NESSIE® & LISIE

RESERVOIR CLEANING AT LA BALME-DE-RENCUREL

PROJECT TITLE
La Balme-de-Rencurel

CLIENT
EDF (Électricité de France)

LOCATION
La Balme-de-Rencurel (38), France

YEAR OPERATION
2022

PROJECT OVERVIEW

The La Balme-de-Rencurel dam, an EDF gravity dam 22m high on the Bourne River (Isère) commissioned in 1912, has a reservoir of about 60,000m^3. Its reservoir was partially silted immediately upstream of the plant intake, whose trashrack was obstructed up to 70% of its height, causing head losses that prevented the hydroelectric plant from operating at full capacity.

In 2022, a major dredging project was carried out in this small reservoir to restore its original hydraulic profile and recover the plant's full production capacity. The operation involved extracting about 14,050m^3 of predominantly sandy-silty sediments over a length of 170m and a maximum width of 29m. As the reservoir could not be by-passed, the works had to be carried out with the dam in water.

It was therefore prescribed to perform dredging at depths reaching up to 18m. The main dredging was executed with direct discharge immediately downstream, into the bypassed reach, while maintaining the dam in overflow mode to flush sand and dilute fine sediments into the river flow.

Once a low threshold had been reached in this way, a cleaning of the sediments and woody debris obstructing the intake restored its full functionality. The project included strict environmental monitoring, particularly of turbidity at the downstream discharge point, as well as optimized risk management throughout the works.

TECHNICAL APPROACH & IMPLEMENTATION

To restore the La Balme-de-Rencurel reservoir, whose access is highly constrained by a narrow road and a steep track at the tail end of the reservoir, Watertracks deployed the NESSIE® underwater robot for the main dredging operation. Sediment discharge was carried out in a controlled manner immediately downstream over the dam crest.

Fine cleaning around the intake and trashrack clearing were performed using the LISIE mini-excavator, equipped with an air-lift suction tool and occasionally assisted by divers for the removal of larger woody debris.

The team overcame significant access and logistical challenges, adapted equipment and procedures, and ensured environmental protection by monitoring suspended matter in real time to comply with ecological and regulatory dilution thresholds. Strict safety protocols, daily coordination, and corrective actions were implemented, leading to the successful completion of the project and the renewal of the MASE safety certification.

"The site was very quiet thanks to the robots' full-electric power supply connected to the local medium-voltage grid."

RESULTS & PERFORMANCE

- **Hard-to-access** site.
- **19m depth** in confined conditions.
- **100%** of intake section restored.
- **Full compliance** with environmental thresholds.
- **Zero-carbon** dredging.
- **Zero** accidents.

WATERTRACKS

TEASER – Photos credit: Watertracks – 10/2025