

La Roche-sur-Yon

New Wastewater Treatment Plant



A reliable, efficient and sustainable installation

Sanitation is a major issue for the development and attractiveness of La Roche-sur-Yon and a key challenge of the ecological transition. This new plant, at the forefront of energy efficiency, will serve as an educational showcase to raise public awareness of the importance of integrating sustainable practices into sanitation.



Client objectives

La Roche-sur-Yon wastewater treatment plant, built in the 1970s, no longer meets the needs of the population or environmental and health standards. To remedy this, the Agglomeration of La Roche-sur-Yon has decided to invest 80 million euros in a new wastewater treatment plant, the design, construction, operation and maintenance of which will be provided by a consortium of companies composed of Sogea, Eiffage Construction, Safege, Pelleau and Associés Architecte, and SUEZ. It will serve 3 municipalities and will be able to treat the wastewater of 120,000 inhabitants, with a capacity expandable to 160,000 inhabitants.

- Metallic digester Digelis® Simplex, optimized thanks to a new sizing approach developed by SUEZ.
- A Methanis® Grid purification unit for biomethane injection into the city gas network.
- A sludge incineration workshop integrating pre-drying and incinerator, the Thermylis® 2S Flex capable of adapting to the current and future load of the furnace, thus significantly reducing the use of fossil energy for its operation.

Benefits

At the forefront of technology in terms of wastewater treatment and energy efficiency, the La Roche-sur-Yon plant will be able to eliminate pollutants, including microplastics, and to produce its own energy by valorizing sludge (biomethane and heat) and producing solar energy.

Biogas production
up to **4,800 MWh**,
Equivalent to the consumption of
2,000 French households

Installation of **2 100 m²**
photovoltaic panels

The plant anticipates future needs by also hosting on site 2 pilots, one for the treatment of micropollutants on powdered activated carbon upstream of tertiary filtration and the other for the liquefaction of CO₂ emitted by biogas treatment.

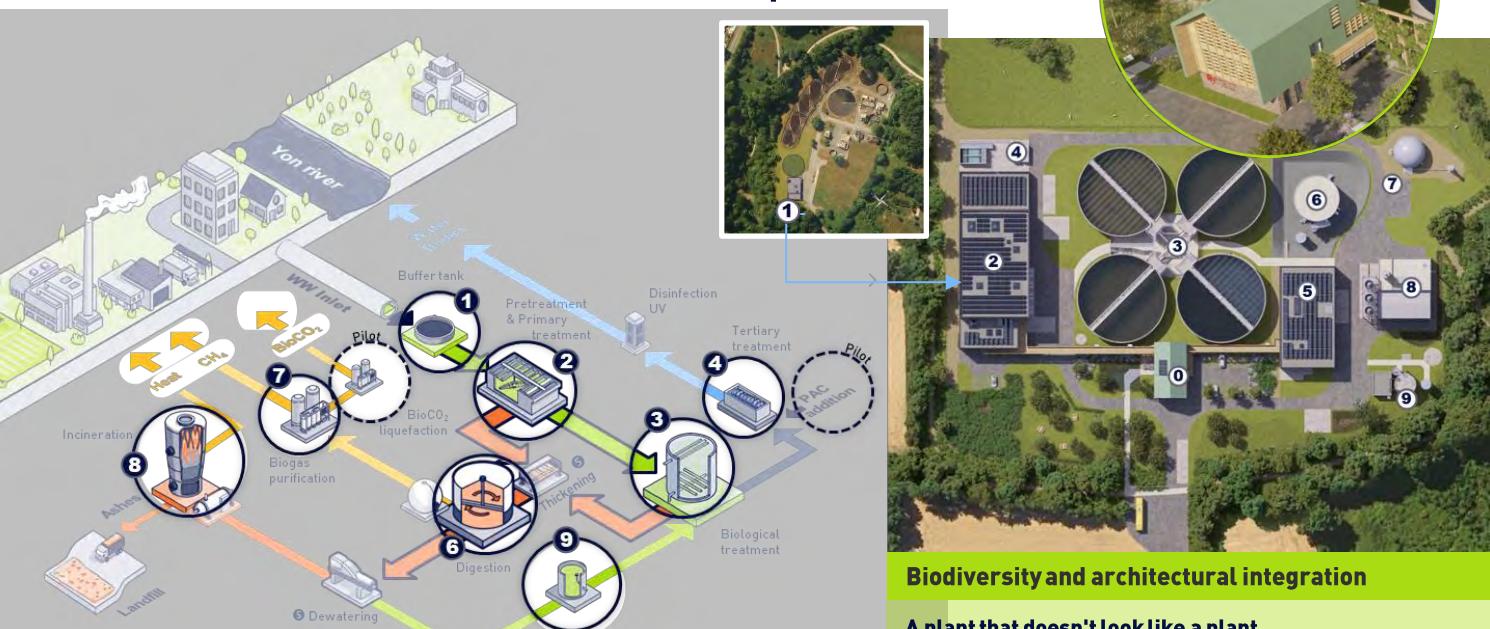
A true showcase for the region, the wastewater treatment plant will offer physical and digital tours allowing schools and local actors to observe water treatment in real time and enjoy an immersive experience.

Differentiating factors

SUEZ has mobilized all its innovation and expertise to help the agglomeration protect biodiversity and maximize the plant's energy efficiency:

- The choice of processes and compact configurations, including the use of multi-level buildings, reduces the plant's physical footprint, thus minimizing its environmental impact and freeing up space for biodiversity.
- Energy savings and biogas revenues are optimized by using the furnace's energy to heat the digesters, exploiting fats to increase biogas production, installing solar panels, adding a turbine to the treated water, and recovering heat from the blowers.
- The plant's design considers the site's topography and soil conditions, and incorporates eco-design elements, such as renaturation, tree planting, eco-grazing, and a vegetation curtain at the entrance, making the plant an example of sustainable practices.

A concentration of innovation for a sustainable plant



Biodiversity and architectural integration

A plant that doesn't look like a plant

The buildings are eco-designed using sustainable and local materials and adapted concrete formulations. The preservation of biodiversity on the site is just as important and will be achieved through the ecological management of rainwater, a green roof on the operations building, and the creation of a vegetated stormwater tank.

1 The **Azurair® Smart** process provide a solution for controlling odors around the buffer tank. It allows for real-time management of the olfactory impact and adjusts the treatment to the optimal dose, contributing to efficient cost management (reagents & energy).

2 **Sedipac® Turbo** lamellar settlers, installed after the screening. This process operates with a high settling speed and allows to combine in the same structure the functions of sand removal, degreasing and primary settling. This compact solution optimizes biogas production without the addition of reagents. The covered works are connected for odor control.

3 The **Cyclor® Turbo** process, an advanced Sequencing Batch Reactor (SBR), combining advanced hydraulic design and an activated sludge intensification process aimed at ensuring excellent quality, lowering operating costs and reducing the environmental footprint.

4 The **Compakblue® M** disc filter, which is recommended for reducing suspended solids, is especially suitable for urban wastewater treatment or discharge in sensitive areas. Its reliability and low energy consumption perfectly meet the objectives of this project.

Treated water guarantees

BOD5	8 mg/L
COD	50 mg/L
TSS	6 mg/L
TN	10 mg/L
NTK	5.0 mg/L
N-NH4+	2.0 mg/L
PT	0.5 mg/L

Average maximal concentration (24h)

6 The **Digelis® Simplex** metallic digester. Its construction method without welding or bolts from Verinox steel coil automatically assembled in spirals with an innovative folding system (patented Double-Seam Lipp) guarantees perfect reactor sealing over time and reduces construction times. Our new **optimized sizing approach**, based on free ammoniacal nitrogen concentration, allows to increase the organic load. This innovative approach reduces the digestion volume by nearly 40%, heating needs, footprint and construction costs.

7 Transformation of biogas into biomethane with the **Methanis® Grid** membrane purification process, which allows the production of green gas with a neutral CO₂ balance compatible with injection into the city gas network.

8 The energy recovery from dried sludge is carried out on site, providing the necessary heat for the process and building heating. The **Thermylis® 2S** is a two-step process: pre-drying and incineration. The **Flex** solution allows, thanks to the installation of a refractory ring, to adjust the capacity of the furnace according to needs, thus limiting the use of fossil energy. This ring can be removed later to respond to the increase in future load.

9 **Cleargreen® Sidestream** is a deammonification process that limits the impact of methanization centrates on the water line and saves energy.

CONTRACT TYPE

DBO

Design, Build & Operate

CONTRACT DURATION

DB: **2024-2028**
O&M: **2028-2034**

PLANT CAPACITY

26,000 m³/d

POPULATION SERVED

120,000 PE

Expandable to 160,000 PE