Case study

Aguas Andinas remotely manages water resources with MPC-Buoy

Protecting water supplies

Aguas Andinas is a multi-service company supplying drinking water, sewerage, and wastewater treatment services in Santiago. With its subsidiaries, the utility provides its services to approximately 8.5 million people. In a joint effort between the public and private sector, Aguas Andinas built the Pirque Mega Ponds – a new infrastructure to protect the water supply amid unexpected events.

Climate change, a catalyst for harmful algae blooms

Heavy rainfalls and warm temperatures create the ideal conditions for algal blooms to occur. And climate change accelerates their frequency, severity, and persistence. To preserve the water quality in the Pirque Mega Ponds, Aguas Andinas installed an ultrasonic system, called MPC-Buoy, in each of their six ponds. The project was developed with the MPC-Buoy technology in mind due to its proven success in controlling algae growth in the La Dehesa dam of Aguas Andinas.

How ultrasound works

Algae require sunlight and nutrients for growth and are characterized by a diurnal behavioural pattern in which they rise to the water's surface during the day and sink to the bottom at night.

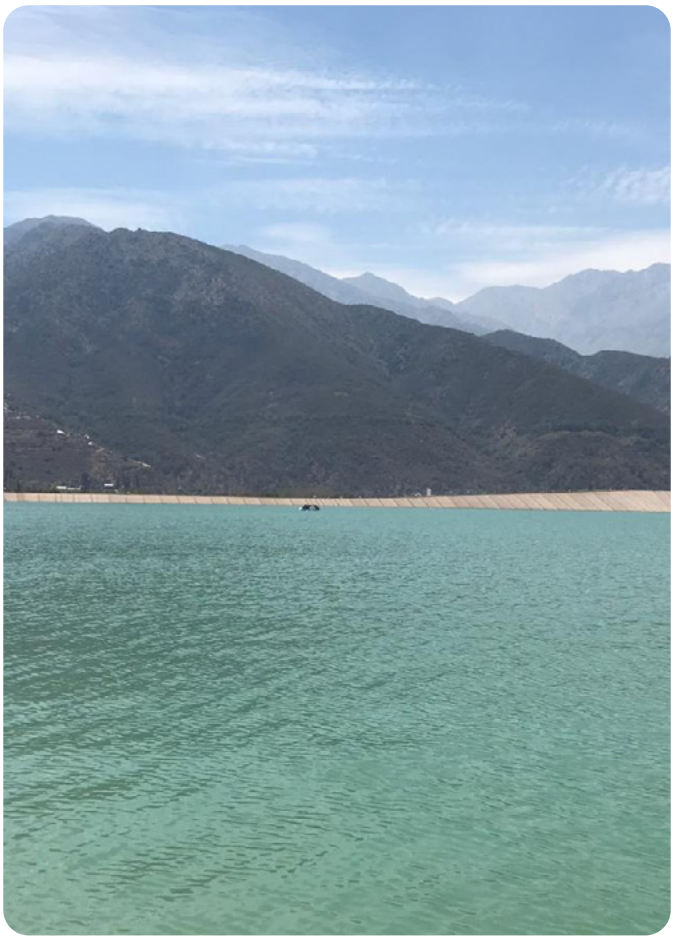
Buoyancy vesicles found within the algae cells control this ability to ascend and descend in a water column. The buoys emit ultrasound which interferes with these vesicles, creating a sound barrier on the surface of the water through which the algae struggle to access sunlight, limiting its growth.

Ultrasound refers to sound waves with frequencies higher than the upper audible limit of human hearing (20 kHz). At specific frequencies, these sound waves can be used to control algae growth.

Real-time water supply insights

The MPC-Buoy is an ultrasonic system that monitors, predicts, and controls algal blooms in real-time. This innovation measures key water parameters and sends this information to an online software, allowing utilities to be proactive in responding to unexpected events.

Aguas Andinas finds the real-time monitoring feature of the MPC-Buoys valuable. Besides having immediate access to biochemical information, they also receive alerts if the water quality changes. This means the utility can easily determine if it complies with the SEA Chile regulations. And more important, it can protect both its employees and the water supply if a crisis occurs, such as in extreme weather.



COVID-19 lockdown

During the COVID-19 lockdowns, the utility could rely on the MPC-Buoys' in-line sensors to keep operations afloat if a loss in personnel occurs. By managing the water resource remotely, the utility could also avoid the risk of endangering employees during their site visits. As the buoys offered real-time information about what's happening in the water, there was no need for people to assess the situation physically. Therefore, the Chilean company relied on real-time monitoring to ensure an uninterrupted water supply to the citizens of Santiago. Besides, the six ponds play a critical role in another consequence of climate change – drought. In 2020, two severe forest fires broke out. Helicopters could land on the Pirque Mega Ponds and collect water to extinguish the fire.