

A Reprint from

POWER ENGINEERING

FIELD NOTES

Pitbull pumps solve maintenance problems for Texas power plants

Several Texas lignite/coal-fired power plants found that the low cost of their fuel was being overshadowed by expensive maintenance, including the abuse that many of their pumps were taking from abrasive products and by-products necessary to operate their facilities. Limestone/fly ash slurries, bottom ash and lignite/coal wastes were hydro-blasting the pumps away. AES Deepwater, a cogeneration power plant in Pasadena, Texas, was the first to

address this problem. Bill Eberwein, AES plant engineer, turned to Chicago Industrial Pump Co. (CIPC) for help with his plant's fluid handling problems. CIPC recommended a stainless steel Pitbull pump. "Our vertical sump pumps were a nightmare. This sump saw the most severe service in the plant and, as a result, we had a problem keeping the vertical pumps in service," said Eberwein. A Pitbull pump, 40 inches high and 24 inches in diameter, capable of 350 gallons per minute, was installed in a waste sump application. A very fine gypsum/bottom ash material mixed with wastewater collected in the sump. "The Pitbull paid for itself after only six months of operation," said Charles Kirkpatrick, maintenance foreman. "It's been operating for over two years now, and all I've done is change one check valve." AES now has six Pitbulls in operation.

Fayette Power Plant, Unit 3, owned and operated by the Lower Colorado River Authority, was next. Stephen Polasek, maintenance superintendent, saw potential in the Pitbull. "I put my first pump in a sump which is located under a conveyor belt transfer station. This station is isolated and quite a distance from the main plant. Because of its isolation, the pump had to be reliable. It's been in service for almost two years now and we have yet to touch it," he said.

The pumping principle of the Pitbull is based on the concept of a compressed air "piston" acting directly on the surface of the liquid being pumped. The pump consists of a pressure chamber and two check valves, with a remote control panel. Liquid is directed into the chamber, pressurized and then discharged, with an air/liquid interface maintained throughout the process to eliminate the need for a diaphragm or bladder. Pump cycling is automatic, ceasing when no liquid is present. The pump design incorporates large, unobstructed passages to ensure low internal velocities and large solids capacities. The Pitbull can operate anywhere below its maximum flow curve with no inherent relationship between flow, head and solids capacity.



The Pitbull pump features a simple, open design and low internal velocities to boost its reliability.