Case study factsheet Częstochowa , POLAND

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CHP plant Częstochowa

District heating

Main CHP plant indicators

Heat capacity (total)	MW_{th}	120
Electrical capacity (total)	MW_{el}	64,5
Technology	CFB	
No. of units	1	
Manufacturer	Foster Wheeler/Alstom	
Type of Fuel	Coal, Biomass	
Heat: yearly generation	GWh	540
Electricity: yearly generation	GWh	385
Year of construction	2010	
Total investment costs	EUR	130.000.000
Financing	Own founds Loans	
State support	Green and Red Certificates	
Return of investment (payback period)	Years	n. a.
Location	Częstochowa, Poland	

Picture

General description of the case

CHP Częstochowa is the first cogeneration plant built on greenfield site in Poland by Fortum. Plant's production is based on hard coal and biomass combustion in a CFB (circulating fluidized bed) boiler and a backpressure steam turbine. Electricity is supplied to the national grid and heat to the district heating of Częstochowa city. The boiler was supplied by Foster Wheeler Energia Polska and the steam turbine by Alstom Power. CFB technology provides low emission levels. The guaranteed emission levels are:

- Dust emission <30 mg/Nm^3 ,
- SO_2 emission < 200 mg/Nm^3
- NO_x emission < 200 mg/Nm^3

CHP's gross efficiency in first operational year was 70,7 %, share of biomass (energy) – 21,2 %.

Dry and wet auxiliary cooling systems (50 MW each) allow to produce electricity power with minimum and maximum load during Summer season.

A heat accumulator is planned to install in near future.

Success factors

Green and Red Certificates support development of biomass combustion and cogeneration, which is in accordance with Fortum's strategy. CFB is reliable, efficient in different loads, flexible for different fuel mixes and environmental friendly.

Main barriers

Guarantee conditions and design solutions limit increasing of biomass share. Biomass market is not predictable.

Comparison: before and after

CHP Częstochowa produces more than 80 % of district heat demand with better efficiency and lower emissions than other coal heat-only-boilers connected to the network.

Recommendations

CFB technology for Polish market should be further developed for using wide range and high share of agro biomasses.