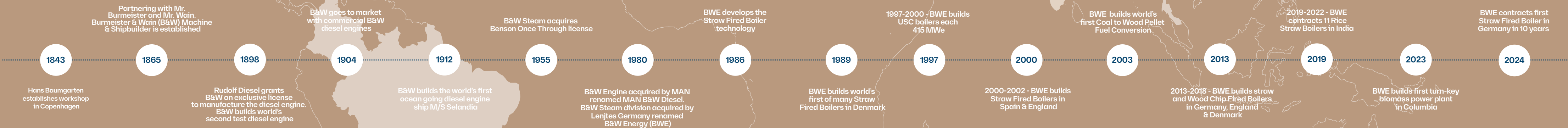


BWE
BURMEISTER & WAIN ENERGY
Berkes Group

YOUNG SINCE **1843**

BWE AROUND THE WORLD

TIMELINE



OFFICES

-  Copenhagen, Denmark
-  Madrid, Spain
-  Montevideo, Uruguay
-  New Delhi, India

NEARLY TWO CENTURIES DELIVERING ENERGY SOLUTIONS

From the early establishment in Copenhagen in 1843, Burmeister & Wain Energy reached 180 years of age in 2023 with an unbroken line of activity within steam generator design and is today the oldest steam generator manufacturer in the world.

The production of the first steam generators took place in 1852, after which steam generators became the technical and industrial identity of Burmeister & Wain Energy. The development of the steam generator to its present level and specialization has been an unprecedented accomplishment both historically and technologically as well as commercially. The technical specialization is today the most important factor for the company's continued presence in a transforming market.

The early Danish market transformation to renewable natural resources for energy production kick started Burmeister & Wain Energy to an early specialization in market development of combustion and steam generation technology. This development responds well to the World's demand of today, placing Burmeister & Wain Energy in a technologically unique position.

WHO WE ARE

One of the greatest assets of BWE is its people and its multi disciplinary organization. After more than 180 years of fossil fuel combustion the focus today is on biomass fired boilers for combined heat and power production, able to burn a wide range of biomass fuels. To remain its position as the leading boiler manufacturer, BWE always develops high quality and innovative solutions forming the very definition of Best Available Technology. Innovation is the DNA of BWE giving us a head start in the race towards the best and most influential solutions in the future energy matrix and environmental challenges.

BWE will continuously develop boiler concepts that respect the most stringent standards and regulations as well as concepts that foresee the needs of the future.

In order to attract the most qualified employees, BWE will always offer a good working environment with focus on professional and personal development through challenging work tasks. The employees represent the main asset of BWE and the success of the company depends entirely on their performance.



PROJECTS

PROJECTS



Lille
France 

Supply: Boiler Island
Steam: 14 tph, 16 bara, 210 °C
Input: 11 MWt
Output: 0 MWe + 10 MWt
Fuel: 100% Spent Grain
Cyclonic Combustion Chamber
COD: 2026 ex



Logrosan
Spain 

Supply: Boiler Island
Steam: 143 tph, 140 bara, 543 °C, 543 °C
Input: 123 MWt
Output: 50 MWe & 0 MWt
Fuel: 100% Wood Chips & 10% Olive Cake
Water Cooled Vibration Grate
COD: 2026 ex



Sinnamary
French Guiana 

Supply: Boiler Island
Steam: 45 tph, 80 bara, 525 °C
Input: 40 MWt
Output: 11 MWe & 0 MWt
Fuel: 100% Wood Chips
Water Cooled Vibration Grate
COD: 2025 ex



Slobozia
Romania 

Supply: Boiler Island
Steam: 35 tph, 55 bara, 455 °C
Input: 31 MWt
Output: 5 MWe & 23 MWt
Fuel: 100% Sunflower Husk
Cyclonic Combustion Chamber
COD: 2023



Lachendorf
Germany 

Supply: Boiler Island
Steam: 72 tph, 112 bara, 543 °C
Input: 54 MWt
Output: 12 MWe & 38 MWt
Fuel: 100% Straw & 60% Waste Wood
Water Cooled Vibration Grate
COD: 2027 ex



Villanueva
Colombia 

Supply: Power Plant
Steam: 110 tph, 66 bara, 485 °C
Input: 94 MWt
Output: 25 MWe & 0 MWt
Fuel: 100% Wood Chips
Water Cooled Vibration Grate
COD: 2025



Chattergarh
India 

Supply: Boiler Island
Steam: 74 tph, 96 bara, 540 °C
Input: 59 MWt
Output: 15 MWe & 0 MWt
Fuel: 100% Mustard Husk
Water Cooled Vibration Grate
COD: 2025 ex



Kurukshetra-
Haryana, India 

Supply: Boiler Island
Steam: 75 tph, 96 bara, 540 °C
Input: 56 MWt
Output: 15 MWe & 0 MWt
Fuel: 100% Rice Straw
Water Cooled Vibration Grate
COD: 2022



Cerro Largo
Uruguay 

Supply: Boiler Island
Steam: 55 tph, 20 bara, 220 °C
Input: 37 MWt
Output: 0 MWe & 33 MWt
Fuel: 100% Wood Chips
Water Cooled Vibration Grate
COD: 2026 ex



Lleida
Spain 

Supply: Boiler Island
Steam: 50 tph, 44 bara, 355 °C
Input: 40 MWt
Output: 2 MWe & 34 MWt
Fuel: 100% Wood Chips
Water Cooled Vibration Grate
COD: 2024



Jalkheri-Punjab
India 

Supply: Boiler Island
Steam: 50 tph, 68 bara, 490 °C
Input: 41 MWt
Output: 12 MWe & 0 MWt
Fuel: 100% Rice Straw
Water Cooled Vibration Grate
COD: 2023



Gent
Belgium 

Supply: Boiler Island
Steam: 100 tph, 105 bara, 470 °C
Input: 76 MWt
Output: 20 MWe & 48 MWt
Fuel: 100% Waste Wood
Water Cooled Vibration Grate
COD: 2022

PROJECTS



Puerto Carreño
Colombia



Supply: Power Plant
Steam: 24 tph, 69 bara, 485 °C
Input: 20 MWt
Output: 6 MWe & 0 MWt
Fuel: 100% Wood Chips
Travelling Grate
COD: 2021



Kent
England



Supply: Boiler Island
Steam: 90 tph, 140 bara, 540 °C, 540 °C
Input: 78 MWt
Output: 28 MWe & 0 MWt
Fuel: 100% Wood Chips
Water Cooled Vibration Grate
COD: 2018



Lisbjerg
Denmark



Supply: Boiler Island
Steam: 152 tph, 112 bara, 543 °C
Input: 110 MWt
Output: 35 MWe & 78 MWt
Fuel: 100% Straw & 50% Wood Chips
Water Cooled Vibration Grate
COD: 2017



Sète
France



Supply: Boiler Island
Steam: 40 tph, 36 bara, 295 °C
Input: 33 MWt
Output: 2 MWe & 28 MWt
Fuel: 100% Sunflower Husk
Cyclonic Combustion Chamber
COD: 2014



Santa Rosa
Argentina



Supply: Boiler Island
Steam: 76 tph, 69 bara, 490 °C
Input: 58 MWt
Output: 18 MWe & 0 MWt
Fuel: 100% Wood Chips
Water Cooled Vibration Grate
COD: 2019



Cacao,
French Guiana



Supply: Boiler Island
Steam: 23 tph, 69 bara, 485 °C
Input: 20 MWt
Output: 6 MWe & 0 MWt
Fuel: 100% Wood Chips
Travelling Grate
COD: 2018



Brigg
England



Supply: Boiler Island
Steam: 152 tph, 112 bara, 543 °C
Input: 117 MWt
Output: 38 MWe & 0 MWt
Fuel: 100% Straw & 20% Wood Chips
Water Cooled Vibration Grate
COD: 2016



Emlichheim
Germany



Supply: Boiler Island
Steam: 67 tph, 112 bara, 522 °C
Input: 50 MWt
Output: 16 MWe & 29 MWt
Fuel: 100% Straw
Water Cooled Vibration Grate
COD: 2013



San José
Uruguay



Supply: Boiler Island
Steam: 2 x 40 tph, 43 bara, 450 °C
Input: 2 x 37 MWt
Output: 15 MWe & 0 MWt
Fuel: 100% Wood Chips
Travelling Grate
COD: 2019



Snetterton
England



Supply: Boiler Island
Steam: 173 tph, 112 bara, 543 °C
Input: 130 MWt
Output: 42 MWe & 0 MWt
Fuel: 100% Straw & 50% Wood Chips
Water Cooled Vibration Grate
COD: 2017



Sealford
England



Supply: Boiler Island
Steam: 152 tph, 112 bara, 543 °C
Input: 115 MWt
Output: 38 MWe & 2 MWt
Fuel: 100% Straw & 20% Wood Chips
Water Cooled Vibration Grate
COD: 2014



Avedøre
Denmark



Supply: Boiler Island
Steam: 1067 tph, 305 bara, 582 °C, 600 °C
Input: 860 MWt
Output: 415 MWe & 402 MWt
Fuel: 100% Wood Pellets
Multi Fuel Burner
COD: 2000



OPERATIONS

With the assistance of its four strategically located offices in Montevideo, Madrid, Copenhagen and New Delhi, Berkes Group has successfully delivered projects in 25 countries around the world.

Uruguay, Argentina, Brazil, Bolivia, Chile, Colombia, Denmark, Dominican Republic, France, French Guiana, Germany, Hungary, Mexico, Paraguay, People's Republic of China, Romania, Slovakia, Spain, Sweden, Turkey, Thailand, England, India, Peru, Belgium.



TECHNOLOGIES

MASTERING COMPLEX BIOMASS



Agricultural

Rice
Straw



Agricultural

Cereal
Straw



Agricultural

Corn
Stover



Agricultural

Cotton
Stalks



Agricultural

Palm
Leaf



Industrial

Nut
Shells



Industrial

Sunflower
Husk



Industrial

Rice
Husk



Industrial

Olive
Cake



Industrial

Bagasse



Forest

Wood
Chips



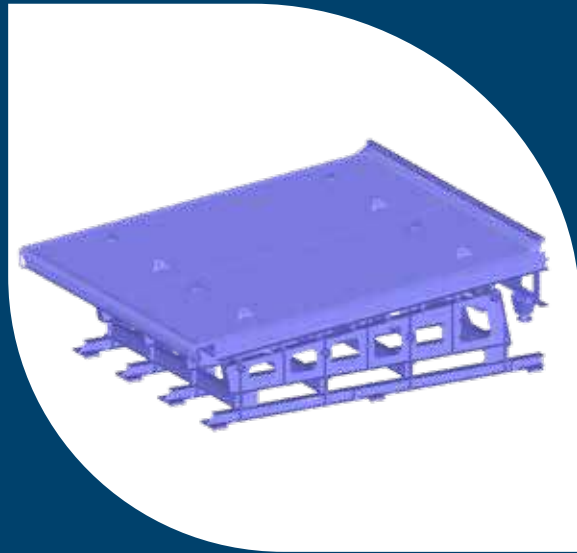
Forest

Wood
Pellets



TECHNOLOGY

COMBUSTION SYSTEM



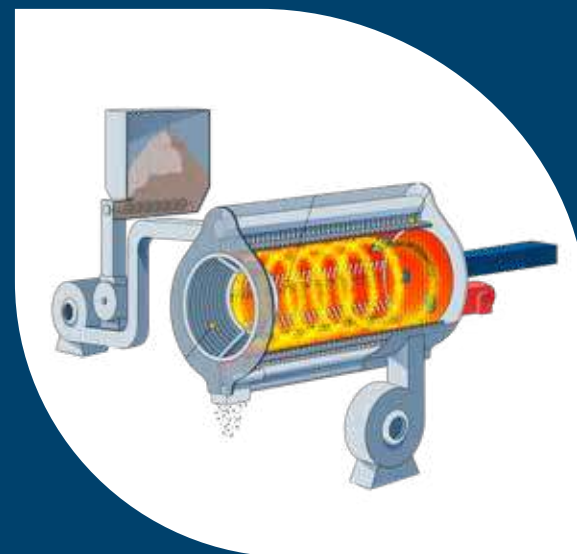
Water Cooled Vibration Gate

The Water Cooled Vibration Gate (WCVG) is a BWE in-house design, which is offered in sizes from 30 to 150 MWt. The design can be tailored to customer requirements and optimized for specific fuels like Wheat Straw, Rice Straw, Corn Stover, Mustard Husk, Palm Leaves, Sugarcane Top Trash, Wood Chips and more. Specific fuel feeding systems are adapted depending on the type of fuel being applied. The WCVG is an integrated part of the evaporator. Primary Air is introduced underneath the grate and takes up 30 % of the combustion air. The remaining 70 % is introduced as Ignition Air, Secondary Air and Overfire Air staging the combustion for superior NOx formation control. The WCVG offers high availability and low maintenance costs.



Multi Fuel Burner

The Multi Fuel Burner (MFB) is a BWE in-house design, which is offered in sizes from 15 MWt to 100 MWt. The design can be tailored to customer requirements including fuel flexibility, air staging and adjustable swirl. The Multi Fuel Burner can be designed for Natural Gas, Heavy Fuel Oil, Light Fuel Oil, Coal Dust or Wood Dust. All fuels can be applied in a single unit and with automated transition. Fuels are controlled individually to obtain optimum flame shape, stability and temperature as well as Ultra Low NOx and CO formation. Air staging is important and involves the stratification of Primary, Secondary and Tertiary Air, Over Burner Air (OBA) and Over Fire Air (OFA). This applies to all boilers, burner arrangements and combustion air designs.



Cyclonic Combustion Chamber

The Cyclonic Combustion Chamber (CCC) is a BWE in-house design, which is offered in sizes from 10 to 40 MWt. The design can be tailored to customer requirements and optimized for specific fine dust fuels like Saw Dust, Sunflower Husk, Meat and Bone Meal. The horizontally oriented Water Cooled Cyclonic Combustion Chamber is an integral part of the evaporator. Fuel is carried to the combustion chamber pneumatically and enters tangentially. Air nozzles enforces the cyclonic movement inside the combustion chamber enhancing residence time, turbulence, temperature distribution and combustion efficiency. The CCC offers high availability and low maintenance costs.



Step-Grate

The Step-Grate system is a robust and proven solution for the thermal conversion of challenging solid fuels, including refuse-derived fuel (RDF), solid recovered fuel (SRF), municipal solid waste (MSW), waste wood (A1/A2/A3), and other mixed waste fuels. The technology is designed to ensure stable combustion, high availability, and excellent fuel flexibility, and is available in thermal capacities ranging from 20 to 60 MWt. The grate consists of a series of stepped, moving rows made of durable cast elements that gradually convey the fuel through distinct combustion zones. Depending on fuel characteristics and plant requirements, the system can be configured with either air-cooled or water-cooled grates, ensuring reliable operation and long service life under demanding conditions.

TECHNOLOGY

FUEL FEEDING SYSTEM

Double Screw Stoker

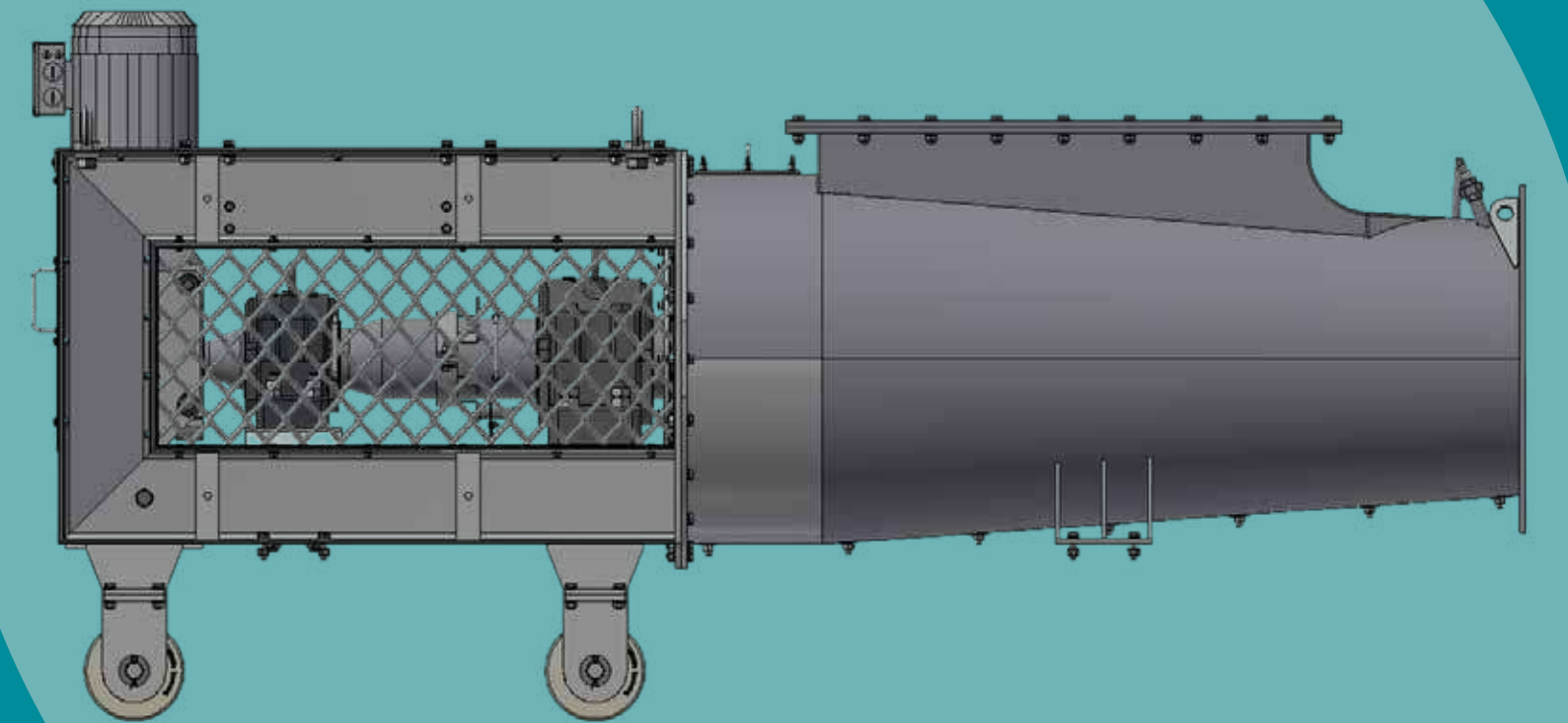
The Double Screw Stoker is a BWE in-house design. It is a fuel feeding system designed for low density fibrous fuels like Wheat Straw, Rice Straw, Corn Stover, Mustard Husk, Palm Leaves, Sugarcane Top Trash and more. As loosened fuel leaves the bales opener, it drops down into the Double Screw Stoker, which consists of two parallel and opposite rotating conical and progressive screws. The Double Screw Stoker ensures that fuel and twines are recompressed forming an air tight plug, and that it is pushed slowly onto the grate. The fuel can be mixed with 50 % Wood Chips and still form an air tight plug.

Single Screw Stoker

The Single Screw Stoker is a BWE in-house design. It is a fuel feeding system for high density particulate fuels like Wood Chip and Wood Pellets.

Spreader Stoker

The Spreader Stoker is a BWE in-house design. It is a fuel feeding system designed for high density particular fuels like Wood Chips, Wood Briquettes and Wood Pellets. Fuel is continuously propelled into the furnace and onto the grate by an air jet pneumatically accelerating the fuel. A pulsing air jet mechanism in the spreader ensures distribution of the fuel. From the landing area in the upper grate end, the grate vibration will even out the fuel layer to cover the upper cross section of the grate. Fuel quality can be selected in a wide range of heating values.



TECHNOLOGY

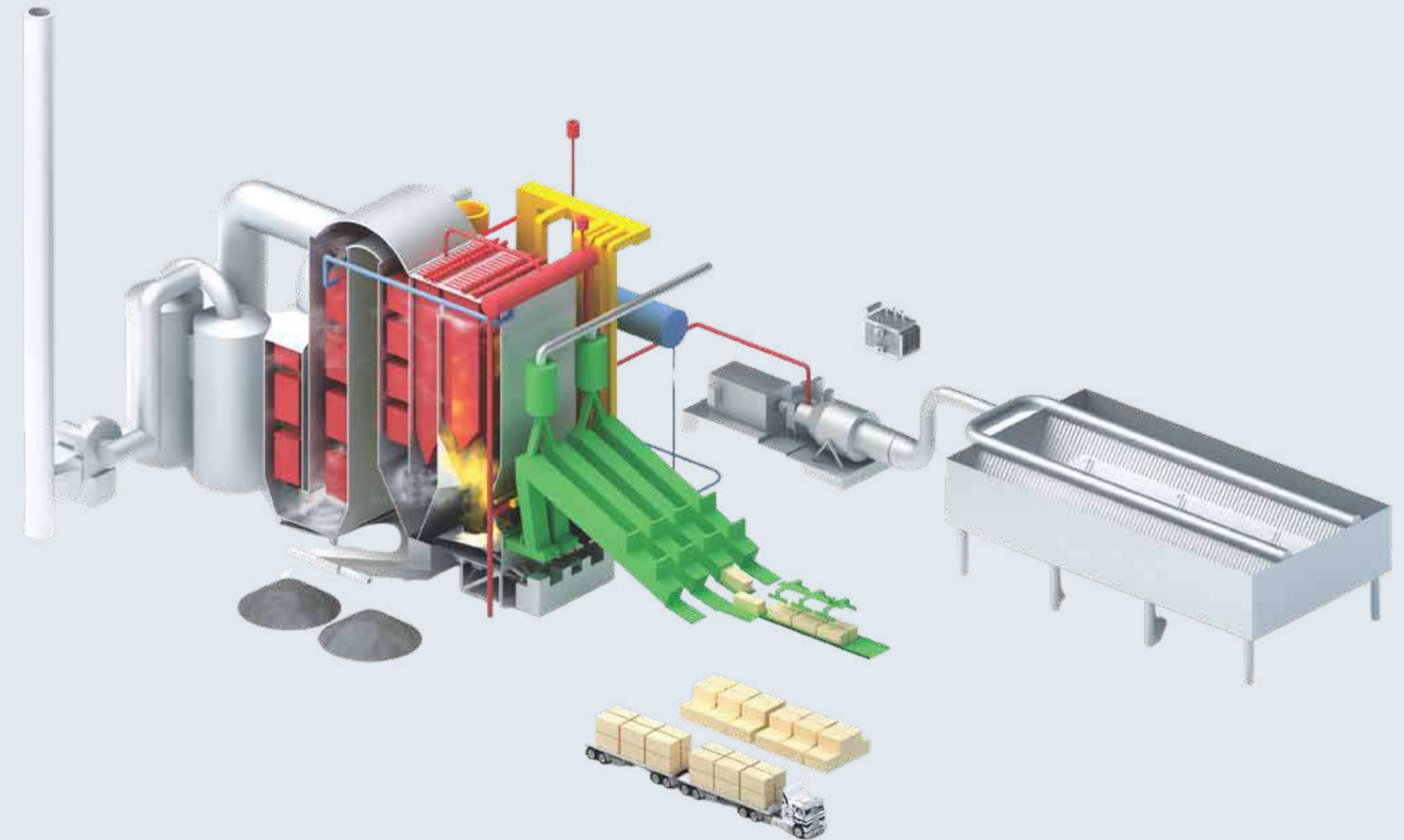
BALE HANDLING SYSTEM

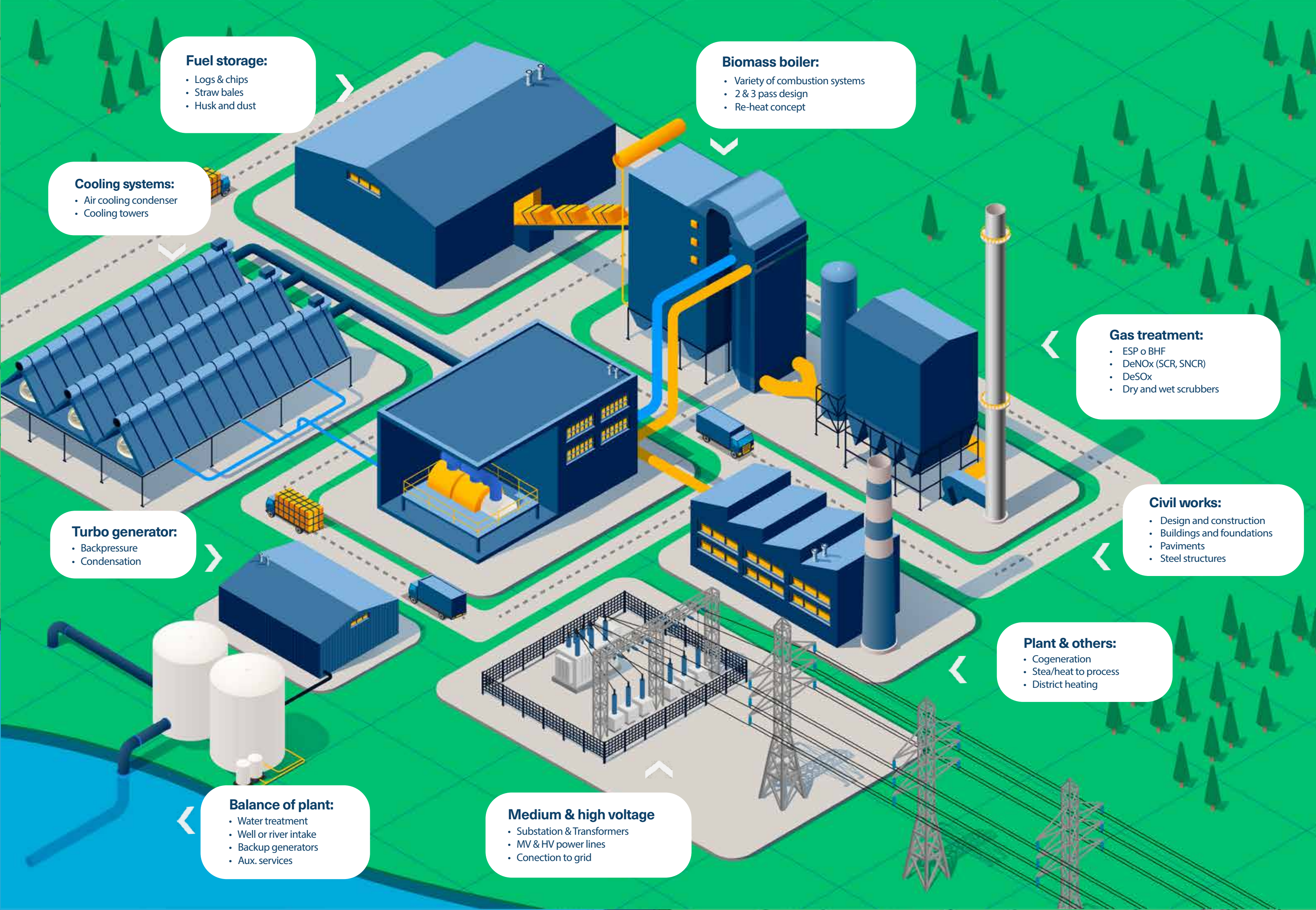
Warehouse Management System

BWE offers a complete automated fuel handling system for baled fuel from reception in the warehouse to feeding the boiler. Warehouse Management is key and consists of a Supplier & Supply Identification Station (SSID), a SQL Database and a Warehouse Management Software. The SSID registers the supplier and stores in the SQL Database. The roof crane lifts the supply of 12 bales directly from the truck (Full Automatic) or from the floor (Semi Automatic) and places them in the warehouse at a specified position provided by the Warehouse Management Software. The crane measures the weight and moisture content in the bales during lift and links the data to the supplier already registered in the SQL Database. The Warehouse Management System (WMS) also ensures that the Reception Conveyor is replenished.

Bale Conveyor System

BWE offers a complete automated Bale Conveyor System for baled fuel from reception in the warehouse to feeding the boiler. The first component in the automated train is the Reception Conveyor. The Reception Conveyor holds 12, 24 or 36 bales in waiting depending on plant size. A Transfer Conveyor receives two bales and delivers them one by one to the feeding line calling for fuel. A Weighing Conveyor measures the weight and moisture content of the individual bale, needed for the operation of the boiler. Next the bales enter the Air Lock Conveyor followed by two Buffer Conveyors. Then the String Cutter Conveyor cuts the twines followed by the Dosing Conveyor pushing the bales towards the Bale Opener loosening up the bales. From the Bale Opener fuel and twines drop down into the Double Screw Stoker..





Fuel storage:

- Logs & chips
- Straw bales
- Husk and dust

Biomass boiler:

- Variety of combustion systems
- 2 & 3 pass design
- Re-heat concept

Cooling systems:

- Air cooling condenser
- Cooling towers

Gas treatment:

- ESP o BHF
- DeNOx (SCR, SNCR)
- DeSOx
- Dry and wet scrubbers

Turbo generator:

- Backpressure
- Condensation

Civil works:

- Design and construction
- Buildings and foundations
- Paviments
- Steel structures

Balance of plant:

- Water treatment
- Well or river intake
- Backup generators
- Aux. services

Plant & others:

- Cogeneration
- Stea/heat to process
- District heating

Medium & high voltage

- Substation & Transformers
- MV & HV power lines
- Conection to grid

EPC/EPCM

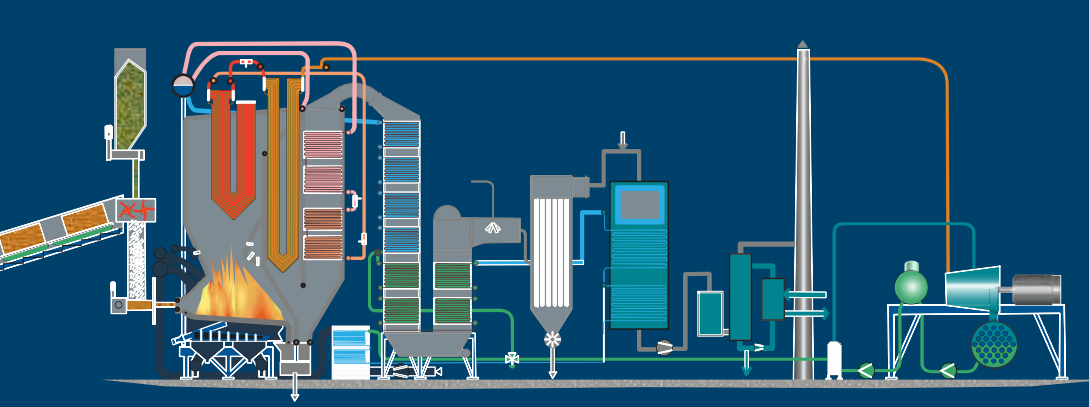
BWE delivers projects under EPC and EPCM contracting models, adapting the execution strategy to the specific needs of each client and project.

Under an EPC (Engineering, Procurement and Construction) model, BWE assumes full responsibility for engineering, equipment supply, construction, and commissioning, delivering a complete turnkey plant with guaranteed performance, schedule, and cost.

Under an EPCM (Engineering, Procurement and Construction Management) model, BWE acts as the owner's engineering and project management partner, leading engineering, procurement coordination, and construction management, while the client retains direct contractual relationships with suppliers and contractors.

Both models benefit from BWE's integrated capabilities and experience, ensuring reliable, efficient, and sustainable biomass energy projects.

BOILER CONCEPTS



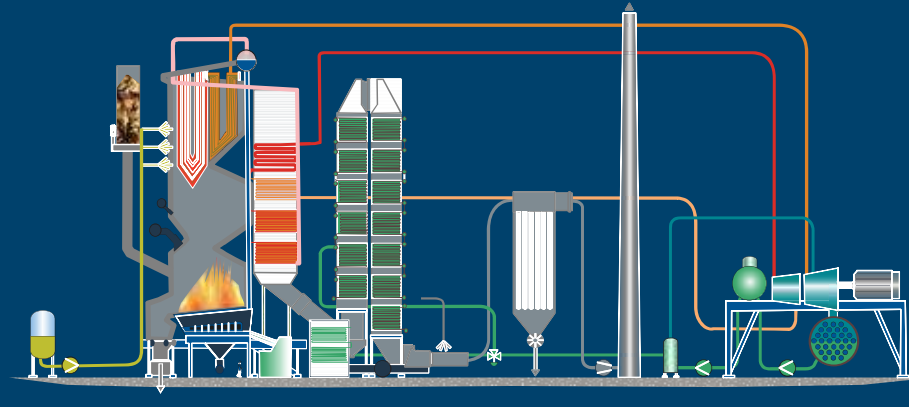
3 PASS BOILER SH & RH

Agricultural Biomass Residue High Alkaline
 Base: Wheat Straw, Rice Straw, Corn Stover,
 Mustard Husk, Palm Leaves, Sugarcane Top Trash ...
 Supplement: Wood Chips, Wood Pellets ...

Fuel: 100% Base & 50% Supplement
 Type: Three Pass Boiler Design
 Water Cooled Vibration Grate
 Double Screw Stoker
 Combustion Air PreHeating
 Submerged Bottom Ash Conveyor
 Flue Gas Treatment with SCR or SNCR

Single Heat
 Sizes: 60, 90, 120 & 150 MWt
 Fuel Lines: 2, 3, 4 or 5
 Steam: 110 bara, 540 °C
 Slagging Pending Super Heater
 Attemperators: 3

ReHeat
 Sizes: 120 & 150 MWt
 Fuel Lines: 4 or 5
 Steam: 140 bara, 540 °C, 540 °C
 Slagging Pending Super Heater
 Slagging Pending Re Heater
 Attemperators: 3+1



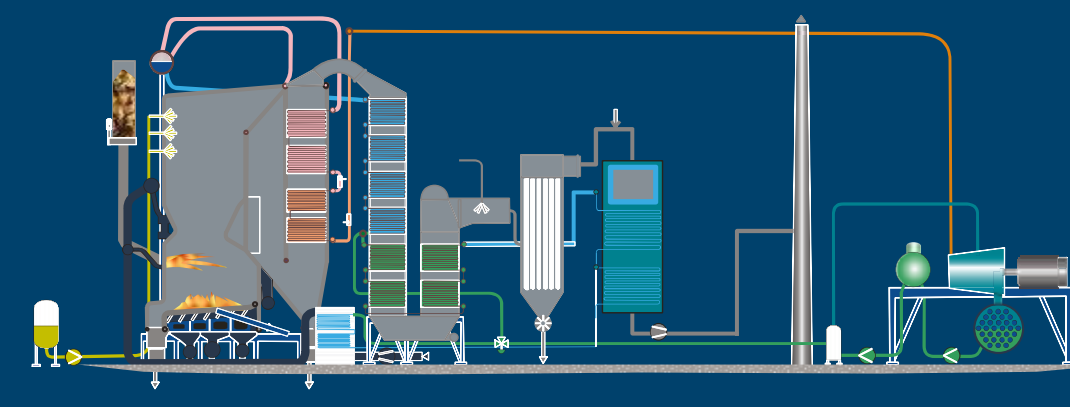
2 PASS BOILER SH & RH

Forest Biomass Residue Low Alkaline
 Base: Wood Chips, Wood Pellets ...

Fuel: 100% Base
 Type: Two Pass Boiler Design
 Water Cooled Vibration Grate
 Spreader Stoker
 Combustion Air PreHeating
 Primary Air PreHeating FW
 Submerged Bottom Ash Conveyor
 Flue Gas Treatment with SCR or SNCR

Single Heat
 Sizes: 30, 45, 60, 75, 90, 105, 120, 135 & 150 MWt
 Fuel Lines: 2, 3, 4, 5, 6, 7, 8, 9 & 10
 Steam: 110 bara, 540 °C
 Slagging Pending Super Heater
 Attemperators: 3

ReHeat
 Sizes: 75, 90, 105, 120, 135 & 150 MWt
 Fuel Lines: 5, 6, 7, 8, 9 & 10
 Slagging Pending Super Heater
 Slagging Pending Re Heater
 Attemperators: 3+1
 Steam: 140 bara, 540 °C, 540 °C

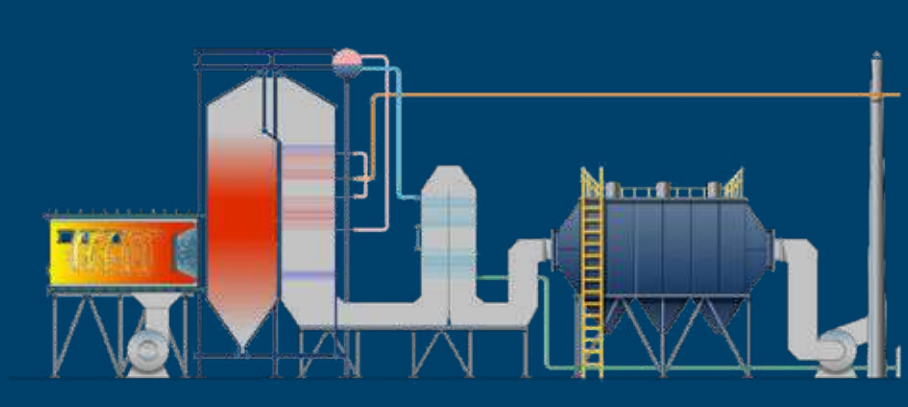


3 PASS BOILER SH

Waste A1/A2/A3/RDF/MSW Low Alkaline
 Base: Waste Wood Chips, Refuse Derived Fuel, Municipal Solid Waste.

Fuel: 100% Base
 Type: Three Pass Boiler Design
 Water Water Cooled Vibration Grate or Water Cooled Step Grate
 Furnace Inconel Lining
 Spreader Stoker or Hydraulic Pushers
 Combustion Air PreHeating
 Primary Air PreHeating FW
 Submerged Bottom Ash Conveyor
 Flue Gas Treatment with SCR or SNCR
 WI T2S Compliant

Single Heat
 Sizes: 20, 30, 45, 60, 75, 90, 105, 120, 135 & 150 MWt
 Fuel Lines: 2, 3, 4, 5, 6, 7, 8, 9 & 10
 Steam: 110 bara, 470 °C
 Attemperators: 2



2 PASS BOILER CCC SH

Industrial Biomass Residue Low Alkaline
 Base: Wood Dust, Sunflower Husk, Bone Meal ...

Fuel: 100% Base
 Type: Two Pass Boiler Design
 Cyclonic Combustion Chamber
 Pneumatic Fuel Injection
 Combustion Air PreHeating
 Water Cooled Bottom Ash Conveyor
 Flue Gas Treatment with SCR or SNCR

Single Heat
 Sizes: 20, 40, 60 & 80 MWt
 Fuel Lines: 1 & 2
 Steam: 100 bara, 450 °C
 Attemperators: 2

MUNICIPALITIES & INDUSTRY

BWE offers on-demand Independent Combined Heat & Power (ICHP) boilers for municipalities and Behind The Meter (BHT) Combined Heat & Power (CHP) for industries which want to transition to an available and abundant renewable energy source while at the same time reducing operating cost and preserving the environment.

BWE supports municipalities and industries in their green transition and commitment to environmental conservation. Our solutions eliminates the carbon footprint and utilizes the full fuel energy by combining heat and power and by using Agricultural Biomass Residue like Wheat Straw, Rice Straw, Corn Stover, Mustard Husk, Palm Leaves and Sugarcane Top Trash or Industrial Biomass like Wood Dust, Sunflower Husk, Rice Husk, Spent Grain and many more.

BWE has extensive experience in carrying out Combined Heat & Power (CHP) concepts making it possible to generate electrical power and thermal heat in the same solution. The heat component can be provided as saturated steam or hot water.

ENGINEERING

BWE has its own engineering team providing clients with customized solutions to utilize renewable biomass fuels for the generation of on-demand green, abundant and competitive energy.



Basic Engineering

BWE appreciates to participate in projects from their early development. This allows a smooth transition to from Conceptual Engineering to Basic Engineering and an early and accurate assessment of supply and assembly works for an accurate quote.

BWE engineering team develops concepts and basic engineering data, prepares plan view drawings, arrangements drawings, technical specifications and bill of quantities and other relevant documentation necessary for an early and accurate quote.



Detailed Engineering

BWE supports projects in all stages from Basic Engineering to final Detailed Engineering & Design making the supply ready for purchase and assembly.

BWE follows the most stringent Safety and Design Standards. All requirements are considered in the design phase to achieve an end result that secures high quality, long life time and safe operation.



Boiler Revamping

BWE offers modification of existing boilers as revamping and fuel conversion:

- Modifying pressure part and converting combustion systems to biomass on existing boilers
- Conversion of industrial boilers to Combined Heat & Power
- Upgrade, supply and assembly of Flue Gas Treatment systems

SERVICES

We are a specialized boiler engineering center of competence focused on the comprehensive lifecycle of thermal systems and power generation plants. We distinguish ourselves by combining the rigor of advanced design and CFD modeling with deep hands-on experience in field operations and maintenance.

In a rapidly evolving industrial landscape, we help our clients maximize asset efficiency, ensuring operational safety while leading the transition toward cleaner processes through emission reduction solutions and fuel conversions. From initial concept to daily management, we are the strategic technical partner that ensures the continuity and profitability of your operation

1. Advanced Design & Simulation

Technical precision to guarantee performance from the conceptual phase.

- Pressure Parts Design
- Boiler Water Circulation Modeling
- CFD (Computational Fluid Dynamics) Modeling
- Strength and flexibility analysis of new or existing high pressure piping systems

3. Asset Integrity & Technical Inspection

Ensuring safety and operational continuity through expert diagnostics.

- On-Site & Pressure Parts Inspections
- Fitness for Service (FFS) Analysis
- Failure Investigations & Remaining Life Time Assessment Estimation
- Independent QA/QC

2. Modernization, Efficiency & Environmental Sustainability

Transforming existing assets to meet future standards and digital integration.

- Retrofitting & Revamping:
- Fuel Conversions
- Low NOx Combustion Systems
- Emission Reduction Studies
- Fuel Feeding Systems
- Control, DCS & SCADA Systems
- Instrumentation & Electrical Power (LV/MV)

4. Project Management & Operations and Maintenance (O&M)

Comprehensive support from construction to daily plant management.

- Greenfield & Brownfield Projects
- Maintenance Shutdown Management & Execution
- Urgent unplanned outage support
- Operation & Maintenance (O&M) Contracts
- Spare Parts Analysis & Risk Assessment

BWE

BURMEISTER & WAIN ENERGY

Berkes Group

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