

TAKING
COOPERATION
FORWARD



Udine, 04/11/2020



D.T3.3.1 - Experience Exchange Workshop

Pilot implementation in Udine (Italy)

CITYCIRCLE | UNIVERSITA' DI UDINE | PATRIZIA SIMEONI, GIOVANNI CORTELLA,



MATTIA COTTES, MATIA MAINARDIS



Promotes technology transfer, dissemination of innovation and performs related research and welfare activities



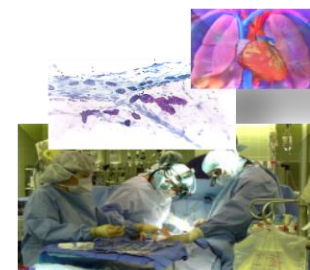
Polytechnic Department of Engineering and Architecture
Department of mathematics informatics and physics



Department of agri-food, environmental and animal sciences



Department of economics and statistics
Department of legal studies



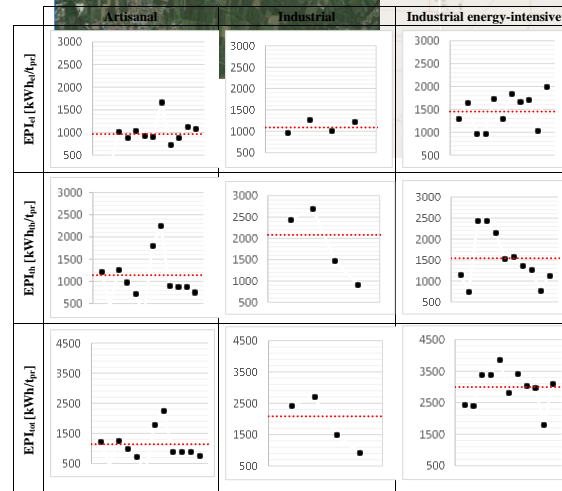
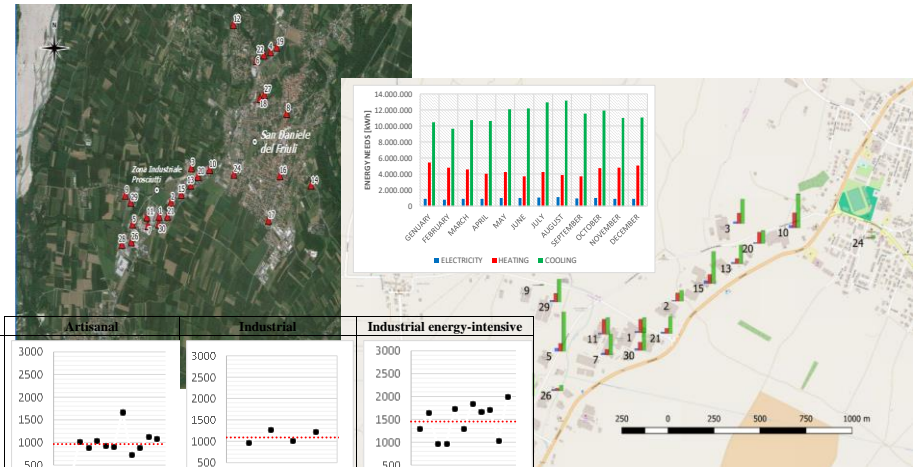
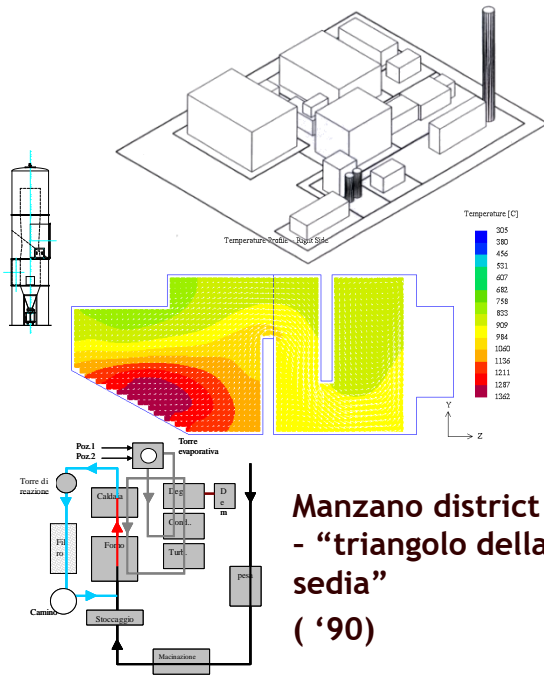
Department of medical area



Department of languages and literatures, communication, education and society
Department of humanities and cultural heritage

Università di Udine

Territory oriented interdisciplinary studies with systemic approach

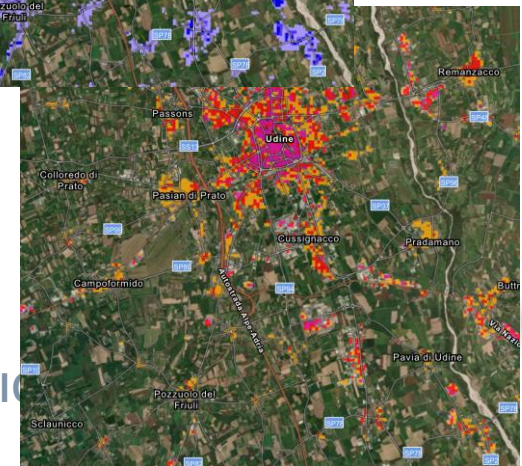
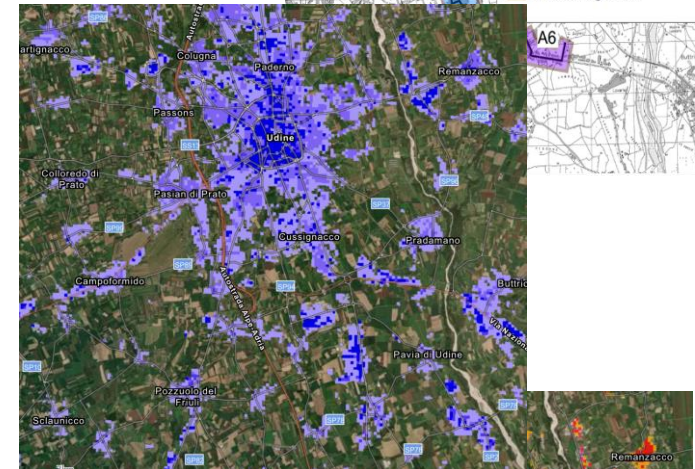
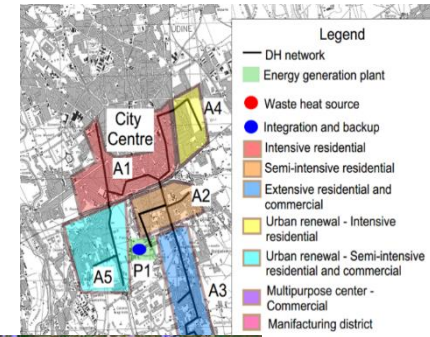


How did the idea come about ?

Industrial-Urban Symbiosis

Because in the area there are the prerequisites for developing projects with a view to industrial symbiosis and circular economy.

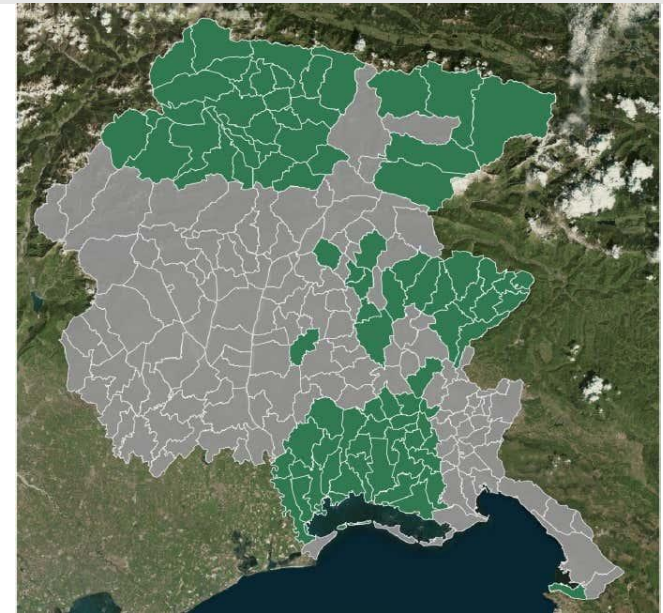
- The presence of thermal waste (heat otherwise dissipated) and fuels deriving from the construction of a waste treatment plant
- The presence in the area of two "service plants"
- The presence of an adjacent industrial area.



STAKEHOLDERS

NET S.p.A.

- Service of waste collection, transport and treatment
- Associates 57 municipalities, serving up to 354,000 inhabitants



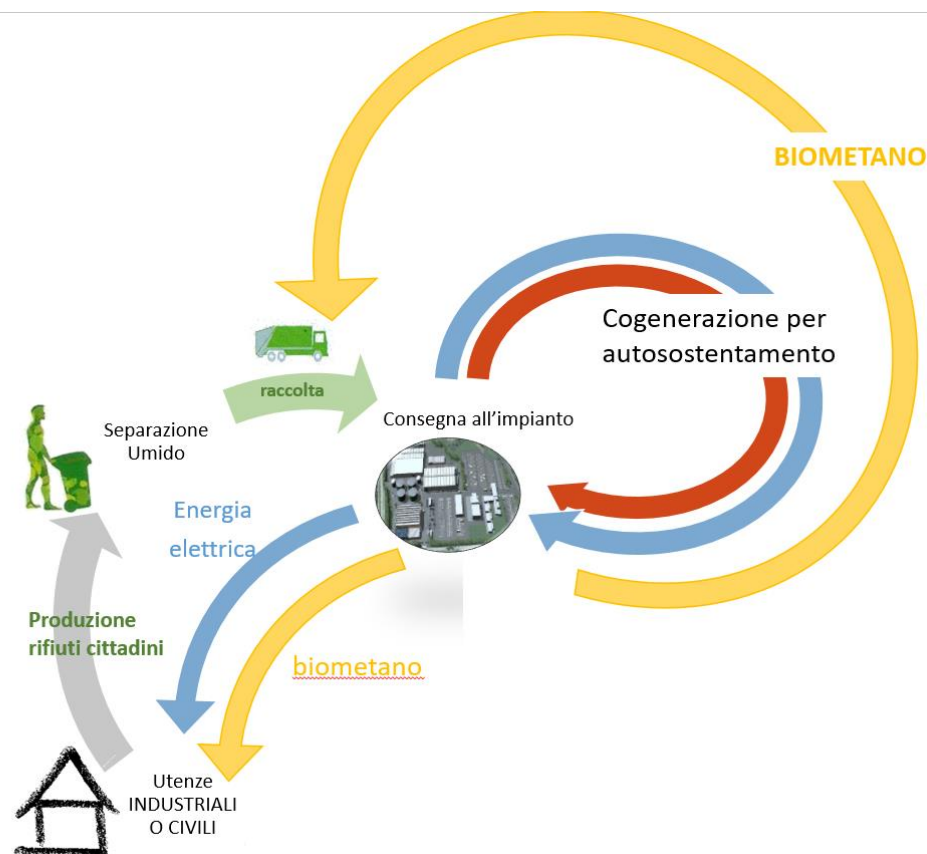
- Revamping the organic waste treatment plant, transforming it into an anaerobic digester with electricity, heat and bio-methane production



The idea

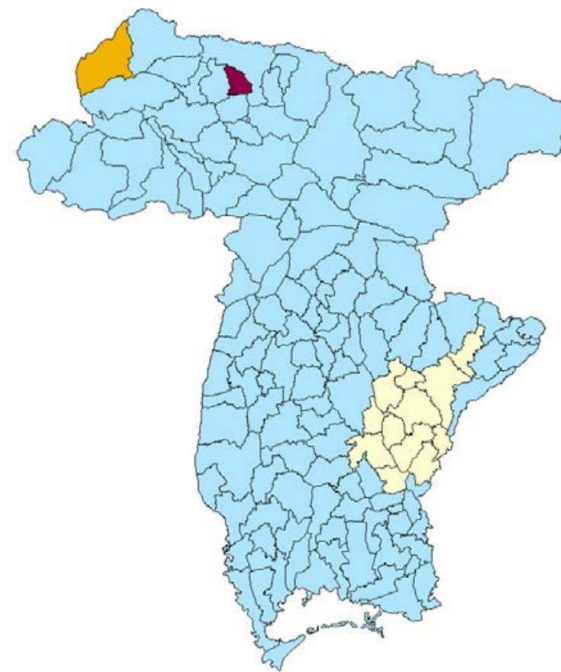
- New Udine plant allows territorial synergies

The plant center is a practical example of integration between circular economy, sustainable mobility and industrial symbiosis on which economically and environmentally sustainable synergies can be implemented



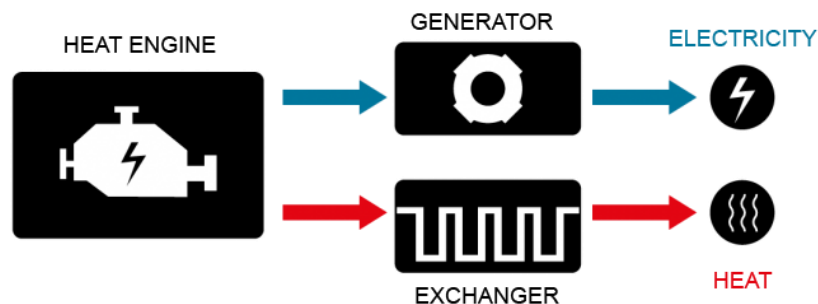
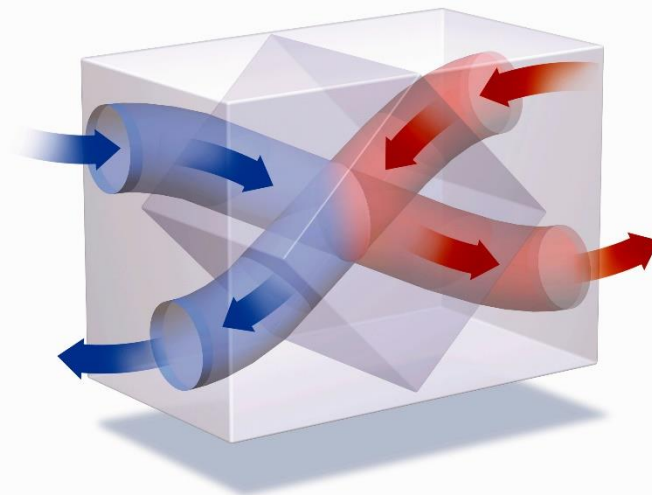
CAFC S.p.A

- Manages water supply, wastewater collection and treatment
- Serving 123 municipalities
- Interested in a better exploitation of the excess heat of the cogenerator



CAFC + NET symbiosis

- Heat Exchanger (HE): recover waste heat to satisfy heat needs



- Cogeneration (CHP): heat and power production from biogas

- Waste mass flows: waste to feed anaerobic digestion



UDINE MERCATI s.r.LI

- Total surface area 150,000 square meters
- 30 companies



- Interested in renewing its facilities to improve internal logistic and reduce energy consumption

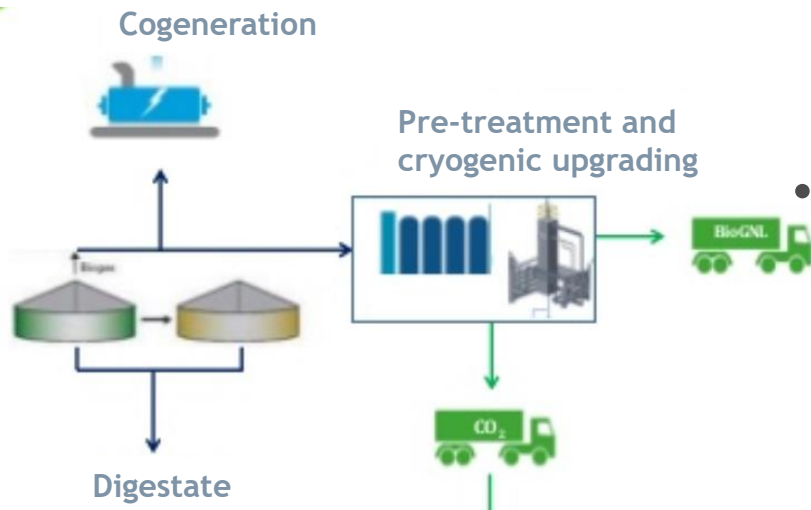


PILOT PROJECT SECOND STEP

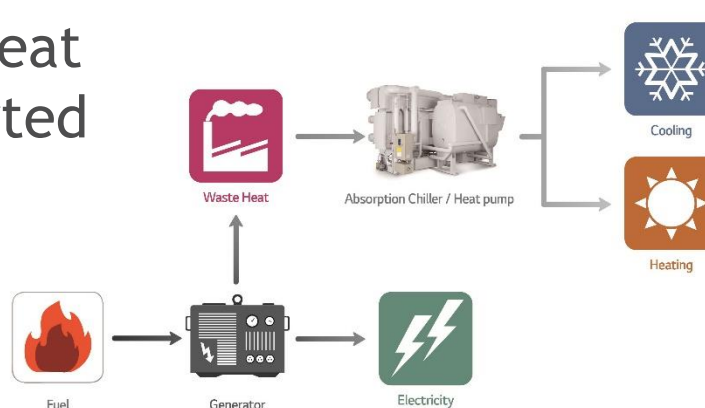
CAFC + NET + UDINE MERCATI symbiosis



- Absorption/Electric Chiller: heat and electricity surplus converted in cold energy



Architecture of the CCHP System



- Cryogenic biogas upgrade: synergy with cold energy production



TIMELINE OVERVIEW

Data collection



- Visits to the plants
- Analysis of technical documents

Scenario identification

Identification of best feasible scenarios based on different synergies combination possibilities

Business model draft

- Business model structuring
- Technical economic environmental assessment solutions identification

Technology identification

Waste recovery and energy efficiency oriented technologies

Preliminary solution

- Technical economic environmental assessment preliminary solutions identification
- Solutions' strength and weaknesses identification

Decision support system development

- Multi-objective modelling
- Scenario simulation
- Best compromise solution identification



Highlights

- Bottom up approach is fundamental to create circular economy chains
- The pilot project is a good practice aimed at recovering waste energy in line with circularity principles



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PROJECT PARTNERSHIP

