



ENERSEM PITCH

VIDA Demonstration Vouchers: Energy efficiency challenges in the food processing Industry 17/09/2019

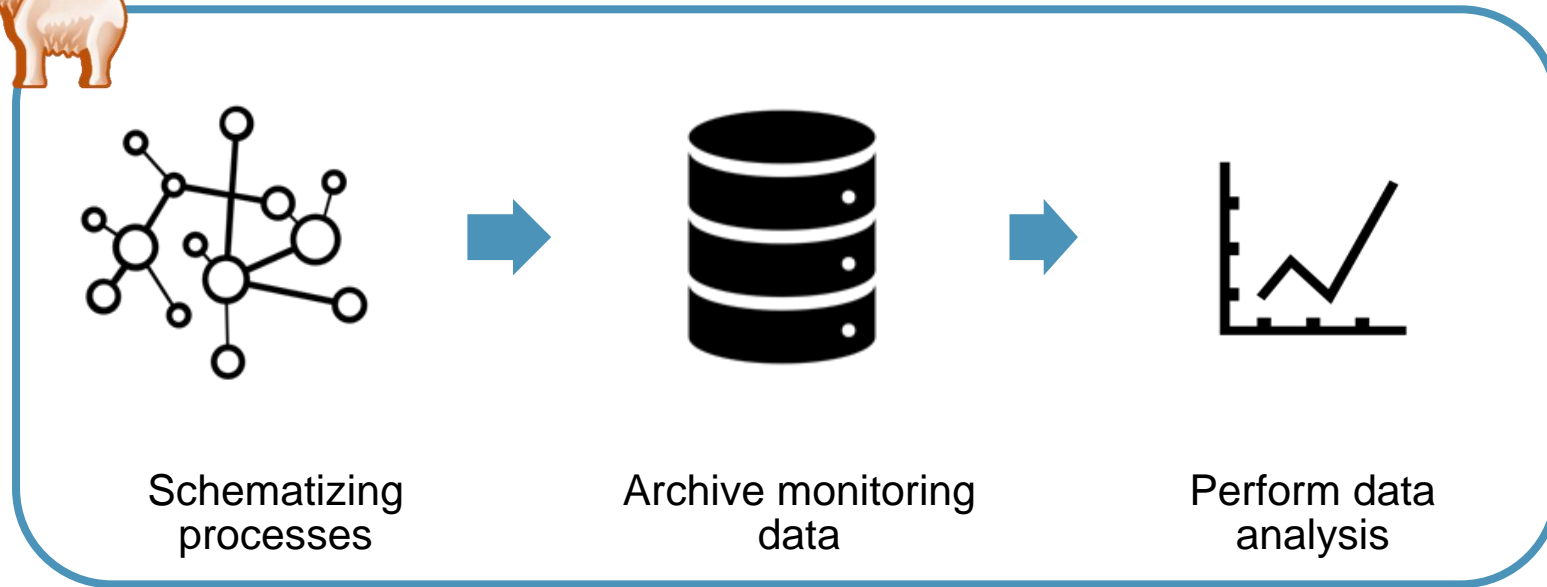
Energy in Food and beverage





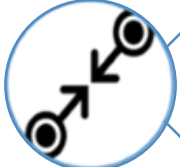
- 10% of energy consumption in Italy 2015 (*)
- 20-30% of energy saving potentials (*)
- 40% energy saving potentials in milk and dairy (*)
- Inefficient use of fresh water for cooling
- Lack of relevant and significative data and information on process and utilities energy consumption
 - a lot of missed opportunities for energy and water savings



«MAMMOTH»: the software prototype for energy optimization in F&B industries



Enabled Services

-  Energy intelligence
-  Optimisation & Predictive Maintenance
-  Pinch Analysis – Heat recovery and saving in cooling

 **OPTIMO**: stack IOT and cloud solution



Optimization and Predictive Maintenance

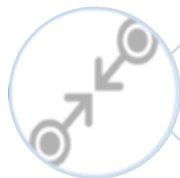
Enabled Services



Energy intelligence



Optimisation &
Predictive
Maintenance



Pinch Analysis

- **Chiller**
- **CHP**
- **Boilers**
- **HX**
- **Heat Pumps**
- **Heat recovery systems**



Chiller optimal control for energy saving



Identification of wasted energy (e.g. CHP)



Planning of maintenance operations (eg. HX cleaning)



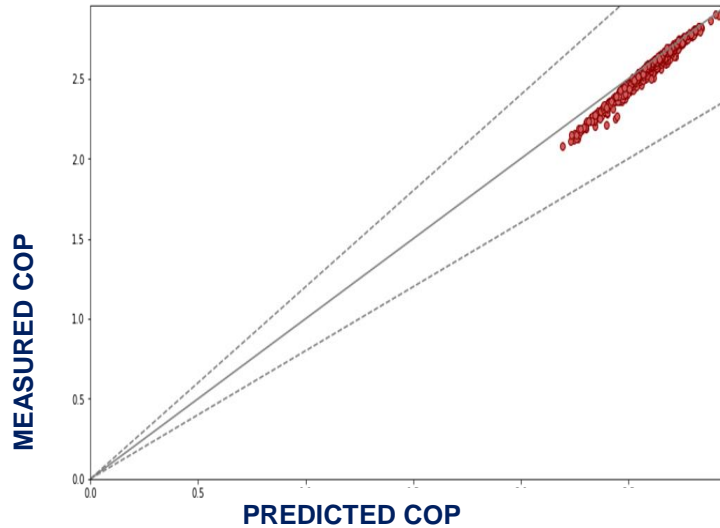
Heat recovery system performances assessment and optimization



Water consumption monitoring and reduction



Example 1: Chiller modelling and optimization



Tasks:

- Optimum management of chiller operating parameters
- Identification of malfunctions and predictive maintenance



Agri-food company; ammonia refrigerator. Optimal management of the condensation temperature. Cooling capacity: 4 MWf

Annual saving: 300 MWh electric -> 45.000 €/a



Example 2: Brewery Heat recovery



Tasks:

- Enhance the heat recovery from wort boiling (“Pfaduko”, already installed but under performing)
- Identification of malfunctions in the system

Valve ON/OFF not working properly

High flow -> low temperature

Thermal de stratification in the heat recovery tank -> lower efficiency of the heat recovery

Extra heat recovery available: 600 MWh/y – 30 k€/y



Pinch analysis – Heat recovery

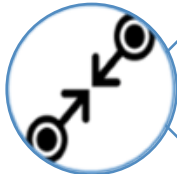
Enabled Services



Energy intelligence



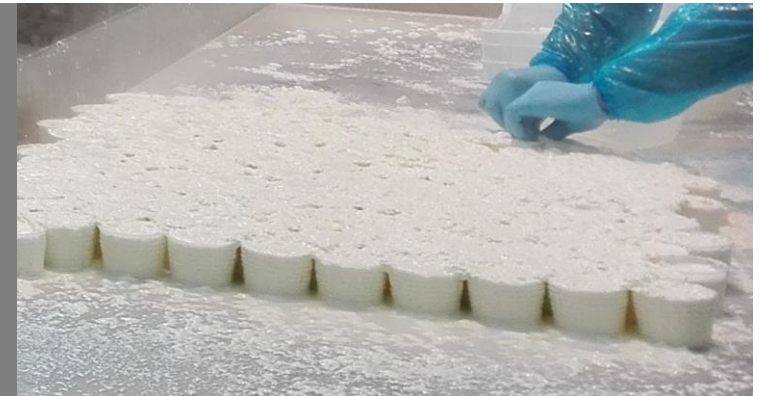
Optimisation &
Predictive
Maintenance



Pinch Analysis –
Heat recovery and
saving in cooling

1. Identification of energy recovery potentials
2. Optimization of the thermal operation of CHPs
3. Optimal integration of thermal renewables

EU top player cheese factory
Plant thermal consumption: 65 GWh/y
Heat recovery from process hot streams
Energy Savings: 600 k€/y +
90.000 m³/y water saving





Customer references

- Energy analysis and **benchmark**,
28 dairies in 4 EU Countries
(Life TTGG )



A web application tailored to industrial users' needs for **Product Environmental Footprint** reduction and energy savings:

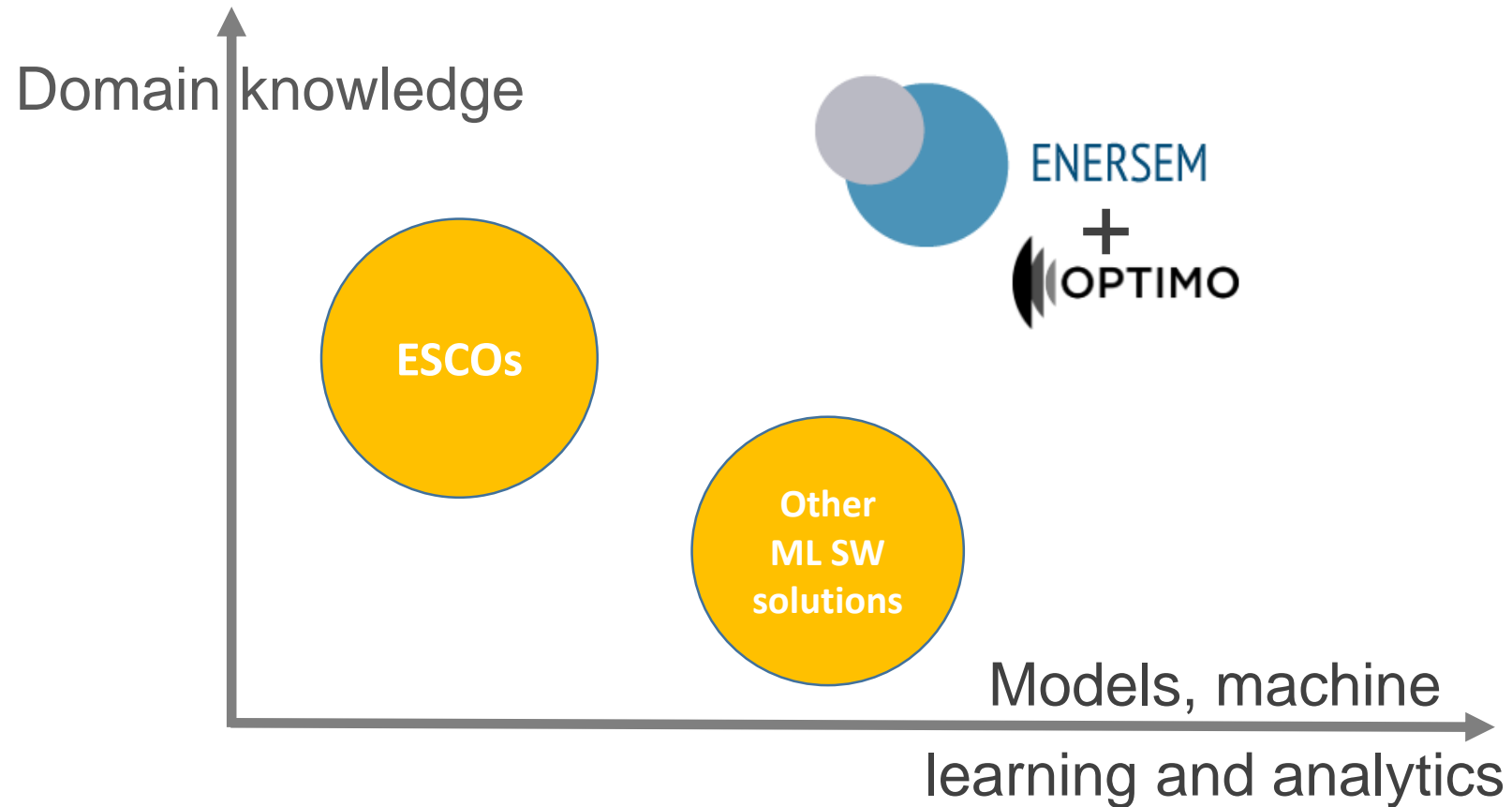
- **15-25% thermal saving**
- **10-20% electricity saving**



Certification Trade Mark



The uniqueness



ENERSEM



Matteo Zanchi (co-founder), researcher at Politecnico di Milano, 15 years of experience in public and private companies in energy efficiency projects



Matteo Muscherà –researcher, expert in energy monitoring and diagnostics and HVAC systems



Antoine Frein, PhD, researcher, expert in process analysis, Pinch analysis



Silvia Garone, researcher, PhD in energy, expert in HVAC systems



Emanuele Mason, researcher - PhD in information engineering, expert in modeling and data analysis



Mauro Pozzi, PhD in electrical engineering, expert in reliability of electrical systems



Software partner
Co-brains



Noemi Barrera, PhD in mathematical engineering, algorithm consultant



Jacopo Famiglietti, researcher, LCA expert, GHG inventories, ISO 50001 internal auditor

Scientific coordination

Mario Motta (co-founder), professor at Politecnico di Milano, collaborates with IEA tables and national working groups on renewable energy and economy decarbonization.

Gianpaolo Cugola, full professor of software engineering at Politecnico di Milano: expert in distributed software architectures



ENERSEM co-founder





VIDA proposal

OUR OBJECTIVE IN VIDA Demonstration Voucher:

- To develop a software product for SAAS delivery to F&B EU clients
- To strengthen business opportunities in VIDA Countries

CURRENT SITUATION: 2 partners in Italy, ENERSEM and Optimo IOT

**Looking for a demonstration site:
dairy, brewery, meat processing factory**



VIDA proposal

We are also open to consider the opportunity to join the effort with other subjects for a shared demonstration voucher proposal, in line with our priorities



ENERSEM

le soluzioni che gli altri non vedono

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credit: NASA's Scientific Visualization Studio

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