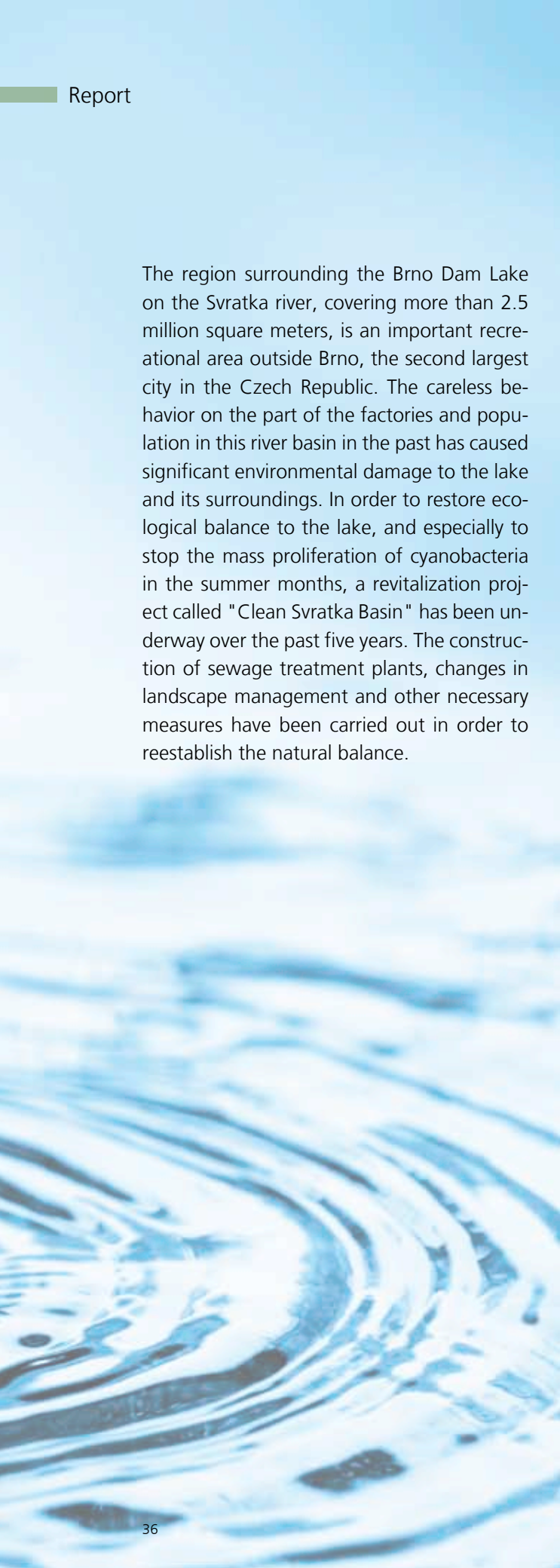


The background of the image is a close-up, high-angle shot of water. It features a series of concentric, overlapping ripples that create a sense of movement and depth. The water is a vibrant, clear blue, and the lighting highlights the texture of the ripples, giving them a shimmering appearance. The overall composition is clean and minimalist, focusing on the natural beauty and fluidity of water.

Keeping the environment

in balance





The region surrounding the Brno Dam Lake on the Svatka river, covering more than 2.5 million square meters, is an important recreational area outside Brno, the second largest city in the Czech Republic. The careless behavior on the part of the factories and population in this river basin in the past has caused significant environmental damage to the lake and its surroundings. In order to restore ecological balance to the lake, and especially to stop the mass proliferation of cyanobacteria in the summer months, a revitalization project called "Clean Svatka Basin" has been underway over the past five years. The construction of sewage treatment plants, changes in landscape management and other necessary measures have been carried out in order to reestablish the natural balance.

Redis spol s r. o., headquartered in Brno, is one of the companies involved in this project. Founded in 1991, Redis was initially focused on developing process control systems for use in agriculture. Since then, the scope of activities has expanded into the area of process automation and the use of well-known control systems from many different manufacturers. Redis has also gathered extensive international project experience, particularly in water treatment (drinking water distribution and sewage treatment projects), heating (flue gas desulfurization), agriculture (feed mixing systems) and the foodstuffs industry.

Efficient water treatment

One of the most significant measures implemented in the "Clean Svatka Basin" project was the introduction of a water treatment plant for Brno Dam Lake. The goal was to enrich the water with oxygen while carrying out destratification through coagulation, which prevents the inflow of phosphorous and cyanobacteria into the lake. The extensive technological equipment installed in the lake for this purpose consists of five aeration towers, fifteen destratification towers and a coagulant dosing station.

The purpose of the five aeration towers is to secure the required concentration of dissolved oxygen at a set depth below the surface of the lake. The coagulant dosing station, located at the inflow to the lake, uses a targeted dosage of coagulant to prevent the entry of nutrients (e.g. phosphorus) and cyanobacteria from flowing into the lake with the water. The system for controlling, managing and monitoring this water treatment plant was supplied by Redis.

Easy to operate and 100% reliable

Four control containers, each equipped with a compressor station for ensuring adequate air supply into the towers, a control cabinet for aerator power supply, and a control system were located at selected sites based on the size of the lake and the location of the towers. Since the entire site is operated without attending personnel, it was necessary to find a process control system that provided maximum reliability. In the end, Redis decided to go with B&R hardware when implementing the project due to its extensive product portfolio and robust industrial hardware.

A Power Panel PP45 control system with 6" touch screen was installed in the door of each cabinet. Each provides an overview of the entire process and can be used to set

control parameters and control the towers individually or in groups. X20 I/O modules with a built-in X2X Link interface are used for high-speed signal transfer to the controller. The four control containers are interconnected via a local network using their integrated Ethernet interfaces and wireless Wi-Fi network in addition to being connected to the Internet.

A separate container for dosing the coagulant into the inflow of the lake is another component of the system. The station provides continuous dosing of ferric sulphate based on the current flow in the river, which the control system receives from a public hydrometeorological service. The Internet is accessed via GSM/GPRS since the rugged terrain and large transmission distances make Wi-Fi impractical. The containers communicate with the master part of the control system through a secure VPN interface.

All transmitted data is time-stamped and collected on a remote server located at Redis company headquarters in Brno. A Web-based visualization interface provides information about the current status as well as historical data about the operation of the equipment (time diagrams, events, alarms) to the operator in multiple views. It also allows various oper-

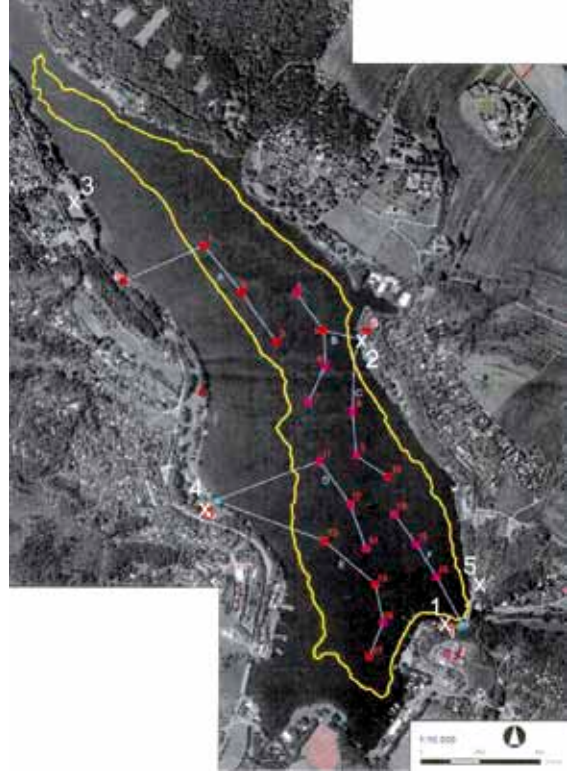
Thanks to the integration of advanced B&R automation technology into our systems, we were able to considerably increase the reliability of our process control technology.

Milan Pek, Managing Director Redis

ating modes to be selected and values to be set for control parameters at the level of each individual technical object. The system can be controlled using a Web browser from virtually anywhere. It is also possible to send warning messages via email and text message.

The control and monitoring system for aeration, the destratification towers and the dosing station on Brno has operated without a malfunction since being commissioned in May 2010. During the development phase, Redis was able to profit from the expertise of B&R automation specialists as well as the use of reliable automation components.

One particular advantage was that integrating B&R technology with systems from other manufacturers was a breeze. With programming languages like Ladder Diagram, Function Block Diagram, Structured Text and ANSI C integrated



Deployment of the technology and control containers at the Brno Dam Lake for use in the Clean Svatka Basin project

Red square	Aeration / destratification tower
A, B, C, D, E, F	Aeration / destratification tower groups
Xn	Location of control containers 1 to 5
Yellow line	Shore line at the reduced water level (Alternative B)

in Automation Studio, the engineers at Redis received excellent support during programming. An extensive library of ready-to-use functions and function blocks made it possible to considerably shorten the amount of time needed to complete the project. ■



Industry: Energy and environment

Location: Brunn (CZ)

www.redis.cz