

POWER GENERATION

Quick STUDY

Hydra-Cell®
Seal-less Pumps

www.Hydra-Cell.com

Location:	Japan
Application:	Atomizing misting application
Media:	• De-ionized water
Model No.:	D10XKSTSNECB x 10
Flow Rate:	5 gpm (20 l/min)
Pressure:	1000 psi (69 bar)
Hydra-Cell Advantages:	• Low price • Low pulsation • Ability to pump corrosive and non-lubricating liquids reliably



Cooling Gas Turbine Inlet

Hydra-Cell D10 pumps at a Japanese power station are feeding de-ionized 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.

This thermal power plant of advanced design is run by one of Japan's major power generation companies. It uses 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 unfavorable conditions and allowing electricity output to be sustained without using more fuel. Energy savings are substantial - reflected in an estimated annual reduction in CO₂ emissions of 800 tons for each gas turbine.

The task of delivering de-ionized water to the spray nozzles at 1000 psi (69 bar) pressure was entrusted to ten Hydra-Cell D10 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 costs and because of their smooth low-pulsation flow, allowing consistent atomization of the liquid into the fine droplets necessary for efficient cooling.



Characteristics of Fluid Pumped:

☐ Contains Abrasives ☒ Corrosive ☐ Solids in Suspension ☐ High-temp. (>158°F/70°C) ☒ Non-lubricating ☐ High-viscosity (>500 cPs)