



ANDRITZ GROUP

BIOMASS BOILERS

EXPOBIOMASA 2023

APRIL 20, 2023

ILKKA VENÄLÄINEN

VP POWER BOILERS FINLAND

ANDRITZ

ENGINEERED SUCCESS

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THE ANDRITZ GROUP



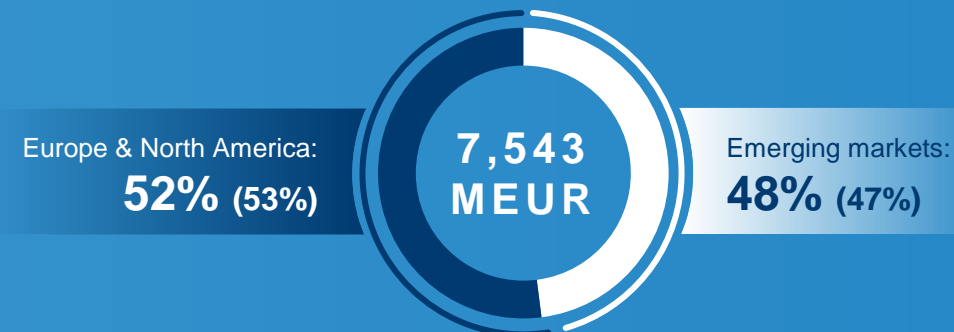
GLOBAL PRESENCE

Headquarter
**GRAZ,
AUSTRIA**

Production sites and service/
sales companies worldwide:
OVER 280



REVENUE BY REGION 2022 (2021)



KEY FINANCIAL FIGURES

	UNIT	2022	2021
Order intake	MEUR	9,263.4	7,879.7
Order backlog (as of end of period)	MEUR	9,976.5	8,165.8
Revenue	MEUR	7,542.9	6,463.0
Net income (including non-controlling interests)	MEUR	402.6	321.7
Employees (as of end of period; without apprentices)	-	29,094	26,804

PULP & PAPER (48 %*)

METALS (22 %*)

HYDRO (20%*)

SEPARATION (10 %*)

ANDRITZ PORTFOLIO FOR BIOMASS



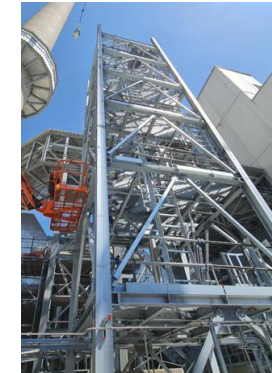
**Equipment for biomass
preparation and handling**



Biomass Boilers



**Air pollution control equipment
incl. CO₂ capture**



Dryers



Gasifiers



**Pelleting machines &
complete lines**



Services for equipment



ANDRITZ POWER BOILERS – PRODUCTS



Product Line: Fluidized Bed Boilers

EcoFluid

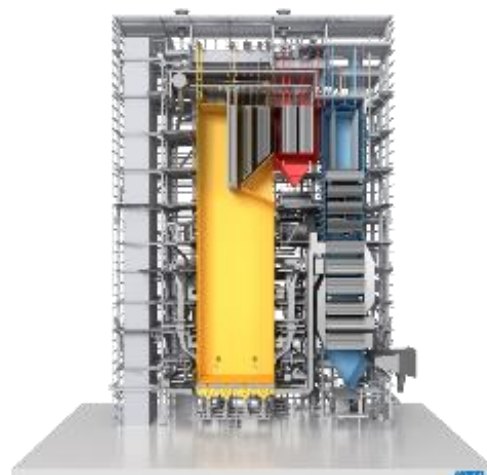
Bubbling Fluidized Bed (BFB) boiler

DATA RANGE:

Fuel input: 3 ... 20 MJ/kg (LHV)
Steam flow: 15 ... 450 t/h
Fuel heat input: 10 ... 350 MW_f
Electrical output: 5 ... 100 MW_e

FUELS:

- Biomass (wood chips, forest residues, bark, saw dust, pellets, agro-biomass)
- Wood waste
- Peat
- Sludges
- Pre-treated municipal & industrial waste
- Rejects
- Refuse-Derived Fuels (RDF) / Solid Recovered Fuels (SRF)
- Animal litter



References
> 75 pcs

PowerFluid

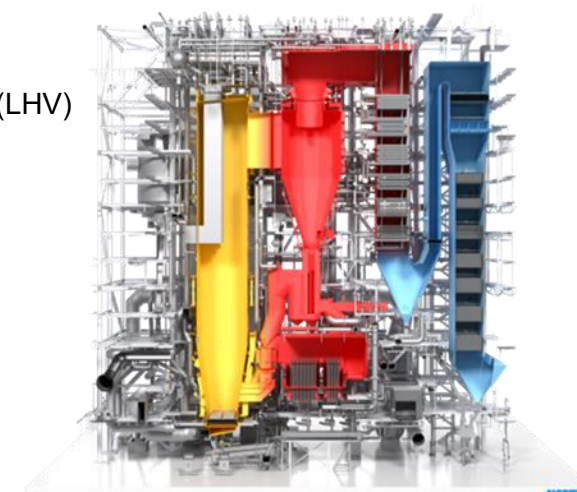
Circulating Fluidized Bed (CFB) boiler

DATA RANGE:

Fuel input: 5 ... 42 MJ/kg (LHV)
Steam flow: 100 ... 750 t/h
Fuel heat input: 80 ... 550 MW_f
Electrical output: 20 ... 250 MW_e

FUELS:

- Biomass (wood chips, pellets, agro-biomass, palm kernel shells)
- Wood waste
- Industrial waste (rejects)
- Sludge (co-firing)
- Municipal waste, Refuse-Derived Fuels (RDF), Solid Recovered Fuels (SRF)
- Coal



References
> 50 pcs

ANDRITZ POWER BOILERS – PRODUCTS



New Product Line: Grate Boilers

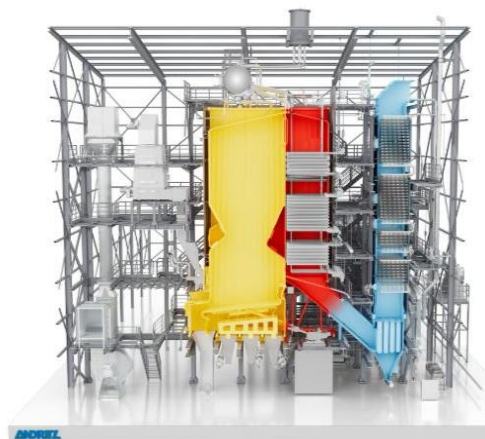
Boilers with vibrating grate

DATA RANGE:

Fuel heat value:	7 - 20 MJ/kg (LHV)
Steam flow:	15 - 160 t/h
Fuel heat input:	10 – 170 MW _f
Electrical output:	2- 45 MW _e

FUELS:

- Biomass (wood chips, bark, saw dust, pellets, straw, energy cane, bagasse, agro-biomass, forest residues)
- Waste wood



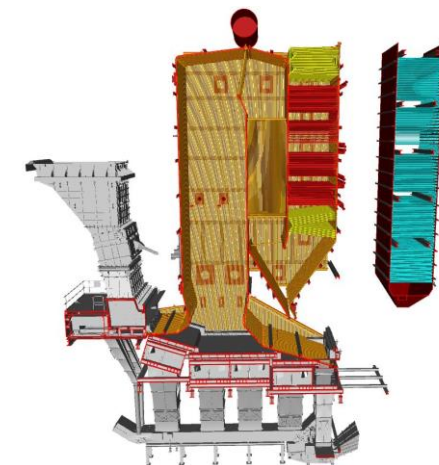
Boilers with water or air-cooled grate*

DATA RANGE:

Fuel heat value:	7 - 30 MJ/kg (LHV)
Steam flow:	20 - 160 t/h
Fuel heat input:	10- 170 MW _f
Electrical output:	2 - 45 MW _e

FUELS:

- Waste wood
- Household / Municipal waste
- Refuse Derived Fuels (RDF), Solid Recovered Fuels (SRF)
- Chemical and hazardous waste
- Industrial waste



* Grate provided by external partner

ANDRITZ POWER BOILERS ADVANCED SOLUTIONS FOR BIOMASS



Selected **EcoFluid BFB** references for biomass

EcoFluid-BFB

Ence Navia
Spain



Fuels: Euca bark, fines, biomass residues

Steam flow 120 t/h

Steam pressure 124 bar(a)

Steam temp. 500° C

Start-up 2009

EcoFluid-BFB

Ence Huelva
Spain



Fuels: Euca chips, energy crops

Steam flow 195 t/h

Steam pressure 101 bar(a)

Steam temp. 500° C

Start-up 2011

EcoFluid-BFB

Navigator Setúbal & Cacia
Portugal



Fuel: Bark (euca, pine), wood residues

Steam flow 2 x 58 t/h

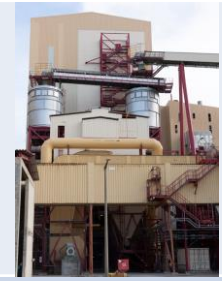
Steam pressure 93 bar(a)

Steam temp. 472° C

Start-up 2010

EcoFluid-BFB

Navigator Figueira
Portugal



Fuels: Euca bark, screen rejects, sludge

Steam flow 150 t/h

Steam pressure 92 bar(a)

Steam temp. 490° C

Start-up 2020

ANDRITZ POWER BOILERS ADVANCED SOLUTIONS FOR BIOMASS



Selected **EcoFluid BFB** references for biomass

EcoFluid-BFB

Pori Energia
Finland



Fuels: Forest residues, bark, saw dust

Steam flow 103 t/h

Steam pressure 117 bar(a)

Steam temp. 525° C

Start-up 2020

EcoFluid-BFB

Växjö Energi
Sweden



Fuels: Forest residues, bark, saw dust

Steam flow 155 t/h

Steam pressure 140 bar(a)

Steam temp. 541° C

Start-up 2014

EcoFluid-BFB

E.ON Climate & Renewables
UK



Fuel: Demolition wood

Steam flow 119 t/h

Steam pressure 85 bar(a)

Steam temp. 490° C

Start-up 2014

EcoFluid-BFB

Virginia
USA



Fuels: Bark, wood residues, sludge

Steam flow 298 t/h

Steam pressure 105 bar(a)


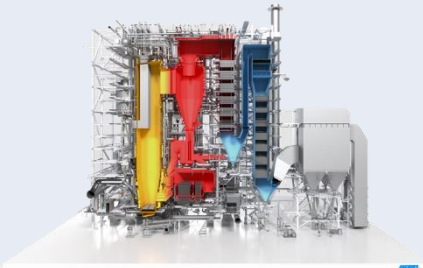
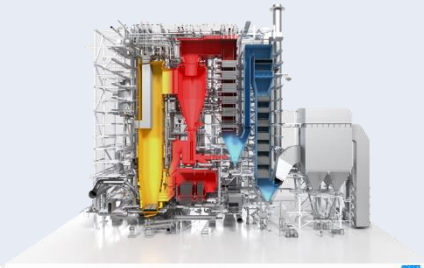

Steam temp. 524° C

Start-up 2014

ANDRITZ POWER BOILERS ADVANCED SOLUTIONS FOR BIOMASS



Selected **PowerFluid CFB** and **Vibro Grate** references for biomass

PowerFluid-CFB	PowerFluid-CFB	PowerFluid-CFB	Vibro Grate
Värtaverket-138 MWe Sweden	Ichihara-50 MWe Japan	Tokushima-75 MWe Japan	Glina Croatia
			
Forest residues, bark, saw dust, biomass pellet, peat (coal)	Wood Pellets, PKS	Wood Pellets, PKS	Wood chips
Steam flow 467 t/h	Steam flow 149/130 t/h	Steam flow 230/217 t/h	Steam flow 26.4 t/h
Steam pressure 143 bar(a)	Steam pressure 140/31 bar(a)	Steam pressure 153/42 bar(a)	Steam pressure 72 bar(a)
Steam temp. 562° C	Steam temp. 543/543° C	Steam temp. 542/541° C	Steam temp. 480° C
Start-up 2016	Start-up 2020	Start-up 2022	Start-up 2017

ANDRITZ OFFERS A FULL RANGE OF VALUE-ADDED SERVICES



Power Boiler Service

Service packages for greater reliability and availability

- Status inspections and diagnostics
- Shutdown planning
- Start-up support and optimization
- Annual safety function check
- Advisory services
- Online monitoring
- Synergy contracts for improved boiler operation

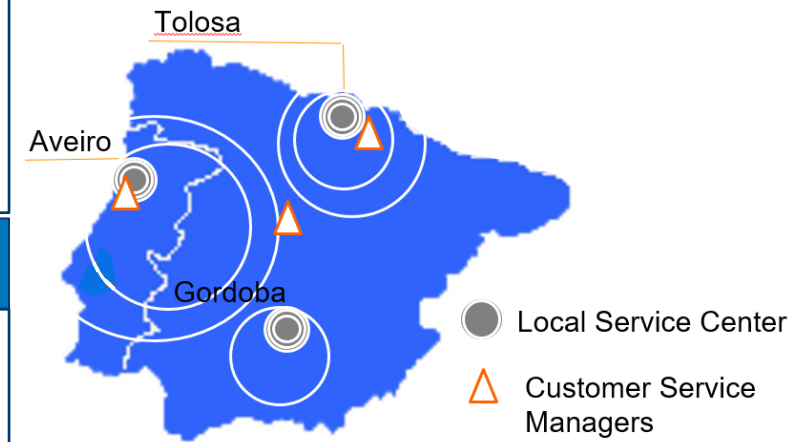
24/7 services near your plant

- Support in preparation of repair procedures
- Supervision of repair works with decision support
- Local partners for repair of pressure parts, NDT testing and inspections

Spare and wear parts

- Full range of replacement parts and engineered wear products for ANDRITZ and other OEM machines

LOCAL SERVICE CENTERS





SUMMARY

ANDRITZ is experienced supplier of biomass boilers and related equipment and services

ANDRITZ products for biomass include biomass handling equipment, fluidized bed boilers, grate boilers, gasifiers, dryers and pellet machines

Extensive knowledge on different biomass fuels

Local service available for customer support



PLANT POWER FOR POWER PLANTS

ANDRITZ
ENGINEERED SUCCESS

**VISIT US AT
EXPOBIOMASA
2023**

MAY 9-11, 2023
VALLADOLID, SPAIN

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