



Reliable effluent discharge

using ITT Flygt abrasion resistant slurry pumps

As a result of the new provincial MISA regulations, the Canadian Nanticoke coal-fired electricity generating plant had to collect and treat its overflow effluent before being discharged into the nearby Lake Erie. Ontario Power Generation, the owner of the plant, had problems with its vertical cantilever slurry pumps, resulting in several pump failures. To avoid flooding, spills to the lake and even shutdowns of the plant, the customer changed to new, reliable abrasion resistant slurry pumps from ITT Flygt. As a result, maintenance costs were substantially reduced.

The background

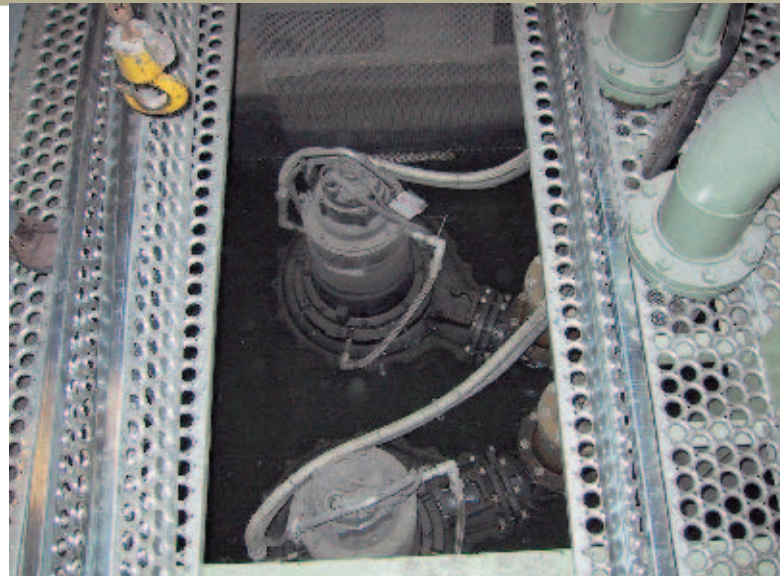
Ontario Power Generation (OPG) is a major Canadian electricity generating company. It operates a fleet of nuclear, hydroelectric and fossil generating facilities across the province of Ontario. One of the facilities is Nanticoke GS, which is a coal-fired generating plant located on the north shores of Lake Erie. It has eight generating units, which are capable of producing 3,920 megawatts of power. The plant's annual production is in the range of 20 to 24 billion kilowatt hours, enough electricity to run almost 2.5 million households for one entire year.

To comply with the provincial MISA regulations, overflow effluent containing wet ash had to be collected



The Nanticoke plant is a coal-fired power generating plant, located on the north shores of Lake Erie, Canada.

and pumped to lagoons where the suspended solids would settle out before the water was discharged to the lake. There were, however, several pump failures due to vibration problems in the vertical cantilever slurry pumps, installed in 1997.



Two submersible HS 5550 abrasion resistant slurry pumps from ITT Flygt were installed in the bottom ash sump for a one year test period at the Nanticoke plant. The customer was extremely pleased with the performance. The successful result led to an order for 14 more pump units.

The pump vibration problem was traced to the pump support structure. Modifications to the structure reduced but did not eliminate the vibration problem.

Failure of pumps could result in flooding, spills to the lake or even shutdowns of the plant. This situation was not acceptable and OPG started looking for a more reliable pump for this solution.

The solution

ITT Flygt in Montreal became engaged to offer a potential solution to Nanticoke's pumping equipment problems, setting the following items in focus:

1. The new pumps had to be adaptable to fit with the existing piping and sump arrangement.
2. The pumps must meet their duty requirements.

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3. The pumps had to be reliable and substantially lower the maintenance costs.

The customer decided to purchase two Flygt submersible HS 5550 abrasion resistant slurry pumps to try for one year in the bottom ash sump. This decision was largely due to onsite performance of a seven year earlier installed Flygt pump of the same model. That pump had since then satisfactorily pumped water, containing coal particles, from the coal storage runoff ditches on site.

The two new HS 5550 pumps were installed and ran maintenance free during the decided test period of one year.

The benefits

There was no need for reconstruction of the piping



HS 5550

and sump arrangement. The ITT Flygt pumps could be installed using quick disconnects on both the hydro and the discharge to the existing pumps. This greatly reduced the installation costs and also the turnaround time in the event of a pump failure.

OPG was also impressed with the fact that ITT Flygt has a very large rental fleet that they could access if they required another pump while theirs was being serviced.

The main benefit was that these compact submersible pumps did not cause the customer any vibration problems as did the vertical cantilever slurry pumps.

The reliability and the extreme low maintenance costs of the submersible Flygt slurry pumps had been proven to the customer by the pump installed in 1993 and the pumps being tested for one year in the bottom ash sump. As a result of this and the satisfactory pump performance, the customer later placed an order for 14 more units to replace all their existing cantilever slurry pumps.

Technical specifications

Pump	HS 5550
Application	Water containing ash
Capacity	240 l/s
Motor	34 kW
Weight	836 kg



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