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Cooling Tower Sidestream Filter, USA

Filtration of cooling tower sidestream to prevent heat exchanger fouling

Background

A large electric utility company installed five new GE LM100 gas turbines for expansion of their existing power station and for their new power station in the El Paso, TX area. The expansion and the new power plant were necessary to meet growing demand from the community and the expanding Fort Bliss U.S. Army Base. The first system was installed at the existing power station and the additional 2 systems were installed at the new one.



The Challenge

The existing power station did not have a sidestream filter included in the original system design. As the plant neared completion, the startup team realized that inclusion of a filter system would prevent many of the issues seen with the existing station design. The cooling towers at these stations are subject to frequent dust storms which contaminate the towers with dust, pollen and grass. Filtration of these contaminants prevents fouling of the intercooler, a heat exchanger, which is a component of the GE LM100 turbine systems. This last-minute design left a short timeframe in which to select, design, build and install the filter system.



No sidestream filter included in design



Frequent dust storms



Short timeframe

The Solution

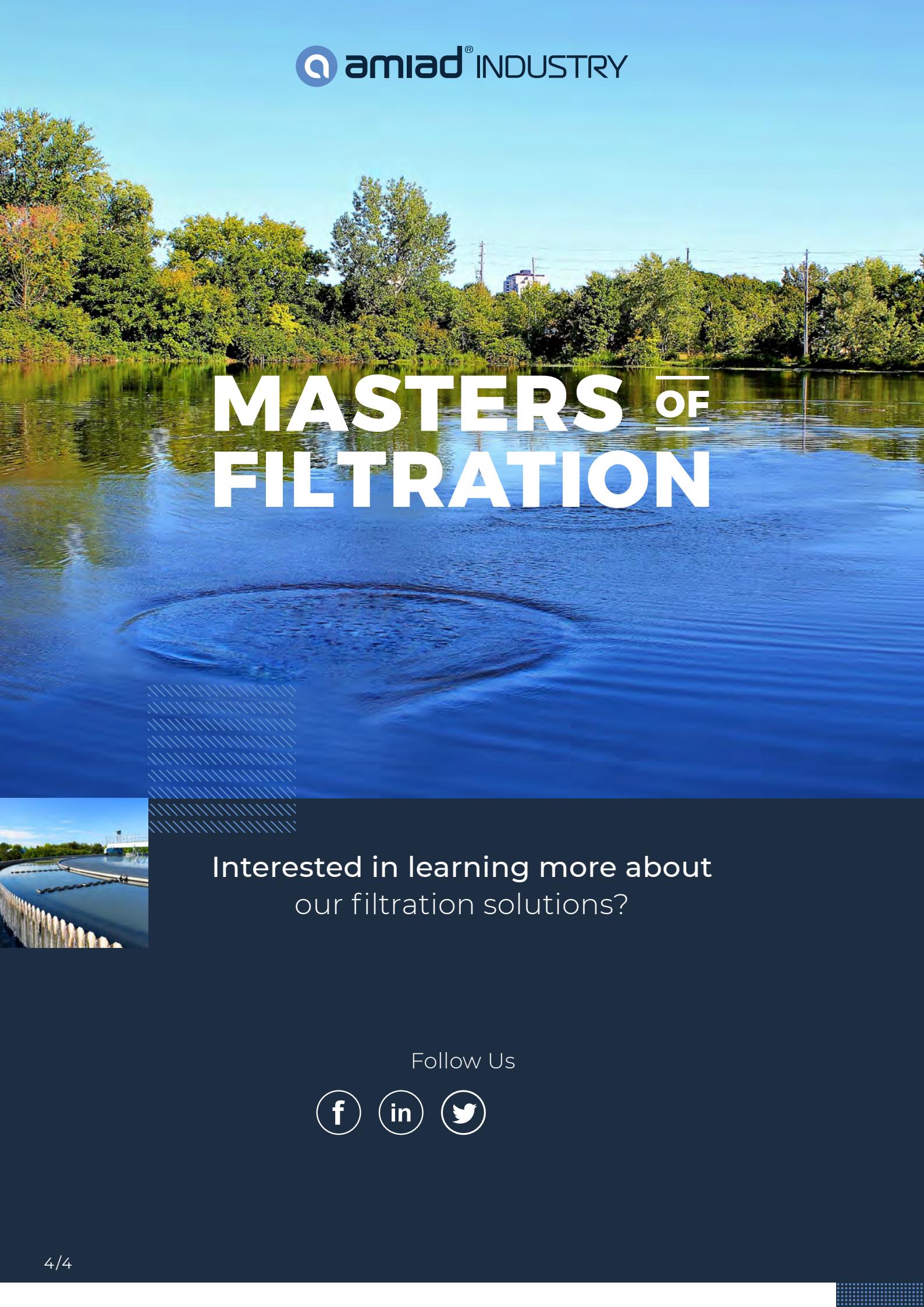
A plug and play skid with a feed pump, a single SAF-6000 filter with a 25 micron screen and control system was proposed to the customer for the existing for a total flow rate of 700 GPM (159 m³/h). The filter system is installed as a sidestream to the cooling tower sump. The filter skid was designed, assembled and delivered in eight weeks to allow installation before the startup of the plant. Following this first filter installation, the new power station was designed with two system skids, each including 2 x SAF-6000 filters with 25 micron screens, designed to treat 1,400 GPM (318 m³/h) (the water for two gas turbines).



The Results

The 25 micron filters have kept the systems clean; actually keeping the bottom of the cooling towers visible to the naked eye.





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