Case study factsheet Alexandria, GREECE

Co-funded by the Intelligent Energy Europe Programme of the European Union

CCHP Unit in a hi-tech greenhouse

Agriculture

Main CHP project indicators

Heat capacity (total)	kW_{th}	6000
Electrical capacity (total)	kW_{el}	4800
Technology	Internal Combustion engine	
No. of units	3	
Manufacturer	CATERPILLAR	
Type of Fuel	Natural gas	
Heat: yearly generation	MWh	32000
Electricity: yearly generation	MWh	25000
Year of construction	2007	
Total investment costs	EUR	20,5 million
Financing	EU Community Supporting Funds	
State support	Feed-in tariff	
Location	AGRITEX s.a. Alexandria, Imathia W. Macedonia, Greece	
Information	www.agritex.gr	

Picture

General description of the case

The facilities include:

- Glass-made greenhouse, of 100 acres, with all heating, cooling, irrigation, fertilisation, shading, ventilation and enrichment with CO_2, linked to a central control unit.
- The greenhouse is equipped with the necessary equipment for hydroponic cultivation, harvesting and pest.
- Energy Management Unit that includes a CHP unit of 4,8 MWe, gas boilers of 18,6 MWth and an absorption chiller of 550 kWc.
- Processing Unit of an 1,5 tn CO_2 production/hour.
- Organic cleaning, disinfection system and water recycling and irrigation facilities for collecting and managing the rainwater.
- 2100 m^2 packing machine sorting and packing of 5 positions with a machine of "flow-pack".
- Coolant chamber of 276 m^2 and 1000 m^2 of storage space.

Success factors

The investment was funded by the EU-funded CSF "Operational Programme-Competitiveness". The cogenerated electricity is purchased by the HTSO and supplies the national grid.

Due to the fact that CCHP units cover the heating and cooling needs of the greenhouse, an extra F-i-T, of 18% is given by the State, as a bonus, for the process of CO_2, which is added to the specified F-I-T for cogenerated electricity with NG.

Main barriers

The Greek electricity market is liberalised according to the Law, but there are many distortions that delay the full liberalisation. In the area of CHP in Greece, due to numerous distortions, there is no continuous payment of the F-i-Ts to the cogenerators, creating serious financial problems in the cash flow of the enterprise. This has the lowering of the CCHP operation.

Conclusions

In general, this hi-tech greenhouse with the CHP unit, the absorption chiller and the processing unit of the exhausts from the engines, producing clean CO_2 for the indoor plants, is a success story and there is a great potential to be multiplied in Greece, especially in this period of economic crisis, where the local primary production should be significantly increased.