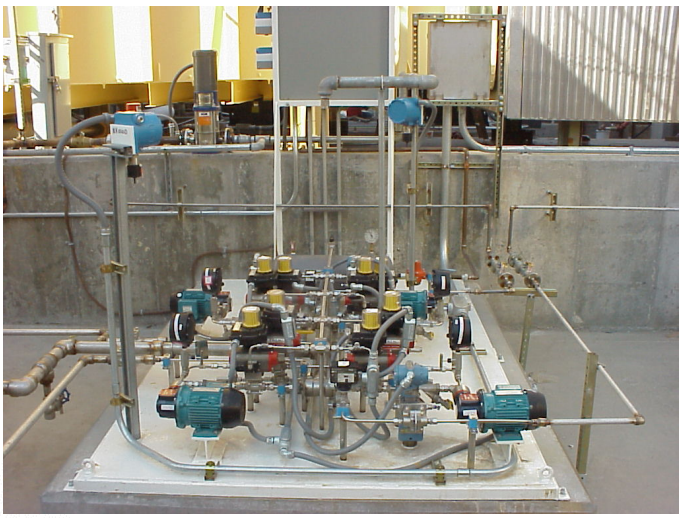
Application story

WANNER™
HYDRA-CELL® PRO
SEAL-LESS PUMP TECHNOLOGIES



Aqueous Ammonia in NOx Control

Location	USA	**Hydra-Cell model**	G20XASESNECJ
Type of application	Reduction of Pollutants in Furnace Gas Emissions	**Flow rate**	Up to 3.8 l/min (1 gpm)
Liquid	Aqueous Ammonia	**Pressure**	Up to 100 bar (1450 psi)

Application details

Hydra-Cell G20 pumps, with their seal-less technology and precisely controllable flow, are helping a number of New York power plants to comply efficiently with EPA regulations on NOx emissions. The pumps inject aqueous ammonia into the combustion zone of furnaces and also into ducts that carry away the flue gases. The Environmental Pollution Agency (EPA) mandates the maximum allowable levels of NOx (oxides of nitrogen) that can be put into the air. NOx is produced by any plant that burns natural gas, coal or solid waste. Ammonia (in aqueous form usually 18%-28% ammonia in water) reacts with NOx to form nitrogen and water and so reduces NOx emissions. But it is also chemically aggressive. No leakage from the pump can be tolerated, so the absence of dynamic seals in the Hydra-Cell design is a major advantage. Accurate, controlled flow is also essential, in order to respond to changing conditions in the combustion and gas exhaust systems. Reducing NOx in the exhaust process involves the use of a catalyst in a honeycomb configuration within the gas duct. The aqueous ammonia is sprayed directly into the flue gas (thereby conditioning it) but must completely evaporate before reaching the catalyst. The droplets must be fine enough to allow for complete evaporation. If they impinge on the honeycomb, deposits and binding will result, preventing the catalyst from reacting with the gas. Optimum droplet size is critical, and to achieve it there must be strict control of liquid flow and pressure – easily arranged by controlling pump speed. The G20 pumps are mounted on skids. Each skid, typically serving a 25 Megawatt generator, carries 4 pumps (2 of them on standby) with the VFD speed controls.

Advantages of Hydra-Cell pump on this application

Seal-less design, avoiding leaks and enabling the pump to handle chemically aggressive liquid. Accurate steady flow, proportional to pump speed, easily controllable. High pumping efficiency – low energy cost.

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