NESSIE®

DREDGING UPSTREAM OF THE HYDRO PLAN IN THE RHÔNE RIVER AT BOURG-LÈS-VALENCE

PROJECT TITLE
Bourg-lès-Valence Lock

CLIENT
CNR (Compagnie Nationale du Rhône)

LOCATION
Bourg-lès-Valence (26), France

YEAR OPERATION
2022

PROJECT OVERVIEW

The Bourg-lès-Valence hydroelectric plant, operated by CNR (Compagnie Nationale du Rhône), was commissioned in 1968 as part of the Rhône River development scheme. It operates as a run-of-river facility, with an installed capacity of about 180Mw distributed across six units.

The plant is regularly affected by sediment deposits carried by the Rhône, whose accumulation in front of the adjoining lock gate gradually reduces hydraulic efficiency.

To address this issue, a dredging campaign was undertaken to remove 15,000m^3 of sediments located immediately upstream of the turbines.

The operation was particularly challenging as it had to be carried out without shutting down the generating units, thereby ensuring continuous power production while restoring optimal intake conditions at the lock.

TECHNICAL APPROACH & IMPLEMENTATION

The dredging operation was carried out using the NESSIE® underwater robot, capable of moving along the riverbed and precisely extracting sediments. Unlike traditional pontoon-based dredgers, NESSIE® did not require any floating vessel, thereby eliminating the risk for operators of falling into the turbine influence zone.

The sediments were transferred through one of the Kaplan turbines to be released downstream into the river.

The NESSIE® robotic system enabled real-time bathymetric monitoring, precise positioning (GPS/acoustic/inertial), and automatic adjustment of the dredging speed.

The environmental impact was minimized thanks to low noise and limited visual disturbance. In addition, the robot adjusted its production rate to comply with regulations on sediment concentration at the downstream discharge point.

"Impeccable professionalism and responsiveness in every situation: the Watertracks team perfectly met our expectations."

RESULTS & PERFORMANCE

- **15m** depth in front of operating units.
- **15,000m³** of sediments removed.
- **Zero** operational constraints for the dam operator.
- **Automatic production regulation** to ensure dilution at the discharge point.
- **Zero human presence** on the water surface.
- **Zero** accidents.

WATERTRACKS

TEASER – Photos credit: Watertracks – 10/2025