass (mix of rice husk and straw, ...)

Steam parameters

Up to 485°C, up to 67 Bar

Boiler type

Step Grate

Boiler capacity

20 – 60 tph

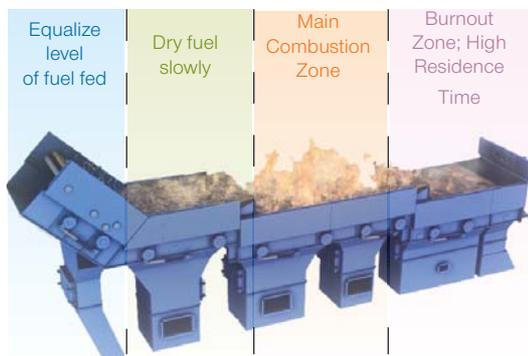
Equivalent power capacity

3 – 12 MWe

Thermal efficiency (NCV)

80 – 90%

Four combustion zones for full burnout



Each zone of the FlexBio grate has an adaptable speed and combustion air to optimize mixing and combustion.

AREVA partners acknowledgement

ENSYS GROUP

"We are proud to be part of the success to deliver biomass power plants in Thailand together with our partner, AREVA. With AREVA's engineering & project management expertise and our strong local support, we will continue delivering the best solutions of biomass power plant to Thai market."

Mr. K. Chumpol, CEO of ENSYS, Thailand.

TECHNOFIT

"AREVA is our choice to move forward and to exceed client expectations." **Mr. Izuddin Mohd Ilias, CEO of TECHNOFIT, Malaysia.**

AREVA Renewable Energies

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