

CASE STUDY



A hydroelectric power plant reduces downtime and preserves the cooling system, improving operational efficiency by installing self-cleaning filters



INDUSTRY

Electric power industry



APPLICATION

Cooling system protection



PRODUCT

Self-cleaning filter

SCENARIO

FLUCTUATIONS IN THE RIVER'S WATER QUALITY PRESENT A CHALLENGE

The electricity industry plays a crucial role in modern society by providing a reliable power source. Power plants, utilizing turbines, harness resources like river water to operate efficiently.

However, they face challenges such as seasonal fluctuations in water quality, which can affect the efficiency of the turbine cooling system.

To ensure optimal performance and protect its resources, the power plant must implement a filtration system capable of managing these water quality fluctuations, thereby improving the continuous operation of the plant.

PROBLEM

IMPACT OF SEASONAL VARIABILITY ON THE POWER PLANT

The primary challenge faced by the hydroelectric plant is the seasonal variability of suspended particles in the river water. During heavy rainfall, increased debris can clog the cooling system of the turbine bearings, leading to unplanned downtime and potential equipment damage. This issue compromises the plant's operational reliability and energy efficiency.

They needed a solution that would guarantee:

- Reduced production downtimes
- Enhanced operational efficiency
- Effective cooling system protection

SOLUTION

AUTOMATIC FILTERING SYSTEM TO PROTECT THE COOLING SYSTEM

To tackle this challenge, our technical team proposed installing LFU model self-cleaning filters. The filters operate as follows: the customer's pump draws water from the river and directs it to the filter inlet, where a filter cartridge retains suspended solids.

The cartridge undergoes automatic cleaning when the differential pressure reaches 0.7 bar, utilizing stainless steel wire brushes mounted on a shaft and powered by a geared motor. This process ensures debris expulsion without interrupting the continuous flow of clean water to the cooling system.

RESULTS

Thanks to LFU self-cleaning filters, the power plant achieved remarkable savings in cooling system downtime. Dirt particles in the river water were effectively withheld and removed, preventing them from reaching the bearings. Additionally, the flow of filtered water remained consistent throughout the cleaning cycle, enabling continuous operation downstream of the filter. This enhancement significantly improved the operational efficiency and longevity of the power plant equipment.

PRODUCT INSIGHTS

The **LFU self-cleaning filter** can filter small volumes of liquids according to the amount and types of contaminants to be filtrated, with no plant downtimes.

The filter body and the parts exposed to the liquid are in 304L stainless steel and 316 steel on request. The seals are Viton and EPDM.

According to the type of liquid and contaminating material filtered, can be installed a filter cartridge

- with radial arranged V-shaped bars
- with punched holes from the inside of the cartridge

ADVANTAGES

- Reduced plant downtimes
- Effective bearing protection
- Continuous flow of filtered water
- Improved operational efficiency
- Extended equipment durability
- Adaptability to changing conditions

