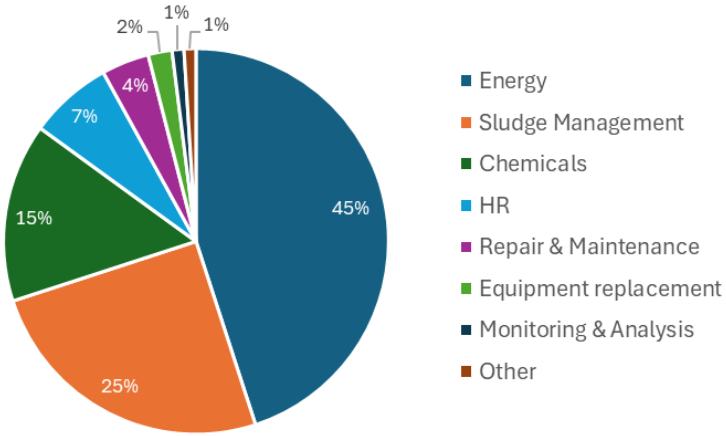
CIMICO

Helinia

Your copilot for biological wastewater treatment

New Paradox in Wastewater Treatment

Wastewater Treatment Plant OPEX



Ongoing regulatory increase

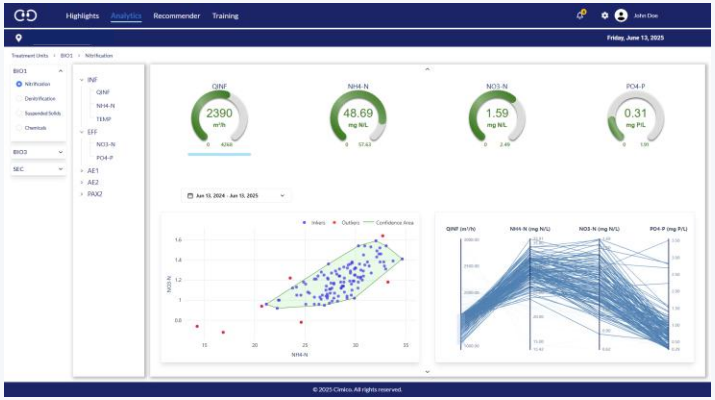
- ✓ More stringent regulation in Nitrogen and Phosphorous (down to 8 mg/L and 0,5 mg/L respectively)
- ✓ Energy Neutrality
- ✓ Resource Recovery

How can we achieve more stringent treatment standards with less energy, chemicals and qualified people?

Helinia

Your copilot for biological wastewater treatment

- Blends wastewater treatment expertise with data management
- Complements the lack of available data
- Structures operating decisions in different time scales



Control the Now

Helinia CONTROL

A control system for real-time optimization, ensuring regulatory compliance while minimizing costs.

Energy Savings

Chemical Savings

Operator Time Savings

Understand the Present

Helinia ANALYTICS

Visualize your Plant's status in real time, check the effectiveness of system recommendations, anticipate water quality in the coming hours, and intuitively analyze patterns and relationships between variables.

Regulatory Compliance

Plant Efficiency

Event Management

Decide the Future

Helinia TWIN

Your ally in medium- and long-term strategy: Visualize the impact of your decisions, explore wastewater scenarios, and receive operational recommendations to optimize performance according to your plant's objectives.

Resource Recovery

Energy Neutrality

Operator Training

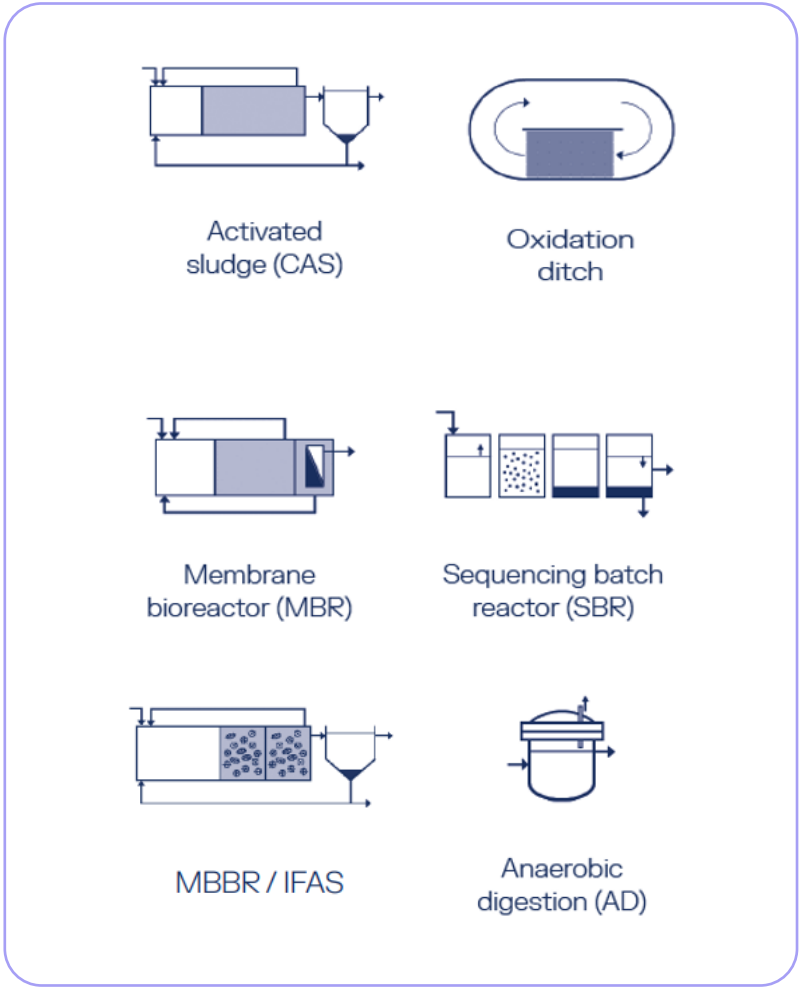
Helinia Scope

In big plants:

- Generates significant savings in energy and chemicals.

In Industrial plants and smaller municipal plants:

- Simplifies and cheapens operations management.
- Ensures regulatory compliance.
- Allows remote control and management of multiple plants.



Cybersecurity

- ISO 27001 and ENS certified
- Different cybersecurity needs:
  - Helinia Control → overwrites PLC → **high cyber security level** → we recommend optional extra service of cybersecurity update.
  - Helinia Analytics & Helinia Twin → no PLC overwrite → **medium cybersecurity level** → API with secure design.

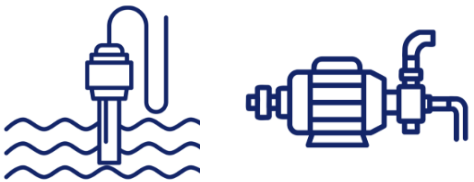
Helinia

How does it work?

The Helinia collects data from different sources to feed the three modules of the platform

- Sensors and actuators installed at the plant
- Laboratory analyses (e.g. LIMS)
- Other public or private databases, such as from public meteorological APIs.

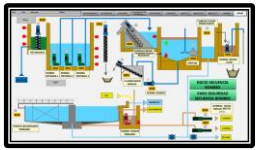
Sensors & actuators



Laboratory analysis

Other databases

Helinia Control



Basic
control
loops

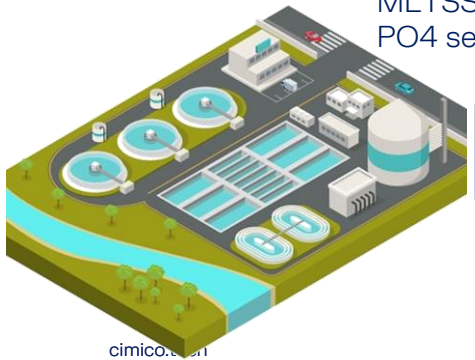
AUTOMATIC
CONTROL

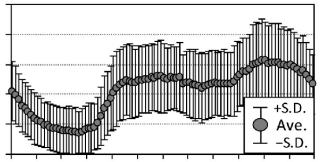
Advanced
control loops

Dissolved oxygen
Internal recirculation flowrate
Wastage flowrate

N-NH4 setpoint
N-NO3 setpoint
MLSS setpoint
P-PO4 setpoint

NH4 sensors
NO3 sensors
MLTSS sensors
PO4 sensors



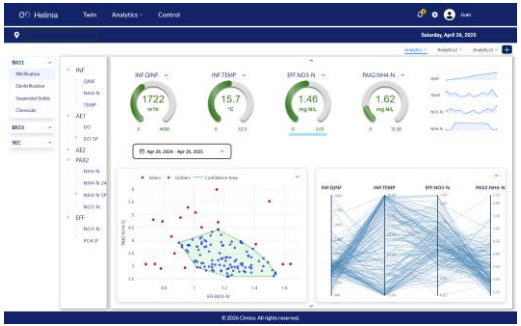


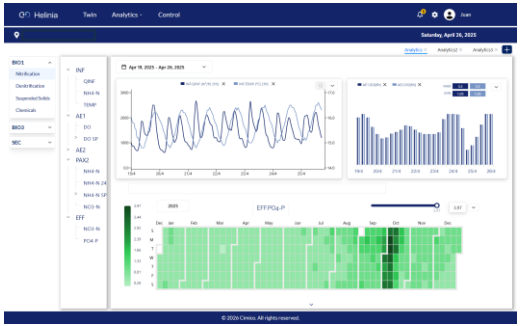
Helinia Analytics

A module that allows you to monitor the plant current status and perform advanced analysis of your plant.

- Allows visual identification of relationships between plant variables.
- Predict the characterization of wastewater in the coming hours.
- Clearly and intuitively visualize plant behavior patterns through quick-interpretation graphs.
- Verify in real time that the Digital Twin recommendations are effective.

The plant operator can customize the graphs according to their preferences and needs.





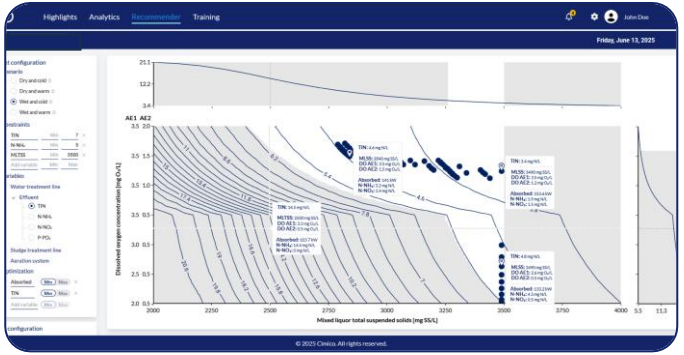
Helinia Twin

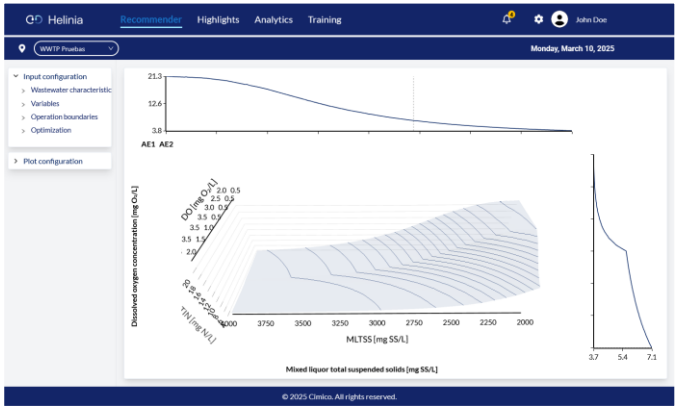
Operational recommendations based on the plant's medium & long-term operating strategy, supported by our algorithms and process expertise.

Specifically targeted for smaller plants with less instrumentation.

Recommendation system for strategic decision-making:

- Designed to be intuitive and user-friendly, with no previous experience needed.
- Allows to select wastewater characteristics manually or automatically.
- Allows to select specific plant operational boundaries (e.g., range of dissolved oxygen and suspended solids).
- Allows to select the optimization operational variable (e.g., aeration energy, CH4 production).





Success story

Helinia Control at Ranilla WWTP, Seville

EMASESA

Facsa
ciclo integral del agua

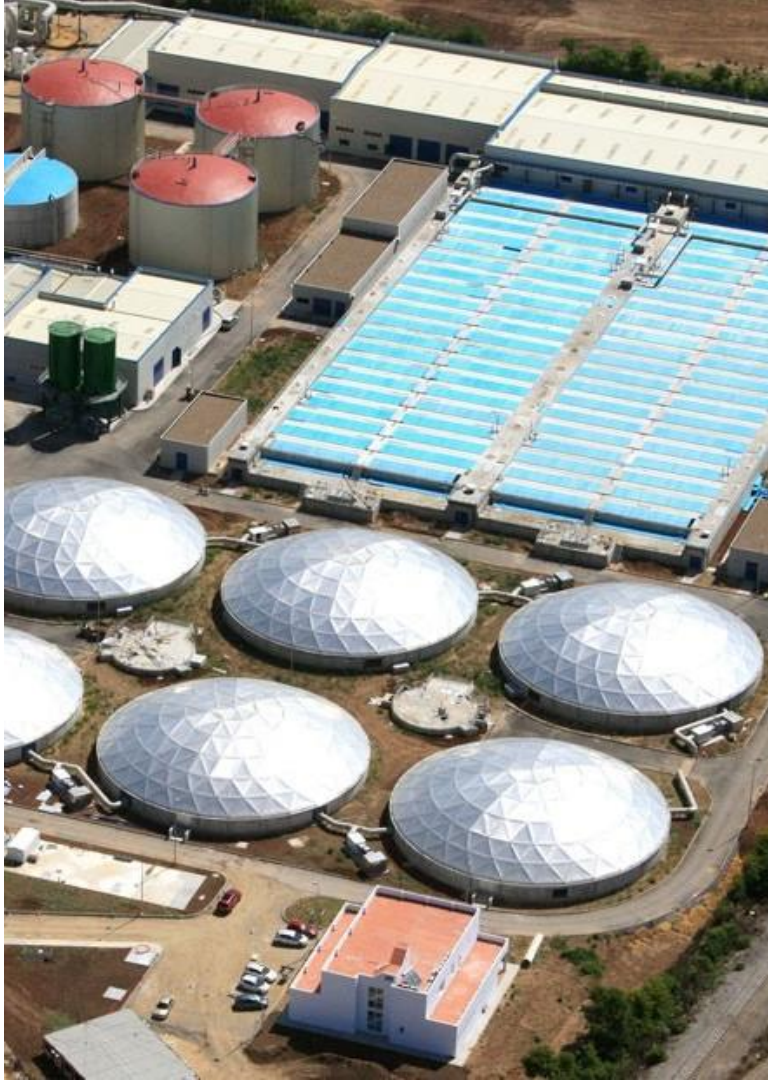
Flow: 90,000 m3/d, 350.000 PE in Seville, Spain.
Removal of organic matter, nitrogen and phosphorous

Challenges:

- High energy consumption.
- Complex operation of Bardenpho configuration
- Minimize ferric chloride consumption for P removal

Control modules applied:

- Dissolved oxygen set point **based on ammonia and also nitrate concentration**
- Internal recirculation flow
- External recirculation Flow
- AI virtual sensor
- AI forecasting



Success story

Helinia Control at Ranilla WWTP, Seville.

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Results:

- High energy consumption
  - → **-15% energy consumption**, even in the months of higher endogenous respiration which worsens consumption.
  - → **424 MWh to be saved,** equivalent to ~**65 tons of CO2**. saved and approximately **€32k in** first year.

- Complex operation configuration
  - → **Automated bardenpho configuration operation**, eliminating more than 15 daily manual DO adjustments, freeing up operator time for higher value tasks.
  - → **Greater process stability** and **reduced fluctuations** in critical parameters

- Minimize ferric chloride consumption for P removal
  - → **90-100% of phosphorous biological removal,** generating consequent savings in the consumption of ferric chloride.

Upcoming Projects

Helinia Control & Helinia Analytics at Guadalhorce and Peñón del Cuervo WWTPs, EMASA

- Guadalhorce WWTP
  - → Capacity of **144.000 m3/day**, **1.281.547 PE** in Málaga, Spain.
  - → **8th biggest** plant in **Spain**.
  - → **Helinia Control and Helina Analytics**
  - → Delivery time: **4 months.** In Operation by June 2026

- Peñón del Cuervo WWTP
  - → Capacity of 38.800 m3/day, 288.000 PE in Málaga, Spain.
  - → **Helinia Control and Helina Analytics**
  - → Delivery time: **4 months.** In Operation by June 2026

emasa

Cimico is a technology company, providing proprietary biological treatment and digital solutions for urban and industrial wastewater treatment plants.

Founded in 2021.

HQ in San Sebastian, Spain.

45 employees.

>25 references worldwide in Spain, Portugal, Mexico, India and Middle East.

cimico.tech

Where to find us

Globally connected from San Sebastian.

Cimico is a company located in San Sebastian (Spain) and with the capacity to carry out projects at a global level. Our team of specialists in mathematical simulation, biological treatment technologies and project management is at your disposal. Although we work mainly by video call, we travel to the installation when necessary for the success of the project.

Zuatzu kalea 9, 1 izda.
20018 Donostia-San Sebastián
Gipuzkoa (Spain)

cimico

Thank you!

Join the revolution of
mathematics that treat water.