CASE STUDY

Construction Site Water Treatment and Discharge System

Motorway A13 – Soazza / Mesocco South

The Context

During infrastructure rehabilitation works on Motorway A13 between Soazza and the Mesocco South interchange, hydrodemolition operations on bridges and underpasses generated highly turbid, pH-variable wastewater laden with cement residues — among the most challenging construction site waters to treat.

The challenge: achieve regulatory-compliant discharge without ever halting construction.

The Client's Challenge

The client needed a solution to:

- Treat difficult wastewater with high turbidity and unstable pH
- Meet legal discharge limits for both sewer and natural watercourse recipients
- Maintain continuous operation even during heavy rainfall and peak flow events
- Eliminate the risk of construction stoppages due to water quality non-compliance
- Provide automated monitoring and full data traceability

Operating Conditions

The project required the simultaneous management of two separate treatment systems, each dedicated to a specific discharge recipient.

Parameter	System A	System B
Average flow rate	18 m³/h	12 m³/h
Discharge recipient	Sewer network	Natural watercourse
Sedimentation	1 tank	1 tank
Decantation	1 tank	2 tanks (double)
Recirculation	Yes – automatic	Yes – automatic
pH Neutralisation	CO_2 – automatic	CO_2 – automatic

Our Solution

We designed and built two modular, fully automated treatment systems, sized to the actual site operating conditions and compliant with cantonal regulations (Cantonal guidance on construction site water disposal, SIA Standard 431).

Process design

- Division of work areas into isolated sectors to limit hydraulic volumes
- Optimisation of flows towards the treatment systems
- Oversizing of decantation tanks beyond regulatory minimums for peak-condition performance

Treatment and neutralisation

- Primary sedimentation
- Automatic pH neutralisation via CO_2 injection
- Automatic flocculant dosing
- Continuous pH and turbidity monitoring with inline probes
- Automatic recirculation of out-of-spec water

Integrated safety logic

When a parameter exceeds the set limit:

- Automatic closure of the discharge valve
- Water reintroduced into the treatment cycle
- Immediate SMS alarm notification sent to responsible personnel

Remote Monitoring and Traceability

Both systems operate fully autonomously, 24 hours a day. Through a dedicated web portal, site management and environmental officers have continuous access to:

- Real-time flow rate, pH and turbidity data
- Complete measurement history for reporting purposes
- Periodic data export
- Immediate alarm notifications in the event of anomalies

The Results

- ✓ Full regulatory compliance throughout the entire construction period
- ✓ Zero operational downtime due to water quality issues
- ✓ Stable performance even during heavy rain and flow rate fluctuations
- ✓ Reduced environmental risk and prevention of potential sanctions
- ✓ Improved operational efficiency through process automation

Why Choose Us

Specialist expertise
Hands-on experience in designing treatment systems for construction site waters in complex infrastructure settings.

Tailored solutions
Every system is sized to the actual site conditions, not off-the-shelf standards.

Advanced automation
Control, alarm and recirculation systems that minimise manual intervention and the risk of error.

Remote monitoring
Full operational visibility and data history accessible from any device, at any time.

Environmental commitment
Protection of natural water bodies and strict compliance with applicable regulations: a priority, not a box to tick.

"A structured, prevention-oriented technical approach that simultaneously guarantees regulatory compliance, environmental protection, and uninterrupted operational continuity."