asia®

engineering srl

ASIA: an innovative technology, made to improve our environment. And your activity.

ASIA FOR INDUSTRIAL APPLICATIONS

The ASIA algorithm (Advanced System of Intelligent Aeration) analyses the biochemical status of the activated sludges of a specific Waste Water Treatment Plant (WWTP), when treating a municipal or industrial sewage, and activates the oxidation pumps of the plant with optimal timing. This leads to **increased efficiency in the plant's performance** in terms of **water quality** and **energy efficiency**.

In order to make this analysis, the algorithm must be configured for that specific WWTP, taking into account its peculiarities and the physical and chemical characteristics of its sewage, which condition the biological status of the activated sludge.

The difference between a **municipal** and an **industrial** sewage is that industrial sewages are different from each other, while the municipal sewages are similar all over the world.

For this reason, IGP Engineering managed to standardize the configuration of the algorithm for the municipal WWTP, which autonomously configures itself, but could not do so for the industrial plants. Therefore, to apply ASIA to an industrial WWTP **an engineering activity is necessary**, both before and after the application.

ACTIVITIES TO BE CARRIED OUT BEFORE IMPLEMENTING ASIA

1. **Engineering** of the installation, including:

a) Understanding of the WWTP layout (if possible, remotely);
b) Detailed analysis of historical data related to the chemical and physical characteristics of the influent and effluent of the wastewater treatment plant;
c) Reverse engineering of the existing wastewater treatment plant;
d) Simulations of the various biological processes;
e) Verification - on the basis of field surveys - of the real air supplies (compressors and diffusers) in the oxidation stations;
f) Choice of the type, number and positioning of Redox probes and possibly of Oxygen and pH probes;
g) Process testing in the laboratory, if needed;
h) Design of any plant adaptations, both electromechanical and IT (about this please see the presentation of our WaterIT remote supervision and control system for process plants)
i) Customization of the software algorithm for the specific case;
j) Drafting of electrical diagrams to ensure the interfacing of the control system with the general PLC, both for the ordinary management of the process and for the management of any possible system crashes;

2. ASIA **software and hardware supply** and supply of the probes;

3. Drafting of a **field analysis program** (detailed scheduling of lab analyses in terms of number of samples, sampling positions and parameters to be measured), necessary for the configuration of the algorithm.

ENGINEERING ACTIVITIES TO BE DONE AFTER THE INSTALLATION

1. **Remote start-up** of the ASIA system;
2. Possible **remote testing**, via WaterIT, **of any plant adaptations**;
3. **Training** of the staff **for the collection of analytical and field data** and for the remote interaction with IGP engineering;
4. **Shared management** (from site and with IGP remote assistance) of the purifier for the entire period necessary to configure the ASIA system;
5. **Analysis**, for at least 6 months, of the analytical data related to the efficiency of the WWTP in the various operating conditions and configuration of the ASIA algorithm for subsequent approximations;
6. **Periodic remote meetings** to discuss the results achieved;
7. **Training** of the staff **in the use of the ASIA algorithm**, once configured, and of the WaterIT supervision system, if provided.

A CASE STUDY - Jermann Winery in Ruttars (Gorizia, ITA)

PLANT CHARACTERISTICS

Biological reactor with 2 SBR oxidation and sedimentation tanks, followed by a tertiary phytodepuration treatment.

APPLICATION RESULTS

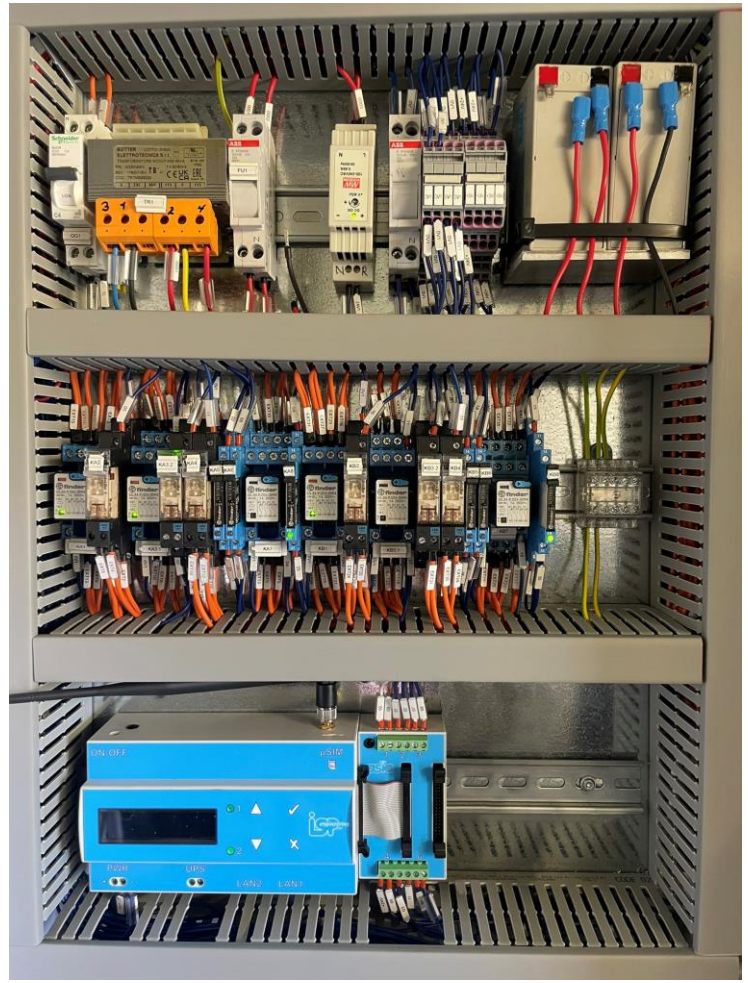
COD abatement	+22,6%
Total Nitrogen abatement	Da 0 a 90%
Plant potentiality increase (COD)	+28,2%
Reduction in energy consumption	-31,7%

WASTEWATER TREATMENT PLANT'S CHARACTERISTICS

- Type of sewage: winery
- Project potentiality: 35 m3/die
- Discharge limits: Tab. 4, Attachment 5, part 3 D.Lgs. 152/2006
- Treatment phases: primary, biological discontinuous, phytodepuration
- Number of biological reactors: 2, alternate
- Aeration system: aeration diffusers
- Mixing system: air mixers
- Process instrumentation: redox, oxygen, pH
- Automation system: custom Plc software

Adds to the existing automation system:

- 2 ASIA algorithms for batch reactors, with 1 IGP-Core industrial PC and 2 I/O IGP-ASIA modules
- 1 WaterIT control system, running on the same computer
- Remote interface for reading and writing via IGP-Platform



REASONS BEHIND THE CHOICHE OF ASIA

CLIENT NEEDS

The client decided to install ASIA on his wastewater treatment plant because:

- In the harvesting period the purification capacity of the plant was lower than actually needed
- The process trend during peaks was not adequate
- The company is very focused on environmental issues and always picks the best available technologies on the market in order to reduce the environmental impact of its activities

WHY ASIA?

ASIA solved the client's problems: it **increased the capacity** of the plant and **stabilized the process**

Quick installation without plant upgrades or changes

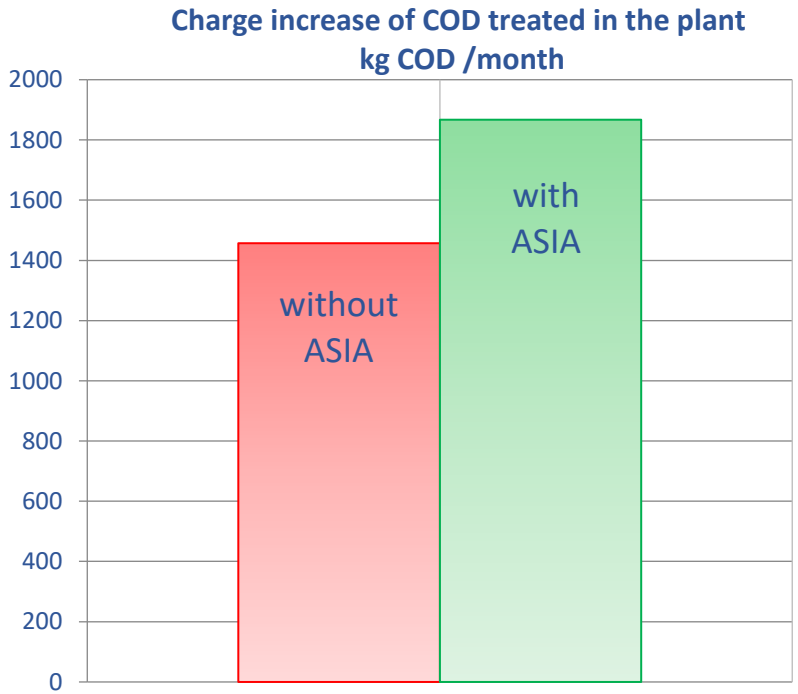
Same processor used to install **ASIA** and the **WaterIT** remote management system

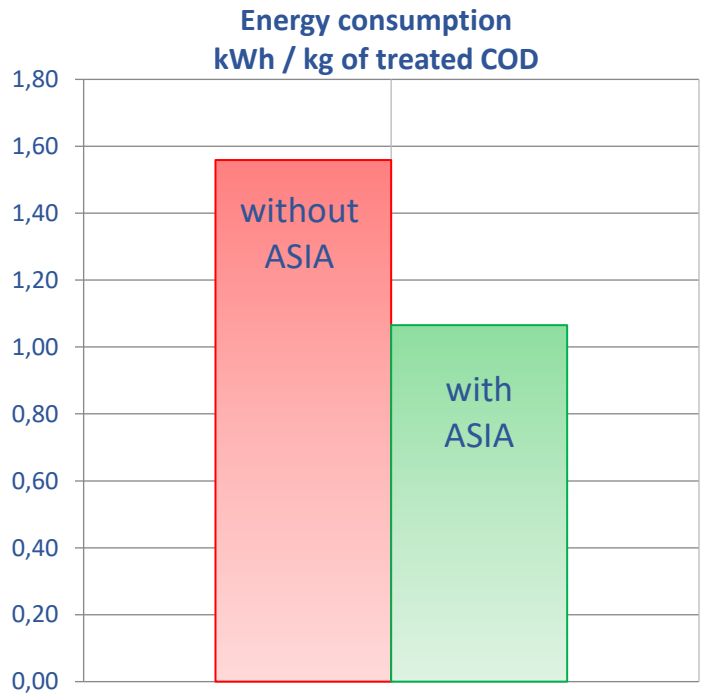
BENEFITS FOR THE CLIENT AND FOR THE ENVIRONMENT

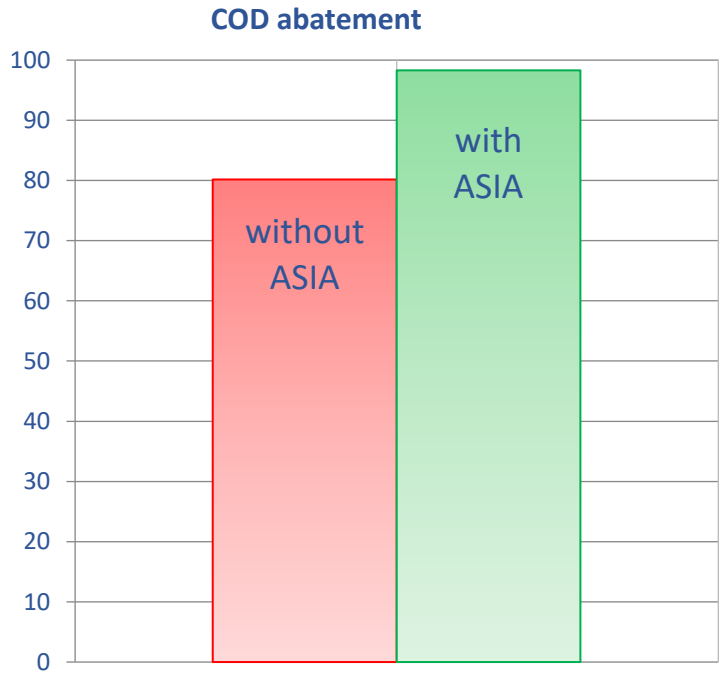
Results recorded in the harvesting period: september 2017 **without ASIA** - september 2019 **with ASIA**

→ ASIA reduced more COD (main pollution parameter)

→ ASIA consumed less energy per kg of abated COD







ASIA IS PRODUCED BY IGP ENGINEERING

30+ years of experience in the water sector

1500+ clients

5 areas of specialization:

- Potable water
- Wastewater
- Swimming pools and fountains
- Pumping stations and irrigation
- Automation of water treatment processes

5 activities:

- Consulting and design
- Laboratory analysis
- Operation of plants
- Ordinary and extraordinary maintenance
- Sale of machines, spare parts, reagents

THANK YOU!

WaterIT

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