Campus of Parma

INSPIRATION DAYS
Ecological Solutions Village


INNOVATIVE
VISION
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Campus of Parma

THE CHALLENGE

- the University of Parma is one of the oldest Athenaeum in the world, with **34.000 students** and a surface of about **300.000 m2**. It is one of the few Universities in Italy to have a real campus: called "Science area park"
- make the Campus more **sustainable** and **technologically innovative**, through an autonomous energetic and decarbonization path
- gain the **50% of renewables** for the use of electric energy consumption
- more than **1 km** of district heating and cooling network
- about **7.000 lamps** to be replaced
- **possibility** of Energy Community Creation, Smart City

Campus of Parma

THE IDEA

- **energy performance contract** - envisages the implementation of important works to improve energy efficiency and reduce primary energy consumption
- **new solutions** will be introduced for monitoring and optimising the plants and networks with a 15-year perspective
- **main investments:**
  - trigeneration plant
  - geothermal plant
  - photovoltaic system
  - biomass gasification plant
  - groundwater and related drinking water plants

KEY FIGURES

- **yearly reduction of 2,500 ton CO2**, equal to **19%** of the current release
- **annual savings of approximately 1,037 toe** (tonnes of oil equivalent) of primary energy equal to **20%** compared to the current situation
- **reduction of Campus electricity** consumption from the grid of about **75%**
- contract value: **150 M€**

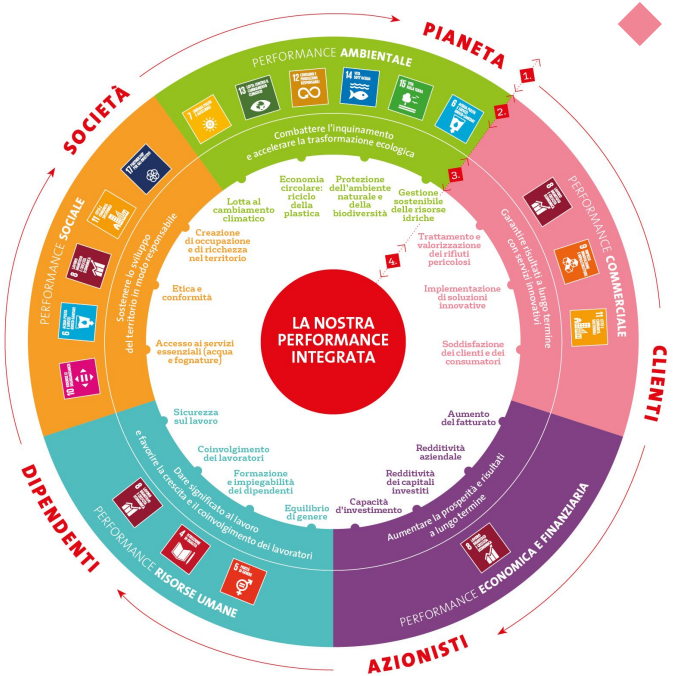
Our Impact

ENVIRONMENTAL IMPACT

- Reduction of 19% of CO2 emissions into the atmosphere
- Annual savings of approximately 1,037 toe
- Reduction of Campus electricity consumption from the grid by about 75%

SOCIAL IMPACT

- Sustainable solutions will provide: comfort, safety and high quality of service
- Increase of the value of the Municipality's assets & growth of local companies, through the assignment of part of the activities & maintenances
- development of research projects in collaboration with professors and students



COMMERCIAL IMPACT

- New solutions: Hubgrade, renewables, Indoor Air Quality
- Model that can be transposed to other realities
- Integration of new services: treatment of water for hygienic use; biomass pyrogasification (Synbiose)
- flexibility and scalability of the contract typology (PPP)

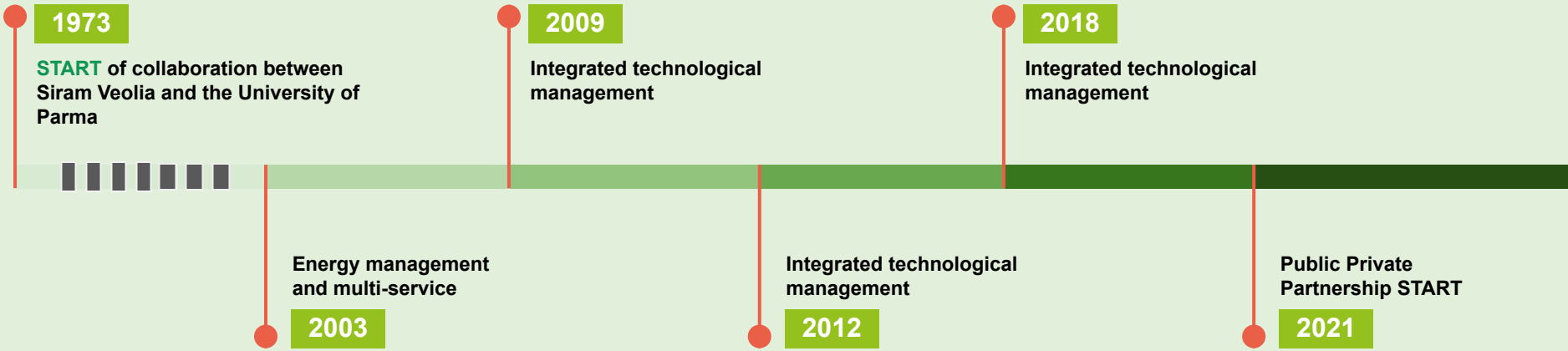
HR IMPACT

- 35 employees involved in the contract
- Development of transversal competencies & new contractual scheme: Heat pump - H2O purification; Biomass Pyrogasification - Synbiose
- An active lab technological innovation

FINANCIAL IMPACT

- Sustainable economic analysis
- Duration: 15 years
- Contract value: 150 M€
- Investments: 23 M€ Euro

An historical Partnership



An integrated approach

Energy efficiency

- Trigeneration plant
- Relamping

Digital system

- Hubgrade
- Eurekam

Renewable sources

- Geothermal heating
- Photovoltaic systems
- Biomass cogeneration

Financial instruments

- PPP

Indoor Air Quality

- Monitoring

Seeds for smart city

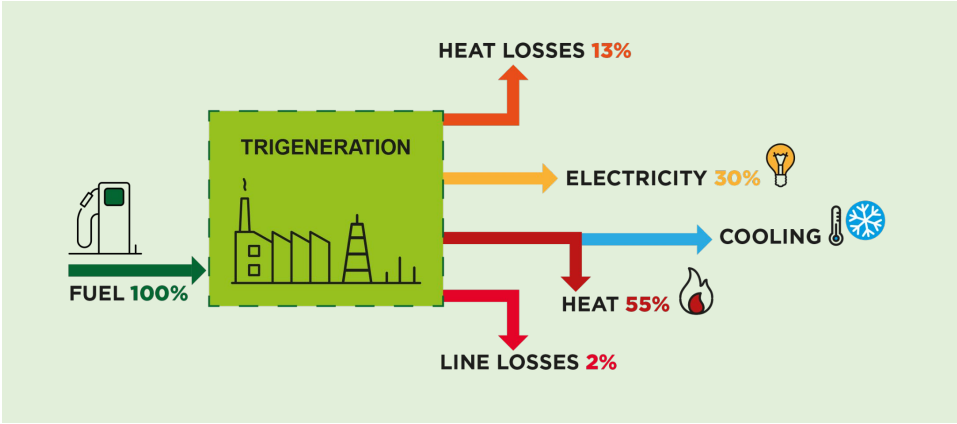
- Electric vehicles recharge
- Drinking water

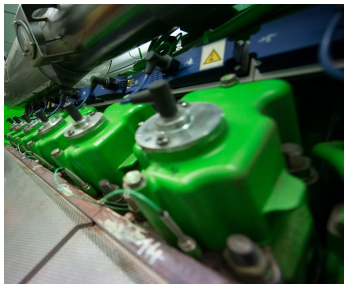
The decarbonisation objective in the long term

The University of Parma has been contractualized with a new **EPC energy performance contract** that involves the completion, by the year 2023, of major **upgrading works** on the University's buildings and facilities.

Among the most significant projects there is a new **trigeneration plant** at the Science and Technology Campus and the construction of a **geothermal plant** for the production of hot water for district heating and sanitary hot water production.

Relamping: about 7.000 LED lamps to be replaced





Public Private Partnership (PPP)

A brief overview

The PPP consists of a wide range of **cooperation** models between the **public and private sector**.

The PPP can be used when the public sector intends to carry out a public utility project where the design, implementation, management and financing - in whole or in part - are assigned to the private sector.

PRIVATE SECTOR:

managerial, commercial and innovative skills → economic return

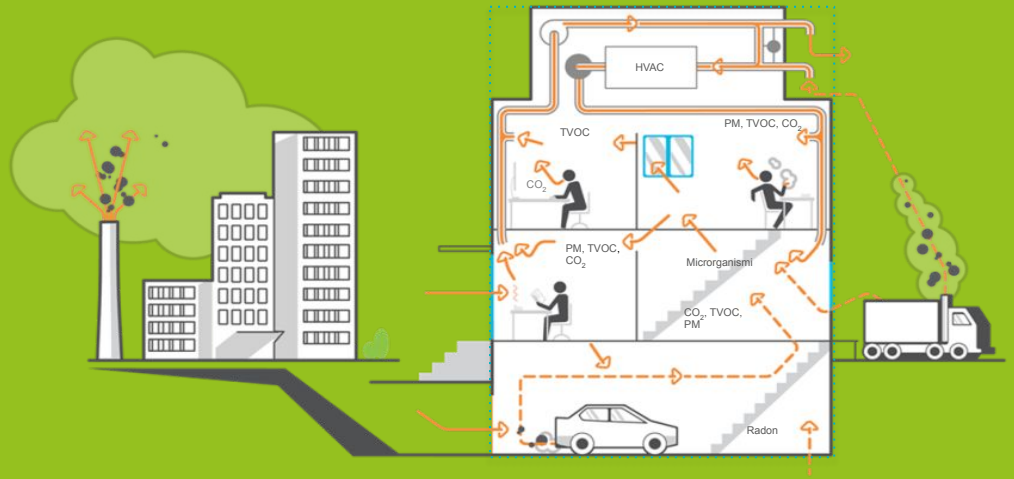
PUBLIC SECTOR:

optimisation of the use of available resources → virtuous circle between public expenditure and the provision of public services.

IAQ - Indoor Air Quality
Air quality Monitoring

INDOOR AIR QUALITY
MONITORING COMPARED TO

- **Record of IAQ levels** and all activities performed (e.g. maintenance, filter changes)
- **Raises awareness** making air quality information accessible and understandable and involve occupants in remediation actions

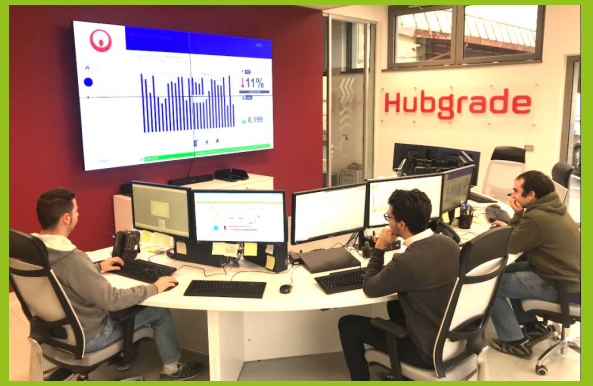


Monitoring Center - HUBGRADE intelligent monitoring centre

It is based on an intelligent and interactive platform for the **remote control of each energy vector**, which thanks to a digital network monitors the status of installations in real time.

Hubgrade's team of analysts, energy experts and system integrators, thanks to the smart meters and business intelligence & analytics software, acts quickly and purposefully, guaranteeing **improved performance.**

Being aware of one's consumption and rationalising it is the first step on an **efficient and sustainable path**.



Seeds for smart city

At the University Campus will also be installed some **electric vehicle charging stations**, powered directly by the new **photovoltaic** panels.

Nearby the technological hub, a new well will be built to collect groundwater and the related drinking water plants, to make the University autonomous in terms of **drinking water** supply.

Renewable sources

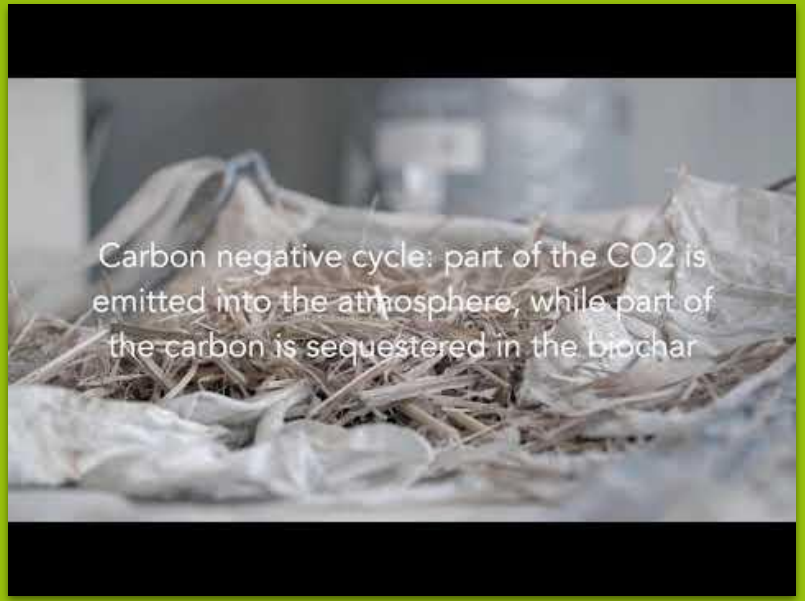
The ambitious objective constantly looks at PEDs (Positive Energy District), with a view to increasingly increasing the percentage of renewable sources - to 50% and more - used to cover the University's energy consumption.

It is foreseen the execution of interventions on the envelopes of some buildings at the Department of Veterinary Medical Sciences and the construction of **photovoltaic systems** on some buildings of the University.

In addition, the project envisages exploiting the integration into the Campus energy grid of the wood-cellulosic **biomass gasification** plant built as part of the "SYNBIOSE" research project, promoted by MISE and co-funded by CSEA, in which Siram Veolia, the CIDEA (Interdepartmental Centre for Energy and the Environment) of the University of Parma and the Department of Engineering of the University of Ferrara collaborated.

SYNBIOSE

focus



The project, developed in collaboration with two **University partners**, aims at establishing a platform of knowledge and experience that can serve as a basis for the dissemination of **biomass gasification** technology integrated with **small-scale cogeneration** to meet the electrical and thermal needs of the tertiary sector.

SIRAM VEOLIA

Università degli Studi di Ferrara

UNIVERSITÀ DI PARMA

www.synbiose.it

SYNBIOSE

Objectives - Results

Provision of biomass follows a short supply chain
→ **sustainability**

Provide **basic know-how** for the diffusion of integrated syngas CHP

Provide **tools and guidelines** for optimal operation, efficient maintenance and optimized component design

Study and test **different types of biomass** in order to use and valorize agricultural or industrial waste

- **INNOVATION AS STRATEGIC KEY IN NEW PARTNERSHIP**
- **REPLICABILITY**
- **KNOW HOW DEVELOPMENT**
- **REDUCTION OF CO_2 EMISSIONS + DECARBONIZATION**

THE ENERGY TRANSITION IN PARMA

Veolia’s contribution to increase the resilience of the region

The model of **energy efficiency** and reduction of environmental impact implemented in the Partnership between the University of Parma and the company Siram Veolia S.p.A. can be easily transposed to the **entire community of Parma**, promoting:

- careful use of energy
- a gradual transition to renewable sources
- constant reduction of both the Carbon and water footprint

SAVING:

- **yearly reduction of 2,500 ton CO2, equal to 19% of the current release**
- **annual savings of approximately 1,037 toe (tonnes of oil equivalent) equal to 20% compared to the current situation**
- **reduction of Campus electricity consumption from the grid for about 75%**

Team involved in the contract

The project has been developed by an interdisciplinary team of:

- **50 experts** from the Siram Veolia Group
- continuous dialogue with **Professors and researchers** at the University of Parma
- **students** involved in specific research and innovation initiatives

PPP University of Parma

Italy - Africa / Near and Middle East

- ***Marco Bongiorni,*** *BU Director*
- ***Mauro Pasquini,*** *BU Proposal Office Manager*
- ***Claudio Bonettini,*** *BU Area Operation Manager*
- ***Luca Vacca,*** *Contract Manager*
- ***Francesco D'Ippolito,*** *Contract Coordinator*

THANKS FOR YOUR ATTENTION