

Application story



Gas Turbine Inlet Cooling

Location	Japan	Hydra-Cell model	G10XKSTSNECB x 10
Type of application	Atomising Misting Application	Flow rate	20 l/min (5 gpm)
Liquid	De-Ionised Water	Pressure	70 bar (1000 psi)
Application details	Hydra-Cell G10 pumps at a Japanese power station are feeding deionised water to an installation of several hundred spray nozzles to create a cooling mist of fine droplets at the air intake of a gas turbine. The Higashi Niigata Thermal Power Plant, a plant of advanced design run by one of Japan's major power generation companies, operates a high-efficiency combined-cycle system in which a second turbine is driven by steam - using residual heat from the exhaust gases of the gas turbine to boil water. Some efficiency is lost however if summertime conditions cause the temperature of the intake air to rise too high. The effective answer to this problem was to install the mist cooling system, increasing efficiency in unfavourable conditions and allowing electricity output to be sustained without using more fuel. Energy saving are substantial - reflected in an estimated annual reduction in CO2 emissions of 800 tonnes for each gas turbine. The task of delivering deionised water to the spray nozzles at 70 bar pressure was entrusted to ten Hydra-Cell G10 seal-less pumps, installed in two batteries of five pumps to serve inlet filter nozzles on both sides of the air intake. The Hydra-Cell pumps were preferred to the conventional alternative, piston plunger pumps, on grounds of life-cycle cost and because of their smooth low-pulsation flow - allowing consistent atomisation of the liquid into the fine droplets necessary for efficient cooling.		
Advantages of Hydra-Cell pump on this application	Low price, low pulsation, the ability to pump corrosive and non-lubricating liquids reliably.		

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