

# JI ENERGY EFFICIENCY PROJECT – UMAN, UKRAINE

## **Objective: Reduction of greenhouse gas emissions from natural gas combustion and grid electricity consumption**

The cogeneration and utilization of waste heat project at Uman Greenhouse Combinate (UGC) aims to reduce greenhouse gas emissions from natural gas combustion and grid electricity consumption. UGC is one of the biggest producers of fresh vegetables in Ukraine. Its main products are tomatoes and cucumbers cultivated in the company's greenhouses located in Uman, Talne and Khrystynivka.

## **Background:**

- > Electricity is used for operational activities and for additional lighting in greenhouses. Natural gas is combusted for the purposes of heating and to enrich the air within the greenhouses with CO<sub>2</sub> in order to increase the plants' bioproductivity.

- > Prior to project implementation, the thermal energy demand was satisfied by water boilers using natural gas and the electricity demand by the national grid.

## **Project description:**

- > The project involves the installation of three cogeneration units in Uman to produce around 7 MW of thermal energy, 6 MW of electricity and CO<sub>2</sub> for the company's greenhouses.
- > In Talne the project comprises two heat utilizers for the waste heat available at the gas compressor station "Talne". The utilized heat in the form of hot water is transported to the greenhouses through a 1.5 km long isolated pipeline. The heat output per utilizer is 16 MW.



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**Benefits: Social and environmental benefits and reduction of CO<sub>2</sub>e emissions totally 150,000 t CO<sub>2</sub>e**

- > Substituting the carbon-intensive national grid electricity produced by traditional power plants with electricity locally generated by gas-fired cogeneration units leads to GHG emission reductions and will also avoid electricity transportation losses.
- > Generated heat will be directed for heating the greenhouses, which will offset the heat previously produced by natural gas-fired water boilers.
- > CO<sub>2</sub> produced by cogeneration units and purified in exhaust gases purification system would be enough to satisfy the CO<sub>2</sub> demand for greenhouse air enrichment in Uman substituting the CO<sub>2</sub> previously generated in boilers.
- > The energy utilized at the gas compressor station “Talne” will be used to heat the company’s greenhouses, offsetting the heat previously produced by natural gas combustion.
- > Two of the cogeneration units will be equipped with an exhaust gas purification system, which will decrease the air pollution on the site and improve health and safety conditions for the UGC workers.

- > The heat utilizers will reduce the heat pollution currently caused by the compressor station and affecting the local ecosystem by changing its microclimate and impacting the local biodiversity.



<b>Project title</b>	<b>Cogeneration and Utilization of Waste Heat at Uman Greenhouse Combine; UKRAINE</b>
Project type:	Waste Heat Recovery
Host country:	Ukraine
Project status:	Registered as JI project activity at the UNFCCC
Crediting period:	until end 2012 Start: November 2009
Emission reduction start:	November 2009
Average Emissions reductions p.a.:	50,000 t CO <sub>2</sub> e