

Who is SISLtech?

SISLtech, founded in 2009, specializes in advanced control solution design and implementation for WWTPs. Market leader whose client list includes heading international utility companies, SISLtech maintains a global presence implementing the **atl** advanced control solution in more than 100 WWTPs worldwide.

Summary

Cehegín WWTP (Spain)

- Small plant
- Plug flow reactor
- Nutrient requirements
- Superficial aeration



Challenge

To reduce the aeration costs whilst ensuring the effluent quality.



Results

- 100% quality requirements
- 42 % reduction of the aeration system energy cost

Plant characteristics



Aerial view of Cehegín WWTP

- Flow: 7,000 m³/d
- Biological reactor:
 - Plug-flow configuration
 - 2 units
- Aeration system:
 - 4 turbines/unit
 - 82 kW/unit
- Aeration strategy before **atl** platform implementation:
 - Aeration strategy based on oxygen measurement
- Effluent discharge consent
 - Turbidity < 15 NTU
 - TSS < 35 mg/L
 - COD < 125 mgO₂/L
 - BOD₅ < 35 mgO₂/L



Aeration system (turbine) of Cehegín WWTP biological reactor

For further information, please contact Albert Vilardaga albertvm@sisltech.net

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Implemented technical solution

Instrumentation

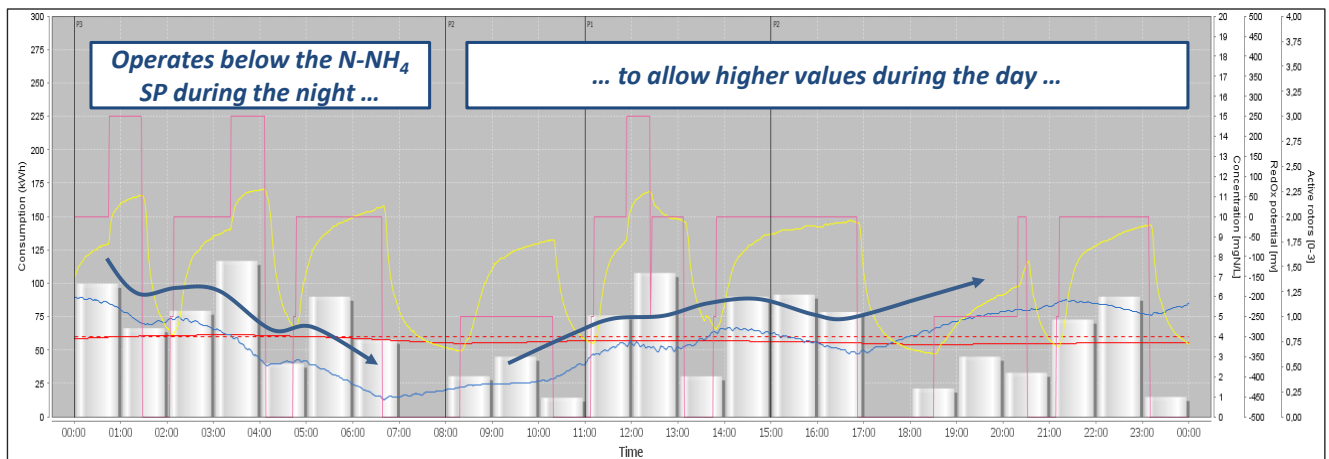
Installation of N-NH₄ probes with ion selective measurement.

Nitrogen removal advanced control **nutriEη**

Within **atl** platform, **nutriEη** module is based on N-NH₄ and N-NO₃ concentrations to optimise the effluent quality and regulate the reactor aeration.

How does it work?

- The effluent quality requirements are based on a 24 hour average value of N-NH₄.
- The tariff strategy takes into account variable energy tariffs and displaces energy peak consumption to night periods:
 - 1) the system increases the aeration during the night to decrease the N-NH₄ concentration, taking advantage of the lower cost of the night tariffs; and
 - 2) decreases the aeration intensity during the day when the price of energy is higher, allowing the N-NH₄ concentration increasing up to a set point fixed by the stakeholder, but always guaranteeing the fulfilment of the 24 hour average N-NH₄ concentration.



— RedOx potential — [N-NH₄] Effluent — [N-NH₄] 24h Average SP [N-NH₄] — Nº of active rotors

Results and benefits

- The **aeration supply** has been adjusted to the influent load, and therefore **optimised**.
- The plant **complies with the river basin discharge** limits as a result of **real time control** of nutrient concentrations.
- The **tariff strategy** has boosted night-time energy consumption to reduce N-NH₄ concentration and increase energy savings during the day.

100 %
Treated water quality guaranteed

37 %
Reduction of the aeration system energy consumption

42 %
Reduction of the aeration system energy costs

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