Zürcher Hochschule
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School of Engineering
IEFE Institut für Energiesysteme
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H-DisNet
EUROPEAN COMMISSION

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H-DisNet

Intelligent Hybrid Thermo-Chemical District Network

Introduction

The H-DisNet is a project funded by the Eu-programm Horizon2020, with the partecipation of seven parterns from the industry and university. The project started in June 2016 with a duration of 3 years.

Concept

The H-DisNet project develops a new generation of district heating and cooling network: **a district thermochemical network without thermal losses in the storages and transport.**
The core innovation is the use of thermochemical fluids, for example **brine**, instead of water as transport medium: **chemical potential is transported**, not thermal energy, the thermal energy is released by contact between fluid and water vapor (i.e. air humidity). The absorbed water shall be then separated from the fluid to start a new cycle (regeneration) by use of heat at low temperatures as residual heat or renewables.
H-DisNet allows to transport heat to users far away from the heat sources as well as a time shift between heat production and use.

Figure 1: ZHAW and the project partner Watergy tested the absorption technology in previous projects: the High Temperature Condensing Technology, installed by Bergmann (ZHAW) recovers heat from the flue gas in an ab- /desorption process (top); an absorption box of Watergy is installed as air conditioner in a prototype building in (bottom)

Demonstrator plants

ZHAW is testing the technology in a biogas plant closed to Schaffhausen and in a green house in the Zurich area.
The thermal potential of the fluegas from a biogas engine is used to evaporate the water contained in the brine. Two effects are reached: the concentration of brine and, through the condensation of the evaporated water, the release of themal energy on site.
The concentrated brine is then transported to the green house. The humid air is brought in contact to the concentrated brine which absorpts the humidity. During the absoprtion process heat is released and the air temperature and humidity can be maintained at the required level setting the recirculation of the brine. Parallel to the climatisation through absorption, an innovative distribution system of conditioned air is developed and tested (fig. II) allowing to treat only the air in contact to the crop instead the air of the entire green house.
The first results are expected at the end of 2017.

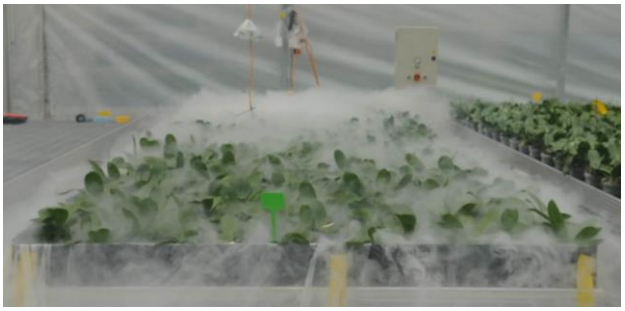

Figure 2: the innovative system for the air distribution feeds the conditioned air directly below the crops abling to create different climate zones in a green-house room.

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