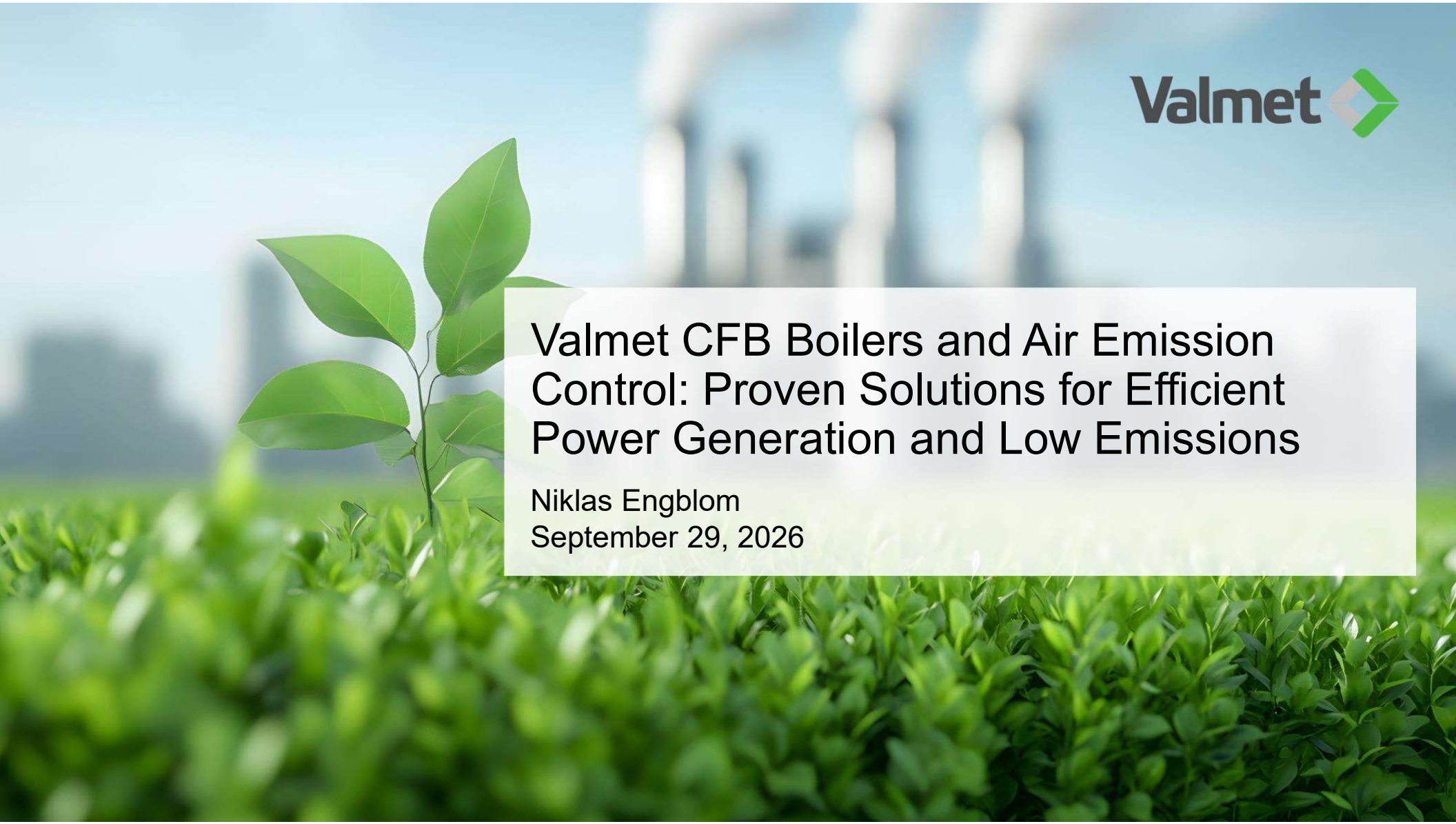


Valmet CFB Boilers and Air Emission Control: Proven Solutions for Efficient Power Generation and Low Emissions

Niklas Engblom

September 29, 2026

Valmet in brief



We are a global technology company, our success is driven by our people



18,500
employees

>110
service centers

> 70
production units



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Key facts 2025

- **Orders received**
  EUR 5,216 million
- **Net sales**
  EUR 5,197 million
- **Comparable EBITA**
  EUR 620 million

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Selected Valmet solutions

A range of solutions and technologies tailored to our customers' needs



Energy and Circularity

- Fluidized bed boilers
- Biomass and waste gasification
- Boiler islands and small power plants
- Flue gas cleaning and heat recovery
- Carbon capture
- Pyrolysis plants



Services

- Spare and process parts
- Workshop and roll services
- Fabrics
- Maintenance development & outsourcing
- Field services
- Process upgrades
- Remote support and industrial internet solutions



Automation Solutions

- Digitally-enabled automation platform
- Optimization and digital solutions
- Analytical measurements, e.g. in-house gas chromatography

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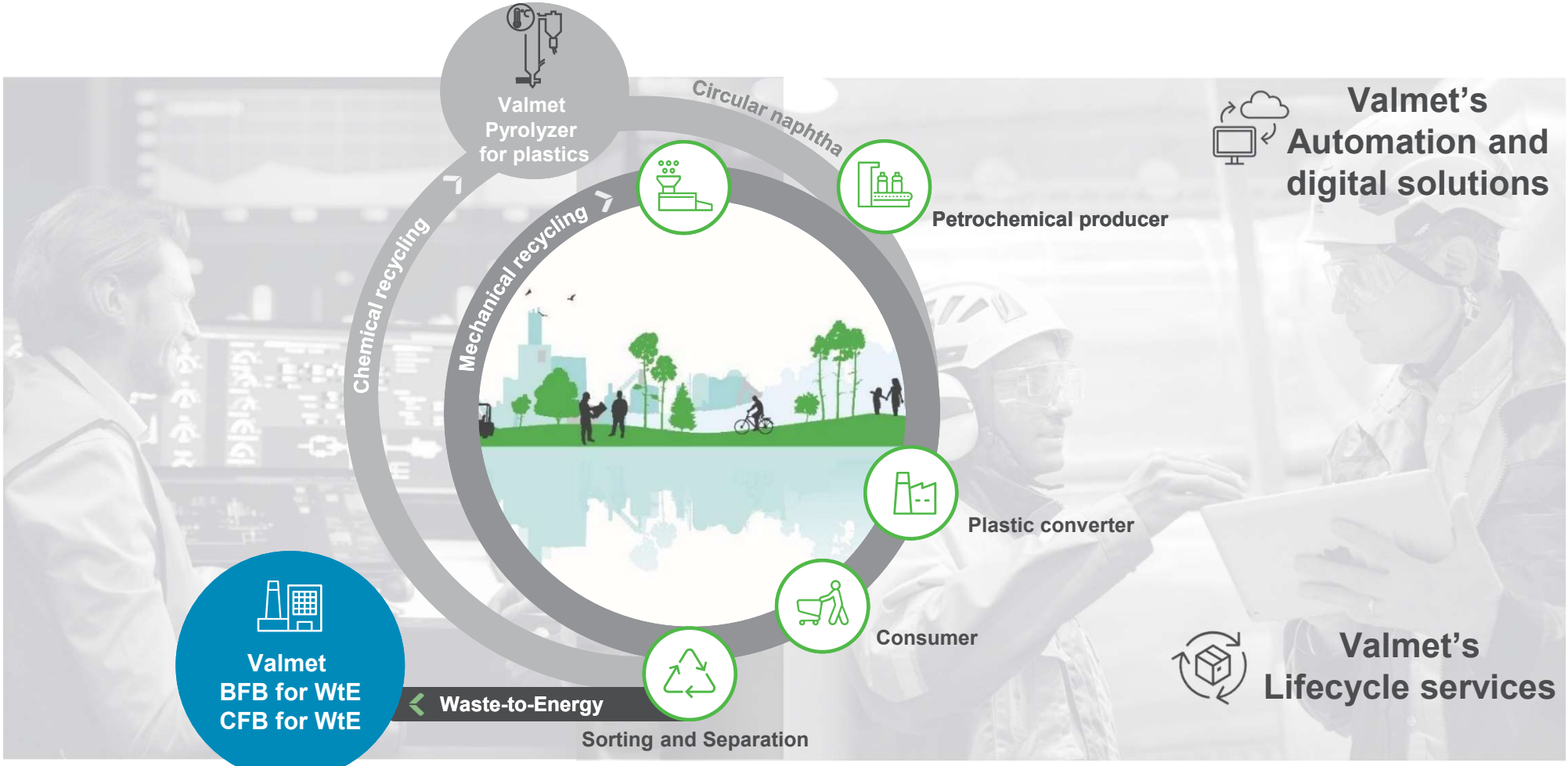
From municipal solid waste to energy

High electrical efficiency – Valmet CFB Boiler



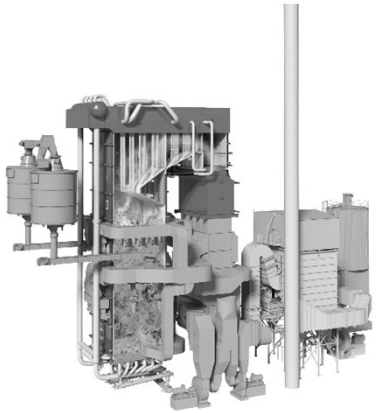
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The circular story of waste



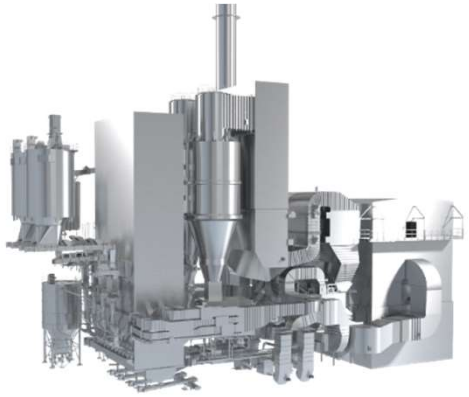
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Valmet’s main products for the waste-to-energy sector



Valmet BFB Boiler

- Bubbling Fluidized Bed
- Biomass, waste
- 30–100 MW_{th}



Valmet CFB Boiler

- Circulating Fluidized Bed
- Biomass, waste, fossil fuel
- 30–300 MW_{th}

Rebuilds and conversions

Air emission control

Automation & Flow Control

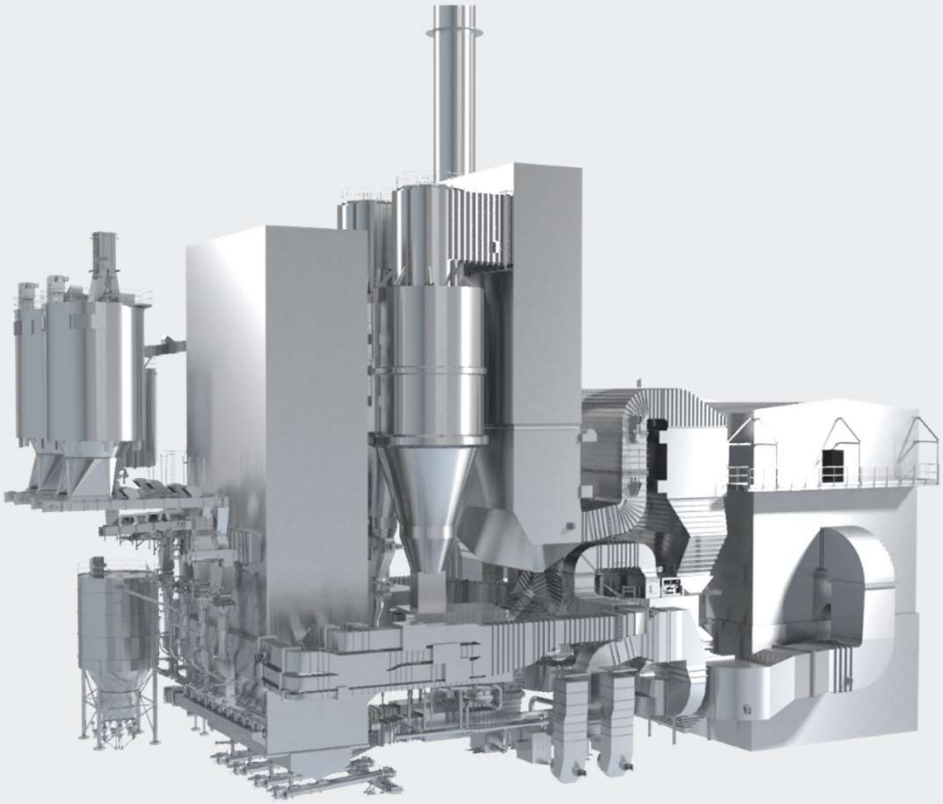
RDF combustion in high-efficiency Circulating Fluidized Bed boiler

Advanced technology with superior advantages in RDF combustion

- High steam temperature and pressure increase plant electricity output compared to other combustion technologies
- Can be designed for RDF with high moisture content and low calorific value
- Wide LHV range possible
- High reliability, low maintenance (no moving parts)
- Low primary emissions from boiler resulting in low consumption of flue gas cleaning additives

Valmet CFB Boiler

- Fuel: RDF 300-3000 tpd in one boiler
- Steam: up to 90 bar, 520 °C with RDF
- Fuel moisture: up to 60%



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High steam parameters result in higher electrical output

- Case example: 500 TPD plant - CFB vs. grate

Main steam parameters

	CFB	Grate
Pressure, bar(a)	75	40
Temperature, °C	510	400

Electrical efficiency

	CFB	Grate
Net electrical efficiency	23.7% *)	18.7%

Electrical output

	CFB	Grate
Net electrical output, MW	9.5 *	7.5

* RDF preparation included in plant's own electrical consumption



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Valmet CFB Boiler for WtE – High annual operating hours

Reliability

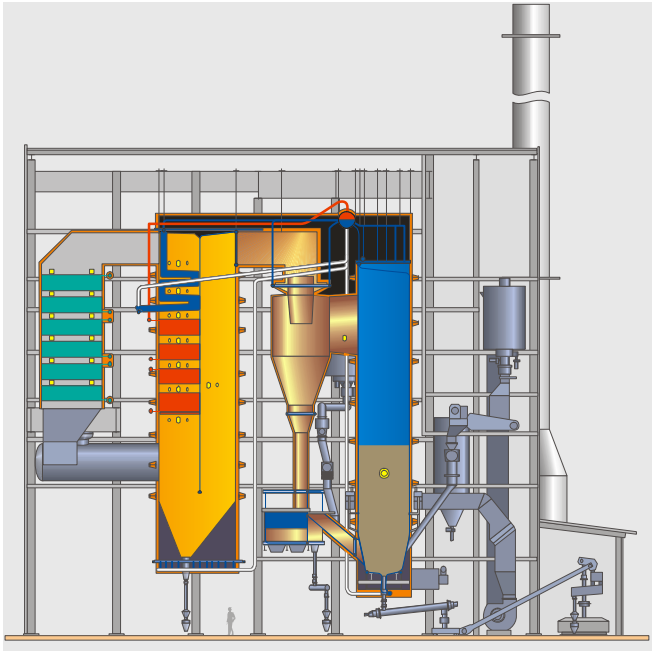
Stora Enso Langerbrugge nv
Gent, Belgium

- Steam 125 MWth
  45 kg/s
  60 bar
  475 °C
- Fuels RDF 320 kt/a
- Start-up 2010

2011–2018 average:

Operation hours
8,272 h/a

Reliability
99.1%



		2011	2012	2013	2014	2015	2016	2017	2018
Boiler in operation	h	8,323	8,213	8,341	8,331	8,171	8,332	8,145	8,323
Boiler unavailability	h	88	11	70	67	109	68	159	53
Boiler reliability	%	99.0	99.9	99.2	99.2	98.7	99.2	98.1	99.4

Clean flue gas from a waste-to-energy plant – OPEX savings optimization



Wide range of environmental solutions



Boiler-integrated

- Primary methods
- Burners
- Selective non-catalytic reduction (SNCR)
- Selective catalytic reduction (SCR)
- Furnace limestone injection

Dry

- Electrostatic precipitator
- Bag house filter
  - Dry sorbent injection
  - Dry & Conditioned recirculation
- Tail-end SCR

Wet

- Flue gas scrubbers
  - Washing scrubbers
  - NOx scrubbers
  - Flue gas desulphurization
- Heat and water recovery
  - Scrubbers and condensers
  - Humidifiers and heat pumps
  - Condensate and water treatment
- Wet electrostatic precipitators
- Carbon capture pre-treatment

Vantaan Energia High-Temperature Incineration Plant

Vantaa, Finland

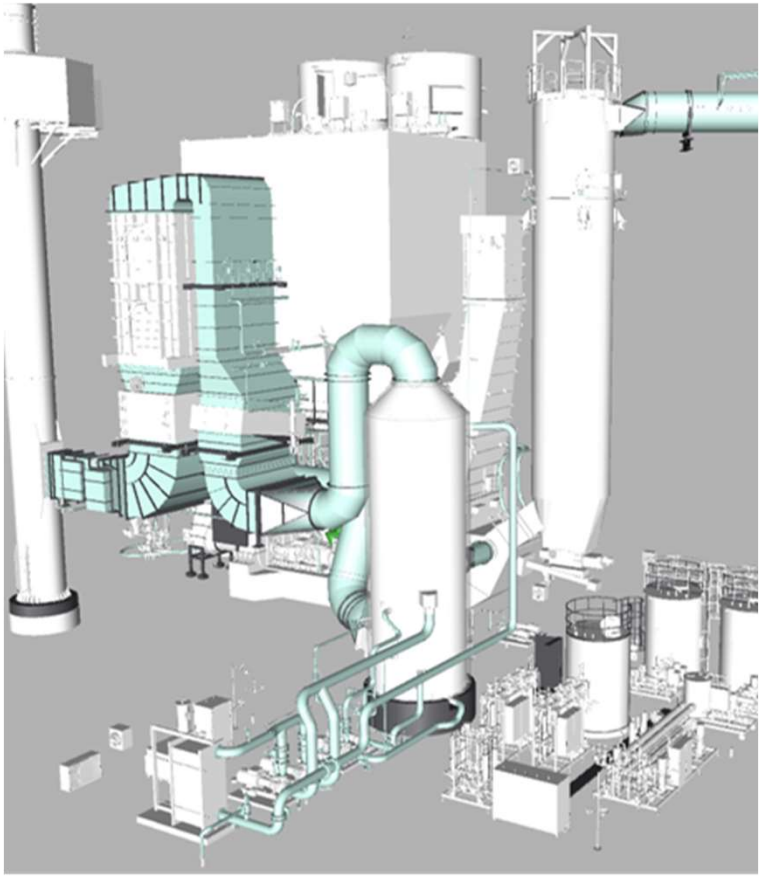
- Valmet scope of supply:
  - Evaporative cooler
  - Conditioned dry sorption
  - Condensing wet scrubber
  - Condensate treatment to raw water quality
  - Tail-end SCR for NOx control
- Low emissions after hazardous waste incineration
- Readiness for Carbon Capture integration
- 6.3 MW heat recovery
- 5.8 m3/h raw water from flue gas condensate
-

Plant

- 40,000 t/a rotary kiln + boiler plant
- Hazardous waste (liquid, sludge and solid)
- Start-up in 2025

Solver effect

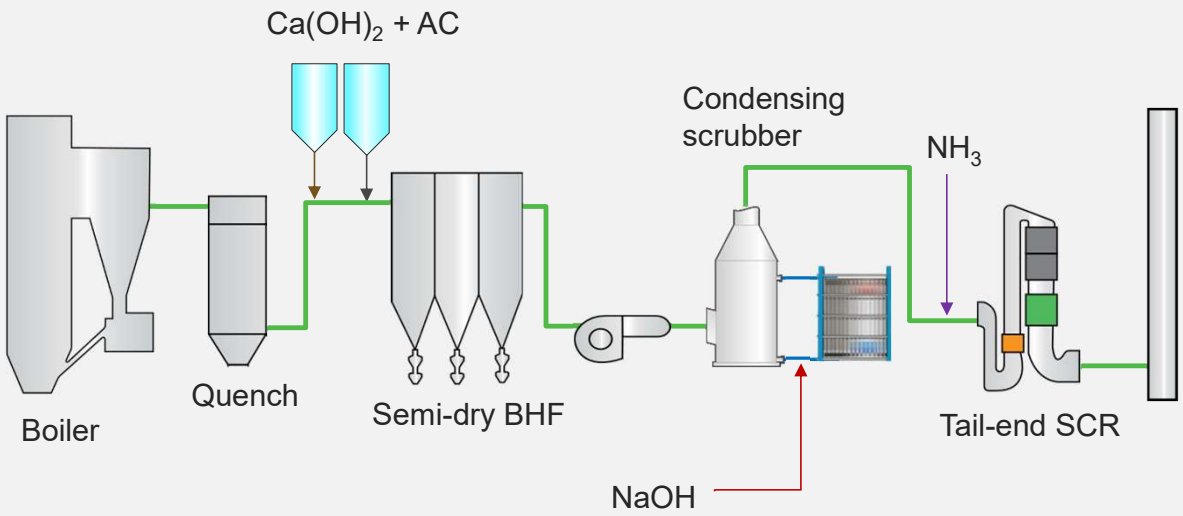
“Safe recovery and utilization of non-recyclable waste while enabling the phase-out of fossil fuels”



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Vantaan Energia High-Temperature Incineration Plant

Flue gas treatment process



mg/nm3	From boiler	At stack
SO_2	3500	<1
HCl	6000	<1
NO_x	400	<30
Dust	10 000	<1

Summary

Enable highest valorization of RDF streams

- Perfectly aligned with a future of stricter recycling regulations
- Proven CFB WtE boilers deliver maximum electrical production alongside long-term reliability.
- Engineered with exceptional fuel flexibility to handle variations in fuel quality and composition
- Valmet's flue gas cleaning solutions provide ultra-low emissions paired with tailor-made OPEX optimization
- Scalable plant designs accommodate small- to large-scale operation while keeping maintenance costs low.
- Inhouse technology to meet the current and future emission limits



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Thank
you!


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