

Rebecca
NíA



Who we are

MIPU is a group of companies whose common mission is to bring prediction into factories and cities, to reduce waste, costs, difficulties and to enhance the existing.

What do we do

AI &
Factory Data
Science

Predictive
maintenance

Management &
Engineering of
Maintenance

Energy
management

Internet of Things

Group of companies



NiA

Identify the **set-up** of the **optimal functioning** of your cogeneration plant by reducing costs and maximizing efficiency with the help of AI

Why NiA?

NiA predicts the optimal configuration of an energy production system one day in advance in order to:

- respond in the most efficient way possible to your energy demand
- maximize profits from the sale of energy



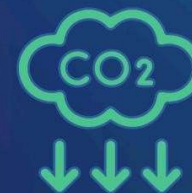
OPTIMIZE THE GAS CONSUMPTION

Through the configuration suggested by NiA, you can reach your production goals, using the correct amount of gas.



MAXIMIZE REVENUES

Get the most out of your cogeneration plant by leveraging AI algorithms capable of analyzing context conditions & providing operational & decision-making support.



MINIMIZE EMISSIONS

Constantly monitor the business impact of your company and check your Energy Efficiency Certificates.

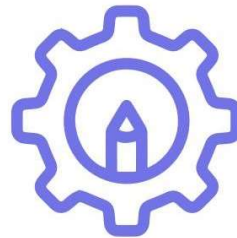
How does it work

1 Digitize



Digitally **map the assets** that make up your system, define your energy flow and set system constraints

2 Simulate



Create and **compare various** configuration scenarios for your system in order to identify the best setup

3 Predict



Receive the optimized configuration of your cogeneration plant **one day in advance**



Digitize

Components

Enter all the **assets** that make up your system.

Define the physical transformations that occur within assets with **AI models** or mathematical **formulas**.

Characterize assets through physical and/or system **constraints** and downtime.

Objective

Identify NiA objectives through the **cost functions** that characterize your system.

Data

NiA has the ability to connect and manage data from **different sources**: IoT systems, third-party services and APIs and manual entry.



Simulate

Rebecca Home

Ottimizzatore > Impianto

< ESCI Aggiungi scenario

1 IMPOSTA SCENARIO 2 CONFIGURA PARAMETRI 3 VISUALIZZA RIEPILOGO

SISTEMA
Impianto

1. Obiettivo

profitto

2. Inserisci valore obiettivo

☒ Max ☐ Min ☐ Valore di 100

3. Seleziona variabili da ottimizzare

2 Variabili • 2 Selezionate

Caldaia unica

☒ energia_termica_caldaia

Cogeneratore unico

☒ energia_elettrica

4. Definisci i vincoli

3 Vincoli • 3 Selezionati

Cogeneratore unico

☒ energia_elettrica > 0 per almeno 4 ore consecutive

Impianto Acea

☒ energia_termica_serbatoio >= 0

☒ energia_termica_serbatoio_prec + energia_termica_caldaia + TLR <= 30

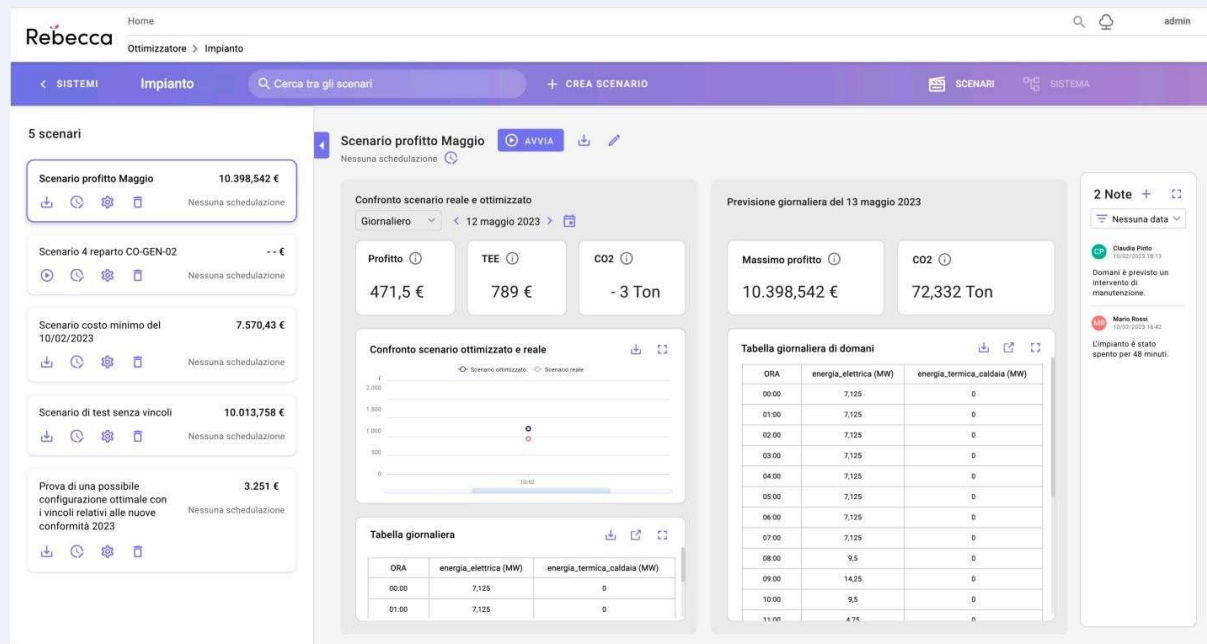
AVANTI

Regenerate and test, through the potential of NiA and AI, different configurations of your system to find the most efficient one to achieve your goals.

Try different **constraint** configurations to find the best fit.



Predict



Visualise the **prediction** of the optimal system configuration for the next day.

Navigate the **KPIs over time** to compare the expected optimized scenario and the real one applied to your plant.

Receive a **report** from NiA every day directly via email containing the best set-up identified by the algorithms.

Rebecca, our software solution to manage factories and predictive cities



Why to choose MiPU



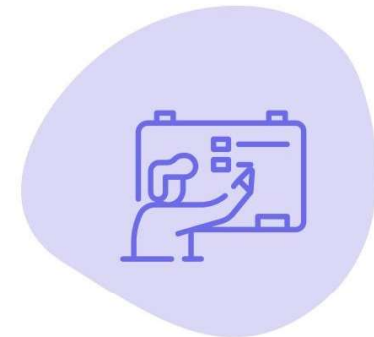
SOFTWARE

Rebecca is a modular platform for predictive factories and cities



SUPPORT TEAMS

Engineers, Data Scientists, Computer Scientists and Software Developers



MIPU AI SCHOOL

Training on the opportunities of AI to the industrial world and facility management

NiA

Optimization of an industrial plant

Approach and results

MiPU 



Scope



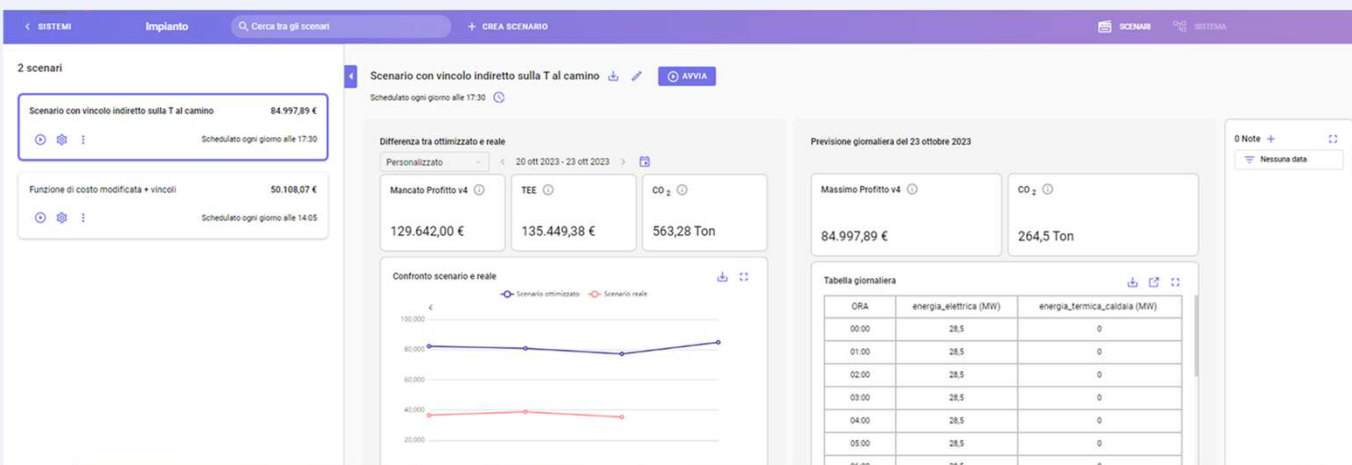
The system is equipped with 1
cogeneration engine of 4.5Wh, 2
boilers of 20 t of steam , 1
photovoltaic system of 600 kW

The aim of the solution is **to minimize the cost of energy** necessary to support daily production .

The operations team is able to **regulate the operation of the cogenerator** , which **fuel** to use inside the two boilers and which is the **master boiler** between the two.



Nia



Nia forecasts the thermal and electrical demand needed for production from 00:00 to 23:59 the next day, and selects the regulation scenario that guarantees the minimum energy cost.

The solution runs at 2.05pm and 5.30pm after receiving **weather data** and data from **Energy Market Operators** (relating to the cost of electricity and gas for the following day) and suggests the **best settings** for the cogenerator and 2 boilers, taking into account how much the photovoltaic system will be able to produce.

The **production of the photovoltaic system** is calculated through a forecast algorithm that integrates weather forecasts.

The system is optimized to return a PDF report to the **operations team**, containing instructions for adjusting the plant to **minimize energy costs related to production**.



Results

9%

Additional profit thanks to the solution

3%

Gas savings achieved in the first heating season

1600

Additional white certificates obtained

The system was put into operation and supported by the operators without modifying the previous regulation methods, in order to generate a **baseline** and be able to compare the ex-ante situation with the ex-post situation.

In the first 9 months of use (January 2023-October 2023) profits and savings were recorded which place the **payback time under 14 months**.



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