Scenic®

Scenic Precise Element Inc.

Case Study

Elevating Security: Condensate Pump Seals Upgrade in Nuclear Power Plant

Industry	Nuclear Power Plant
Equipment	Vertical Feedwater Pumps in Condensate System
Temperature	95 ℃
Feedwater Flow	1357.6 m^3/hr
Pressure	43 kg/cm^2
Shaft Diameter	5.5 inch
Rotating Speed	1200 RPM
Sealing Type (Before)	Stuffing Box / Gland Packing
Sealing Type (After)	Customized Cartridge Double Seal

BEFORE

The original seal of the high-pressure, high-flow, and large-diameter feedwater pump was gland packing, made of asbestos. The packing wrapped around the pump shaft to prevent leakage. Due to intense vibrations during operation, securing the packing tightly around the shaft was essential to prevent leaks. However, this led to friction, causing damage to the pump shaft and a decline in sealing efficiency over time.

Declining in Sealing Efficiency

- Asbestos packing poses environmental hazards.
- The pump shaft experiences wear and tear from the packing, reducing its lifespan. Wear and tear on the packing seal leads to inadequate sealing.
- Extensive leakage of condensate water causes corrosion of the pump body.

Unsafe Working Environment

- The worksite is flooded with leaking water, creating a worrisome work environment.
- Workers frequently need to approach the active feedwater pump to adjust the packing.

AFTER

Introducing Scenic dual cartridge mechanical seals, effectively addressing issues such as pump shaft wear, condensate water leakage, energy inefficiency, and workplace safety concerns in one comprehensive solution. The system has been operating reliably for over 20 years.

Enhanced Equipment Reliability

- Using eco-friendly, wear-resistant materials for improved environmental protection and sealing performance.
- The patented cartridge seal, with self-alignment, compensates for shaft run-out, balanced structure, and self-cooling. This prevents wear on the feedwater pump's shaft, extending its service life and saving energy.
- The mechanical seal provides consistently stable sealing, saving 40,000 tons of condensed water annually.

Improved Working Safety

- The work site is kept dry and slip-free for a safer environment.
- No need to adjust leaking packing, reducing the risk of personnel injuries.