

The background of the entire image is a close-up, high-contrast photograph of flames. The fire is bright orange and yellow, with dark, swirling patterns of smoke and ash visible within the fire's structure. The flames are dynamic and appear to be rising and spreading across the frame.

CLEAN ENERGY TECHNOLOGY

**VYNCKE**







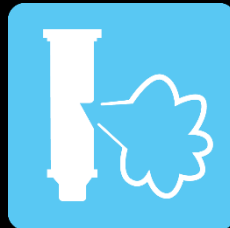
**1 – 100 MW**



**1 – 30 MW**



**0.5 – 30 MW**



**5 – 80 TPH**



**0.5 – 15 MW<sub>e</sub>**



Levensduur = multifuel



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CLEAN ENERGY TECHNOLOGY



## ATTERO - PEKA KROEF

ODIJAPPEL, THE NETHERLANDS

## BIOMASS ENERGY FOR POTATOES

Attero focuses on the large-scale processing of domestic, organic and mineral waste, including the waste of almost 40 % of all Dutch households.

For Peka Kroef, a producer of processed potatoes, Attero built a biomass energy plant. Vyncke delivered a turnkey steam boiler, which replaces the existing gas-fired boiler and produces steam to peel, to blanch and to pasteurize potatoes.

Attero collects natural wood waste and leftovers from composting. This biomass will replace 7 million m<sup>3</sup> gas and as such will reduce CO<sub>2</sub> emissions by 12,800 tons a year.

## ATTERO - PEKA KROEF



Commissioned	August 2015
Fuel	multi fuel
LHV Range	6,700 - 11,500 kJ/kg
Efficiency	> 91 %
NO <sub>x</sub> Emissions	< 95 mg/Nm <sup>3</sup>
Dust Emissions	< 3.5 mg/Nm <sup>3</sup>



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LIFE CYCLE ANALYSIS

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## GREEN CIRCLE GROWERS

OBERLIN, OHIO, USA

## RENEWABLE HEAT FOR GROWERS

Green Circle Growers in Oberlin provides plants to area stores such as Home Depot, Heinen's, Wal-Mart, Sam's Club and Giant Eagle.

They have 6 Vyncke CNS biomass fired boilers, each 8 MW under one roof, providing radiant heat for the greenhouses. The biomass is refuse from local tree removal companies, as well as sawdust and wood chips.

This new installation has cut down their natural gas consumption by 40 %.



## GREEN CIRCLE GROWERS



Commissioned	April 2010
Fuel	wood waste
LHV Range	10,000 - 18,000 kJ/kg
Granular Size	150 x 50 x 20 mm
Dust Emissions	< 20 mg/Nm <sup>3</sup>



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LIFE CYCLE ANALYSIS

Energie flexibiliteit = Van Wingerdens  
Keuze tussen gas en .....

SDE 2017 maakt die energie  
keuzes /flexibiliteit mogelijk door  
een 12 jaar verdienmodel voor een  
mix van  
  
power en/of warmte en/of CO<sub>2</sub>



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## BROUWER BIOCENTRALE

BALKBRUG, THE NETHERLANDS

## BIOMASS ENERGY FOR DAIRY PRODUCER

Brouwer, a family business mowing the verges of roads in the Netherlands and Germany, was looking to validate their natural wood waste and found the perfect solution : supplying biomass steam to their neighbor and dairy producer Friesland-Campina.

Vyncke will deliver the complete biomass CHP plant, a turnkey facility that includes a multistage extraction condensing turbine and a water treatment system that brings the condensate water return from the dairy plant up to turbine quality.

The energy plant will burn wood chips, prunings and shreds and will be able to supply between 4 and 11 tons of steam.



## BROUWER BIOCENTRALE



Commissioning	October 2017
Fuel	natural wood waste
Steam Pressure	29 barg
Steam Temperature	385 °C
Efficiency	86 %
NO <sub>x</sub> Emissions	145 mg/Nm³
Dust Emissions	5 mg/Nm³



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LIFE MEDIA - 100%

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## COGELAN

LANVIAN, FRANCE

## GREEN COGEN FOR GREENHOUSES

BelENERGIA, renewable energy project developer, and Sofival, operator of the Val d'Izère ski resort, have joined arms in a green power project under the name of Cogelan.

Due to the high prices of biomass, the main focus of the project was achieving the highest energy output with a minimum input. Cogelan therefore chooses to install a Vyncke high pressure water tube boiler fuelled by forest cleaning residues. This boiler delivers superheated steam, electricity and hot water at a combined efficiency of more than 90%.

The power generated is sold to the grid and the exhaust heat at the turbine outlet will be used to heat a set of neighbouring greenhouses.



## COGELAN



Commissioning	December 2016
Fuel	natural wood waste
Nominal LHV	9,900 kJ/kg
Steam Pressure	77 barg
Steam Temperature	485 °C
Efficiency	> 90 %



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LIFE MEDIA - 100%



## 2 Rice Husk Fired Power Generation Plants

1. 32 MW<sub>th</sub> - 6,5 MW<sub>e</sub>  
Location : Vercelli, Italy  
Commissioning : 2001
2. 32 MW<sub>th</sub> - 6,5 MW<sub>e</sub>  
Location : Vercelli, Italy  
Commissioning : 2010

The first IDROBLINS cogen plant supplies 6,5 MW<sub>e</sub> green electricity to the grid.

The nearby rice mill RISO VIAZZO receives low pressure steam ( 3,5 bar ) from the fully condensing turbine.

VYNCKE supplied a duplex Dynamic Water-cooled Stepgrate ( DWS® ) and co-designed the combustion room of the watertube steam boiler.

### Technical data

#### Fuel :

- Rice husk

- Lower heating value : 3.000 kcal / kg

#### Steam :

- Capacity : 33 t / h
- Working pressure : 45 bar g
- Temperature : Superheated 450 °C

#### Emissions :

- CO : < 50 mg / Nm<sup>3</sup>
- NO<sub>x</sub> : < 200 mg / Nm<sup>3</sup>



CLEAN ENERGY TECHNOLOGY



## IDROBLINS II VERCELLI, ITALY

### CO<sub>2</sub> CLOSED CYCLE

Idroblins S.r.l. produces green power from rice husk, derived from paddy from the Padana Plain.

The cogen plant delivers power to the public grid and generates process steam at low pressure for the nearby rice mill Riso Viazzo.

Vyncke supplied a double lane DWS watercooled stepgrate and co-designed the combustion room of the watertube steam boiler.

The rice husk ashes have a high value for the steel industry, thanks to their very low carbon content.



### IDROBLINS II

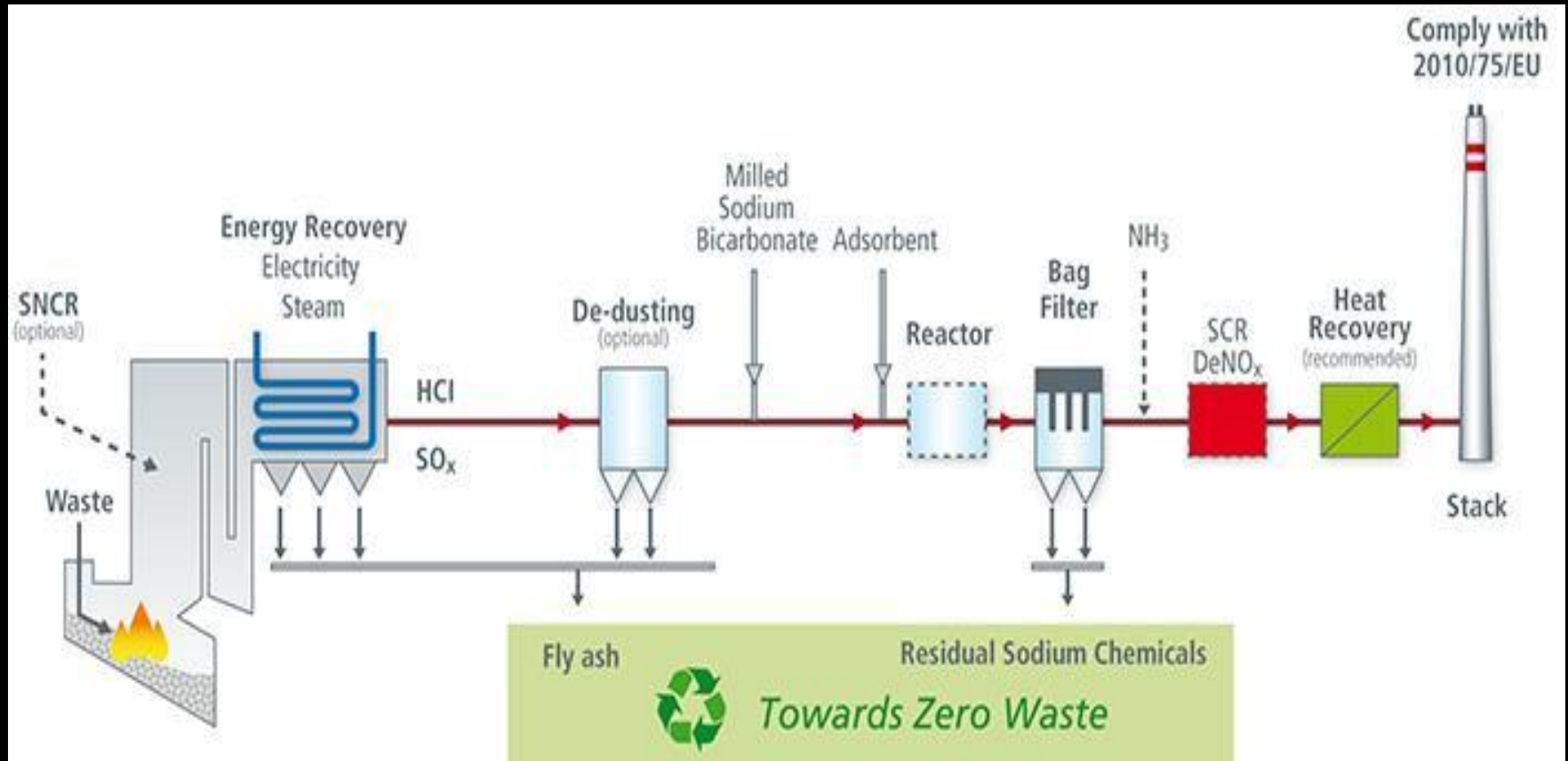
Commissioned	October 2010
Fuel	rice husk
Nominal LHV	12,500 kJ/kg
CO Emissions	< 50 mg/Nm <sup>3</sup>
NO <sub>x</sub> Emissions	< 200 mg/Nm <sup>3</sup>

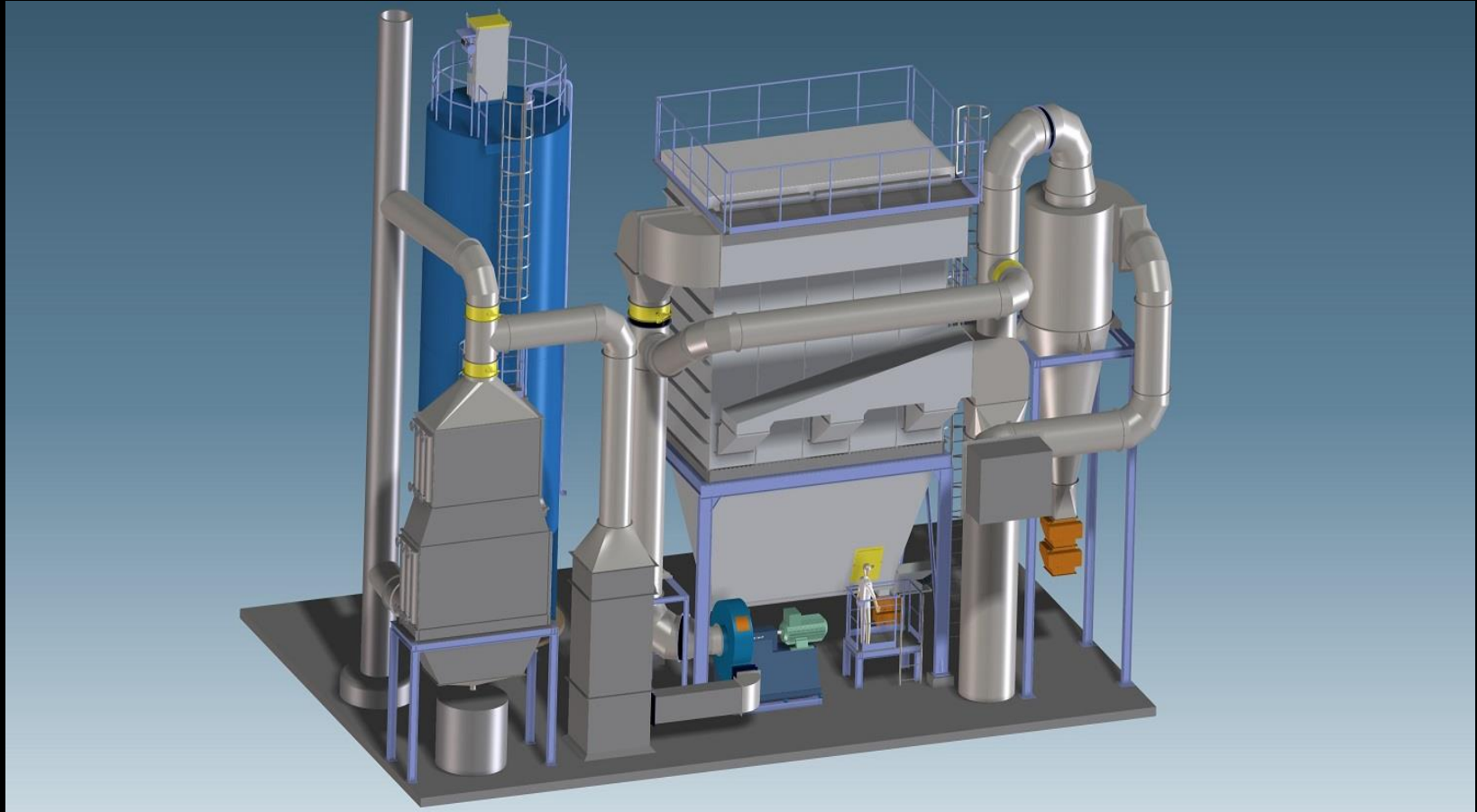


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**BIOMASS ENERGY SOLUTIONS**

*our passion*

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*our focus.*

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