

Promotion and development of energy efficiency in process industry

Strategy and experience of the Italian multi-utility Hera S.p.A.

Energy Management & Asset Upstream
Hera S.p.A.

London, 23rd January 2018



Contents

1.

HERA Group profile

pag. 03

2.

Energy Efficiency strategy & experience

pag. 07

3.

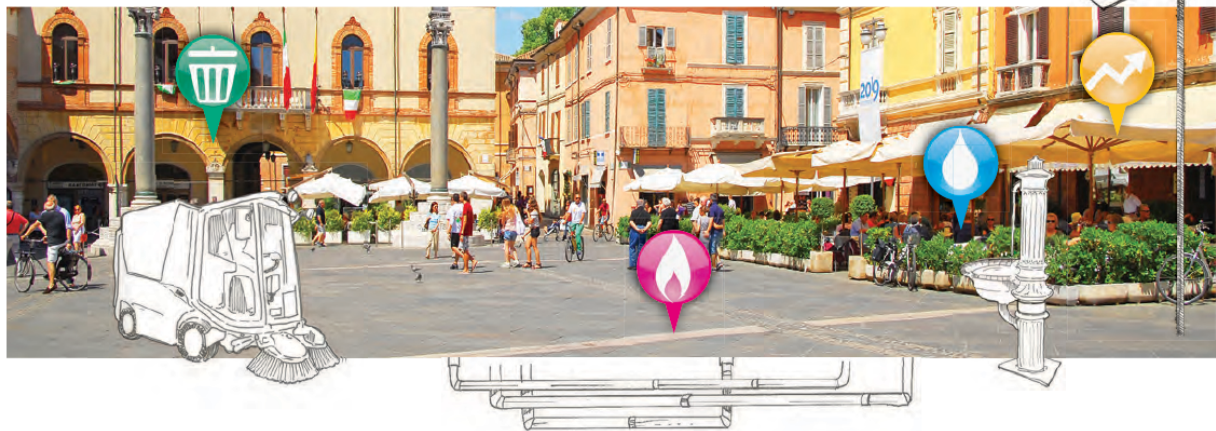
Role in EU-MERCI Project

pag. 17

4.

Conclusions

pag. 20



1. HERA Group profile

A business model that is unique in Italy



HERA was the first national experiment in the combination of council-owned companies

HERA Group:

Strong local roots

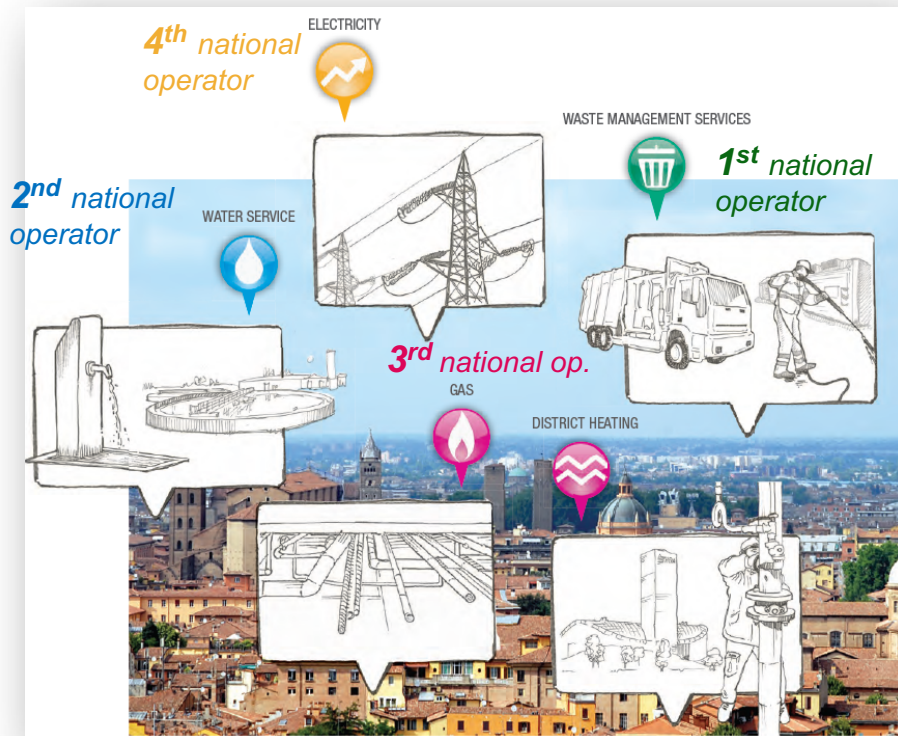
Aptitude for innovation

Independent Management




Balanced and constant growth in all areas of activity (regulated or free-market) and progressive incorporation of other companies.

Offering primary local services to citizens



A major Italian multi-utility

HERA operates mainly in **environmental services** (collection and disposal of waste), **water** (mains water, sewage and purification) and **energy** (distribution and sale of electricity and gas).

-  ~ 7 millions of tons/y of **waste treated**
-  ~ 35,000 km of **drinking water network**
-  ~ 21,000 km of **gas network**
-  ~ 10 TWh/y of **electricity sold**
-  ~ 20,000 m³ served with **district heating**

Strategy and Global Agenda



HERA creates shared value working on Global Agenda Goals

Activities carried out by HERA cover 10 over 17 global goals of United Nations Organization for Sustainable Development.

*Smart energy use
Efficient use of resources
Innovation*

CIRCULAR ECONOMY



CE100



ELLEN MACARTHUR
FOUNDATION

1

2

3

4



**SUSTAINABLE
DEVELOPMENT GOALS**
17 GOALS TO TRANSFORM OUR WORLD



*6 goals are involved in our Energy
Efficiency strategy*



2. Energy Efficiency strategy & experience

Context for energy efficiency in Industrial Sector

Context positive elements:

- En.Eff. Directives obligations
- Presence of subsidies (mainly Whc)
- Improvement of ESCO's structure and services

Huge energy savings potential:

- High energy intensity sectors
- Technological opportunities

HOWEVER

Technical and economical barriers are still preventing a broad development of energy efficiency in Industrial Sectors



**A COMPREHENSIVE AND DEEPLY
STRUCTURED APPROACH IS
NEEDED**



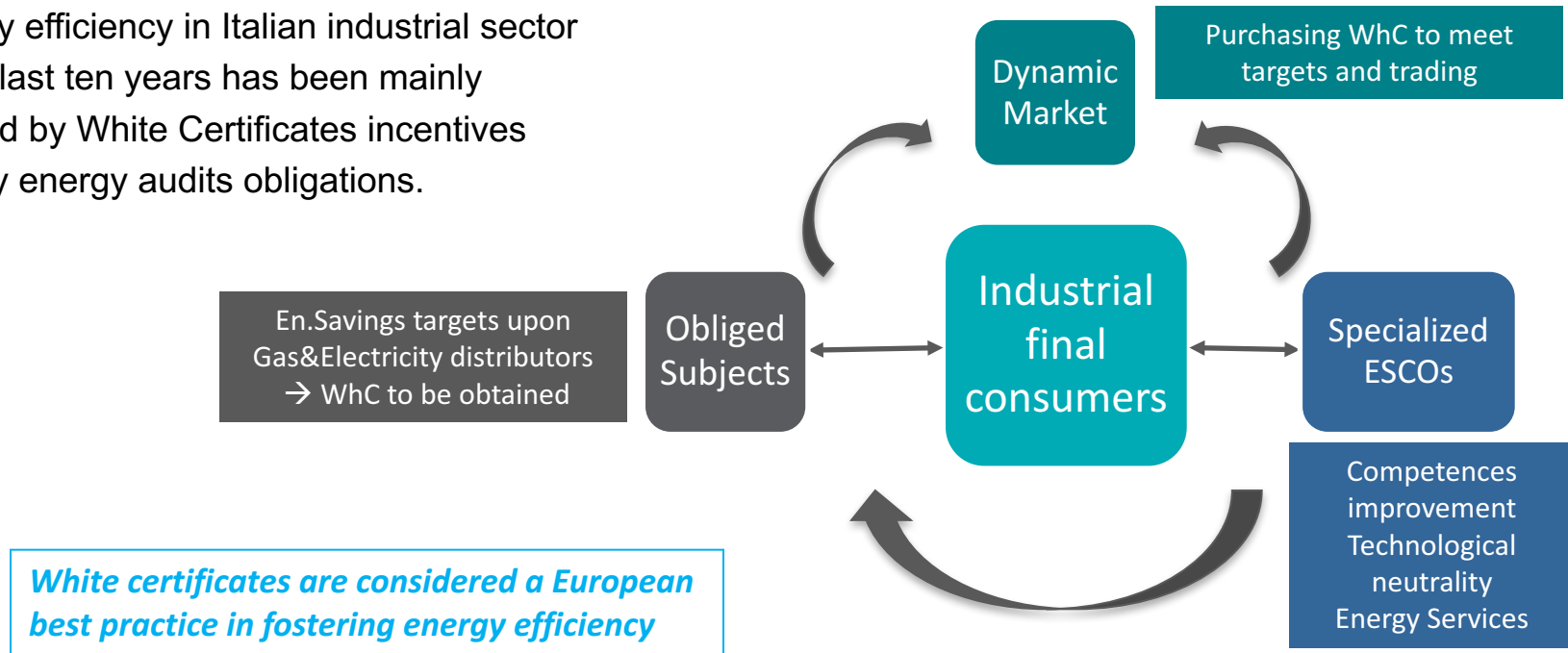
Context for energy efficiency in Industrial Sector



White Certificates Scheme has been the main driver over the last decade

Energy efficiency in Italian industrial sector in the last ten years has been mainly pushed by White Certificates incentives and by energy audits obligations.

SYNERGIES FOSTERED BY WhC ITALIAN SCHEME



HERA's strategy: obligation and opportunity

HERA needs to meet annual energy savings targets

As gas and electricity distributor HERA is obliged under Italian White Certificates Programme to meet annual energy savings. Target can be satisfied:

- **purchasing** WhC on dedicate market;
- **originating** WhC through EE projects and initiatives.

- *Very uncommon for Utilities*
- *More like an ESCO company*
- *Playing a central role in promoting energy efficiency on a territorial level*



From **OBLIGATION** to **BUSINESS OPPORTUNITY**

HERA's strategy: towards both directions



Internal Assets and ISO 50001 certification

Energy management system certification has been a priority: 7 company belonging to HERA Group are already certified and progressive energy savings target are established. Origination of Whc through energy efficiency initiatives in internal assets, mainly on water infrastructures plants.



6,600 toe/y en.savings
Hera S.p.A (resp. 2013)



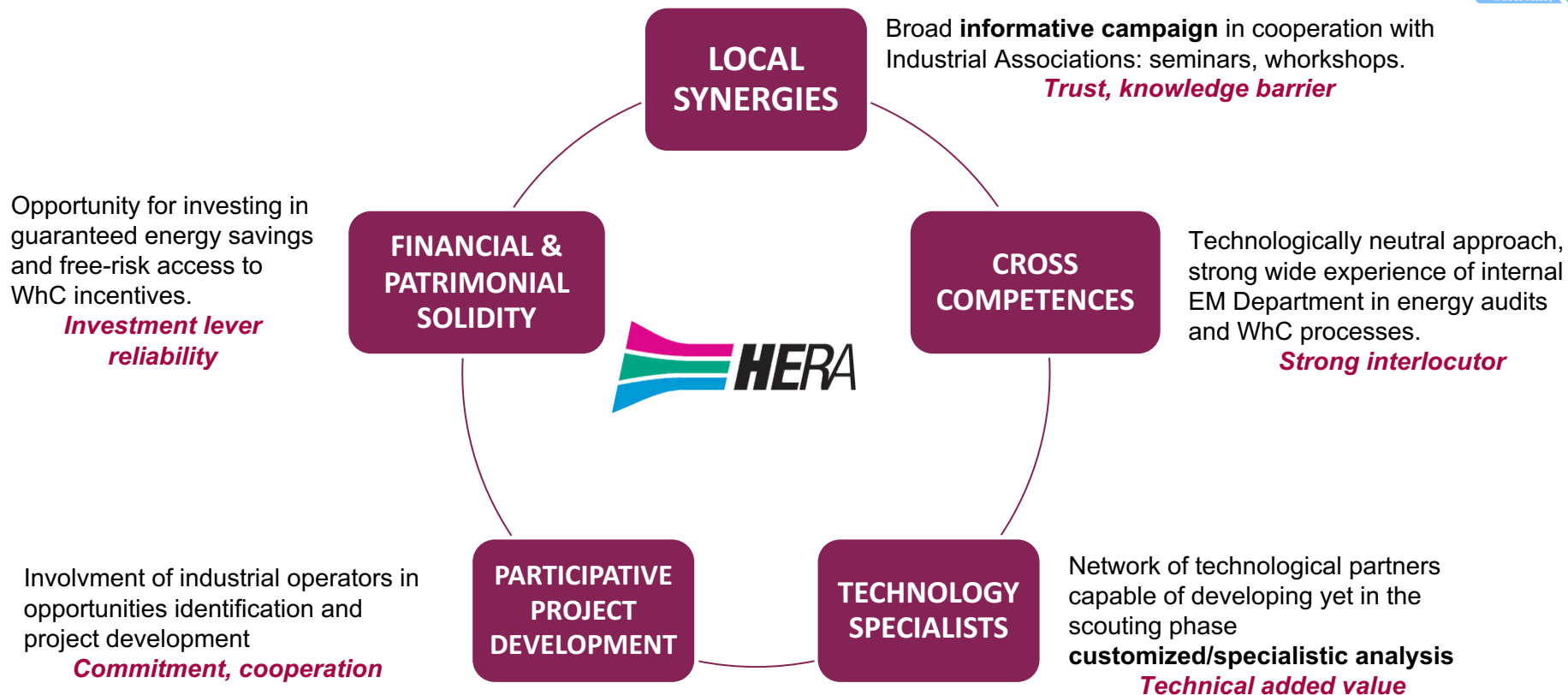
Towards external industrial operators

Support to industrial operators in scouting and development of energy efficiency projects (Vs knowledge barrier).

Participative **project development on a no-fee basis** and scouting of available subsidies of financial support for investments.



HERA's strategy: a comprehensive approach



HERA's strategy: outputs and results



- ✓ Energy Saving **projects are made bankable** through the access to White Certificates scheme

- ✓ HERA assumes the risk **INDUSTRIES do not take any cost** until project is developed and bankable.

Reinforcement of results through certification standards (e.g. ISO 14064)

Access to WhC incentives

Energy Performance Contracts

Energy Provider-Delivered Energy Efficiency

© OECD/IEA 2013

HERA SpA

Table 27 • Mobilizing industrial energy savings within the Italian White Certificates framework

Page | 84



City, country, region	Northern Italy
Programme type	Advice and assistance, financial incentives, information, education and promotion
Programme tenure	Since the 2005 inception of the Italian White Certificates scheme
Sector focus	Industry
Technology focus	Industrial process improvements and equipment replacement
Objectives	<ul style="list-style-type: none">• Satisfy part of Hera's energy efficiency obligations as an energy distributor.• Help customers to save energy, in line with meeting the EU 20-20 target.
Budget	EUR 300,000 annually
Savings	About one-quarter of HERA's annual energy savings obligation of 160 ktoe. Cumulative savings: 135 ktoe since 2005.
Contact information	Claudio Artoli (claudio.artoli@gruppohera.it) www.gruppohera.it Cumani Margherita (margherita.cumani@gruppohera.it)
Reference	http://eng.gruppohera.it/group/business_activities/business_energy/energy_efficiency/context_efa/page2.html

RESULTS:

n° 160
energy savings projects
accessed WhC

450,000 toe
saved in 2007-2017



IEA Report

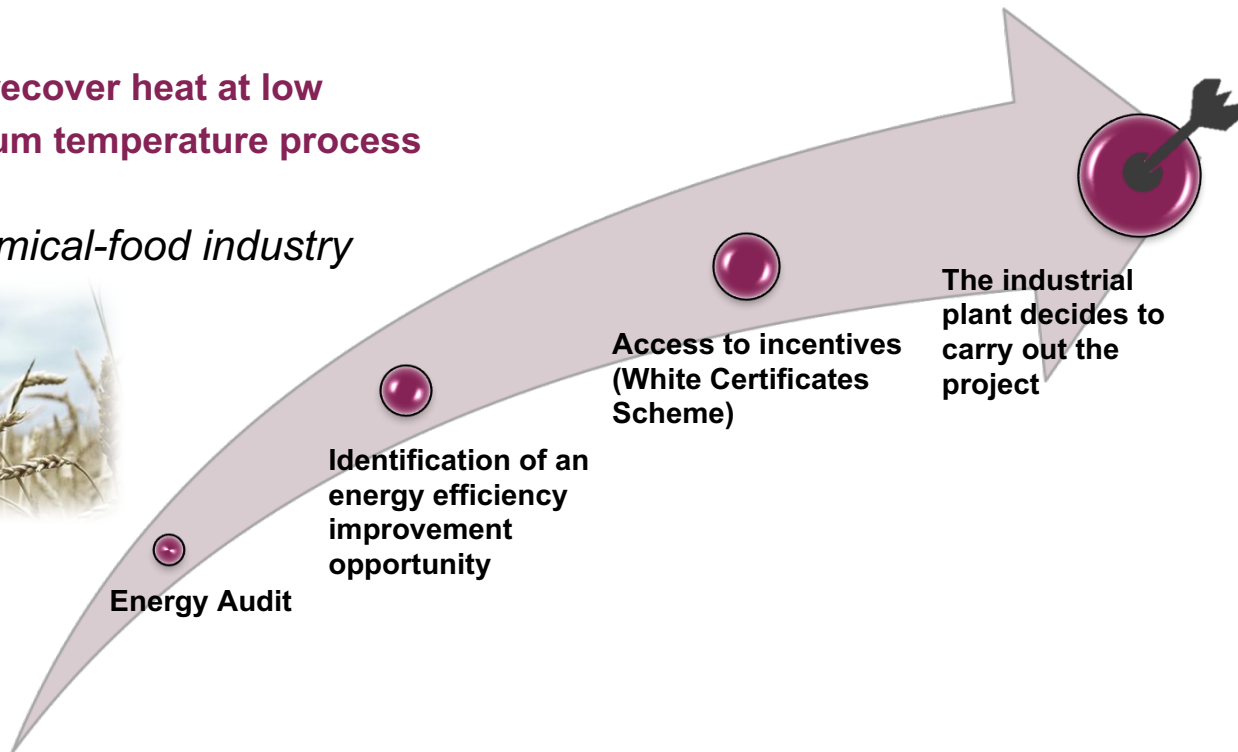
"Energy Provider-Delivered Energy Efficiency"

Example: industrial heat pumps

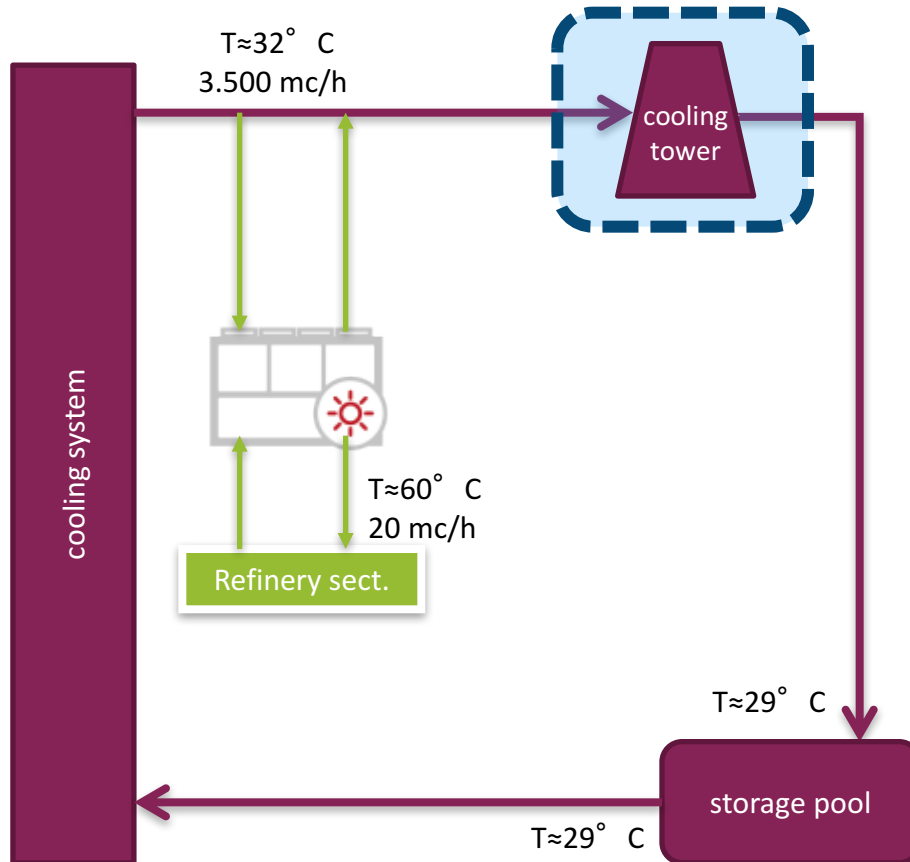


Installation of heat pump to recover heat at low temperature and serve medium temperature process

project carried out in a chemical-food industry



Example: industrial heat pumps



The project



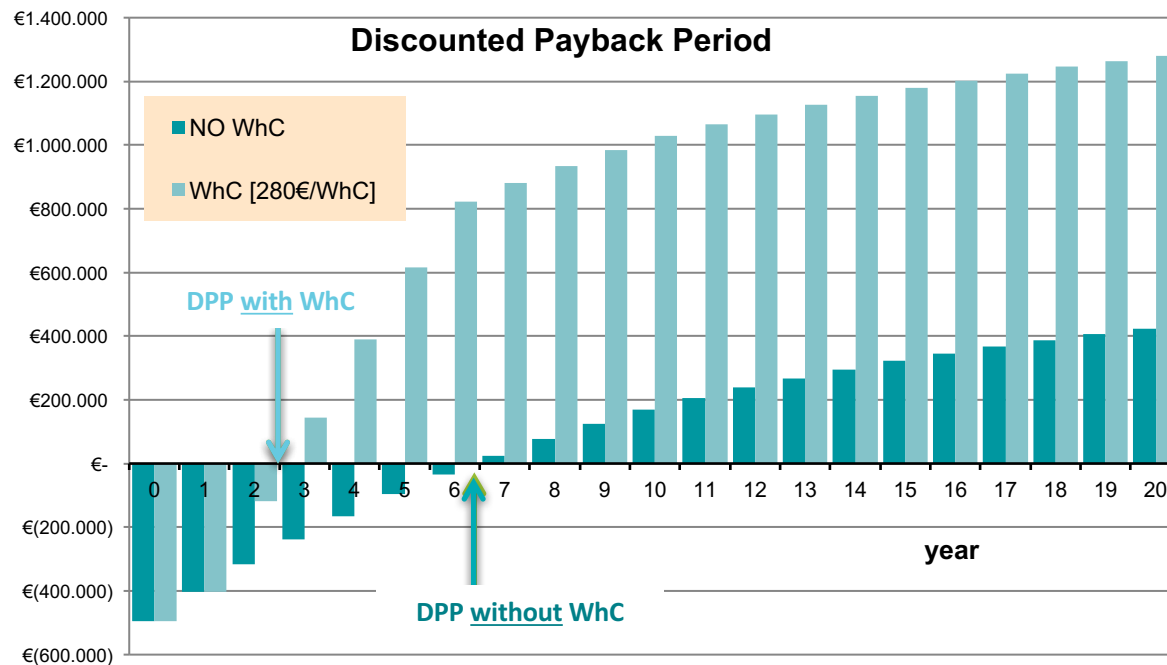
The Energy Audit showed the availability of industrial heat lost in the cooling tower, available throughout the year in great quantity but to reduced temperature (3.500 mc /h and T 30-35°C).

The current heat pump technology allows this waste heat to be used to produce hot water (up to 90°C).

Example: industrial heat pumps



Thanks to the **incentive** the DPP is **acceptable** for the Company



Capex (€)	495.628
(year)	20
Expected Saving (€/y)	125.597
WhC (€/y)	338.830
Decrease in production (%)	0,3%

Routine maintenance costs (€/y)	2.000
Extraordinary maintenance costs (€/y)	0
Discount rate (%)	8,0%
Tax rate (%)	31,5%
Depreciation rate (%)	10%



3. Role in EU-MERCI project

Role in EU-MERCI: KPIs validation activity

HERA participated in EU-MERCI project for **KPIs validation activity**, comparing indicators' values of Good Practices in EU-MERCY library with those of projects developed with its partner-industries and acknowledged with White Certificates.



INDUSTRIAL SECTORS

- Food Processing
- Textile
- Ceramic
- Plastic & Metal Manufacturing
- Chemical industry

- *n°19 projects evaluated*
- *n° 9 Good Practices sheets validated*
- *n°7 Industrial sectors analysed*

MAIN PROJECTS



- Cooking / Drying Furnaces
- Heat Recovery systems
- Upgrading of Refrigeration Systems
- Mechanical Vapour Recompression
- Advanced control systems
- Global process optimization

KPIs validation: preliminary remarks

Positive outcome for the majority of KPIs validated

- Best alignment for KPIs «**cost of implementation**» and «**Cumulative Cash Flow**»
- KPIs validation has been **more successful** for Good Practices obtained from **wide sample of projects**.
- **KPIs** showed to be **more solid** for some GPs whose energy savings could be measured through **easy and homogenous methods** (e.g. heat recovery).

For further analysis

- **Payback time periods** in some cases too low compared to HERA analysed cases and field experience (specially for Refrigeration Systems and Mechanical Vapor Recompression);
- Sensible **differences in annual energy savings** associated to projects for those GPs including multiple and different energy savings measures.



4. Conclusions

Final messages and lessons learned



- ❖ HERA's strategy aims at playing a **central role in promoting and energy efficiency** both internally and toward external industrial operators;
- ❖ **Territorial synergies, cross-competences and financial solidity** have turned out to be key aspects for engaging with industrial operators;
- ❖ **Italian White Certificates** have represented the **main driver for energy efficiency in Industrial sector** over the last decades, being broadly applicable and capable of reducing significantly investments' payback times.
- ❖ EU-MERCI KPIs **more solids for GPs with homogeneous energy savings** evaluation methods and derived from **wider sample of cases**.
- ❖ Further analysis could be useful for **payback periods of structural projects** like Refrigeration Systems and MVR, and for GPs including various typologies of interventions.

Thanks for your attention



Contacts information:

eng. Margherita Cumani

margherita.cumani@gruppohera.it

eng. Claudia Vignudelli

claudia.vignudelli@gruppohera.it

**Dir. Business Development
Energy Management & Asset Upstream
HERA S.p.A.
www.gruppohera.it**

