Scenic®

Scenic Precise Element Inc.

Case Study

核電廠冷凝水泵密封件改善工程

工業應用	核能電廠
設備應用	冷凝系統立式飼水泵
操作溫度	95°C
流量	1357.6 m^3/hr
壓力	43 kg/cm^2
軸徑	139.7 MM
轉速	1200 rpm
軸封形式（改善前）	填料壓蓋式軸封（Gland Packing）
軸封形式（改善後）	客製卡匣式雙軸封

改善前

飼水泵原使用之密封件為填料式壓蓋軸封，藉由石棉製成的填料一圈一圈的綑住泵軸，以防止洩漏。此飼水泵為高壓、高流量、大軸徑之設備，運轉時泵軸會劇烈震動，為避免洩漏，就需要將填料緊緊的捆住泵軸。而長此以往，泵軸與填料在劇烈震動下互相摩擦，造成泵軸損傷、軸封密封效能下降的惡性循環。

密封效能欠佳

- 填料材料為環境汙染物
- 水泵轉軸受填料軸封磨耗損傷，減低壽命
- 填料軸封磨耗，造成密封效果欠佳
- 冷凝水大量洩漏，造成泵體生鏽

工作環境安全隱患

- 現場嚴重積水，工作環境不佳
- 人員需時常靠近運轉中的飼水泵調整填料軸封

改善後

引進祥景卡匣式雙機械軸封，一次性解決泵軸磨耗、洩漏、能源浪費、工安等等痛點，穩定運轉已有20餘載。

提升設備可靠度

- 環保耐磨材料應用，兼顧環保及效能
- 機械軸封的專利結構使其能自動調心、平衡壓力、自冷卻，飼水泵轉軸不再被磨耗，提升壽命及節省電能源
- 機械軸封密封效果穩定，節省冷凝水損耗4萬噸/年

提升人員工作安全

- 工作現場不再漏水溼滑，保障工作安全
- 不須時常調整漏水軸封，降低工安事件發生機率

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核电厂冷凝水泵密封件改善工程

工业应用	核能电厂
设备应用	冷凝系统立式饲水泵
操作温度	95°C
流量	1357.6 m^3/hr
压力	43 kg/cm^2
轴径	139.7 MM
转速	1200 rpm
轴封形式（改善前）	填料压盖式轴封（Gland Packing）
轴封形式（改善后）	客制卡匣式双轴封

改善前

饲水泵原使用之密封件为填料式压盖轴封，藉由石棉制成的填料一圈一圈的捆住泵轴，以防止泄漏。此饲水泵为高压、高流量、大轴径之设备，运转时泵轴会剧烈震动，为避免泄漏，就需要将填料紧紧的捆住泵轴。而长此以往，泵轴与填料在剧烈震动下互相摩擦，造成泵轴损伤、轴封密封效能下降的恶性循环。

密封效能欠佳

- 填料材料为环境污染物
- 水泵转轴受填料轴封磨耗损伤，减低寿命
- 填料轴封磨耗，造成密封效果欠佳，
- 冷凝水大量泄漏，造成泵体生锈

工作环境安全隐患

- 现场严重积水，工作环境不佳
- 人员需时常靠近运转中的饲水泵调整填料轴封

改善后

引进祥景卡匣式双机械轴封，一次性解决泵轴磨耗、泄漏、能源浪费、工安等等痛点，稳定运转已有20余载。

提升设备可靠度

- 环保耐磨材料应用，兼顾环保及效能
- 机械轴封的专利结构使其能自动调心、平衡压力、自冷却，饲水泵转轴不再被磨耗，提升寿命及节省电能源
- 机械轴封密封效果稳定，节省冷凝水损耗4万吨/年

提升人员工作安全

- 工作现场不再漏水湿滑，保障工作安全
- 不须时常调整漏水轴封，降低工安事件发生机率

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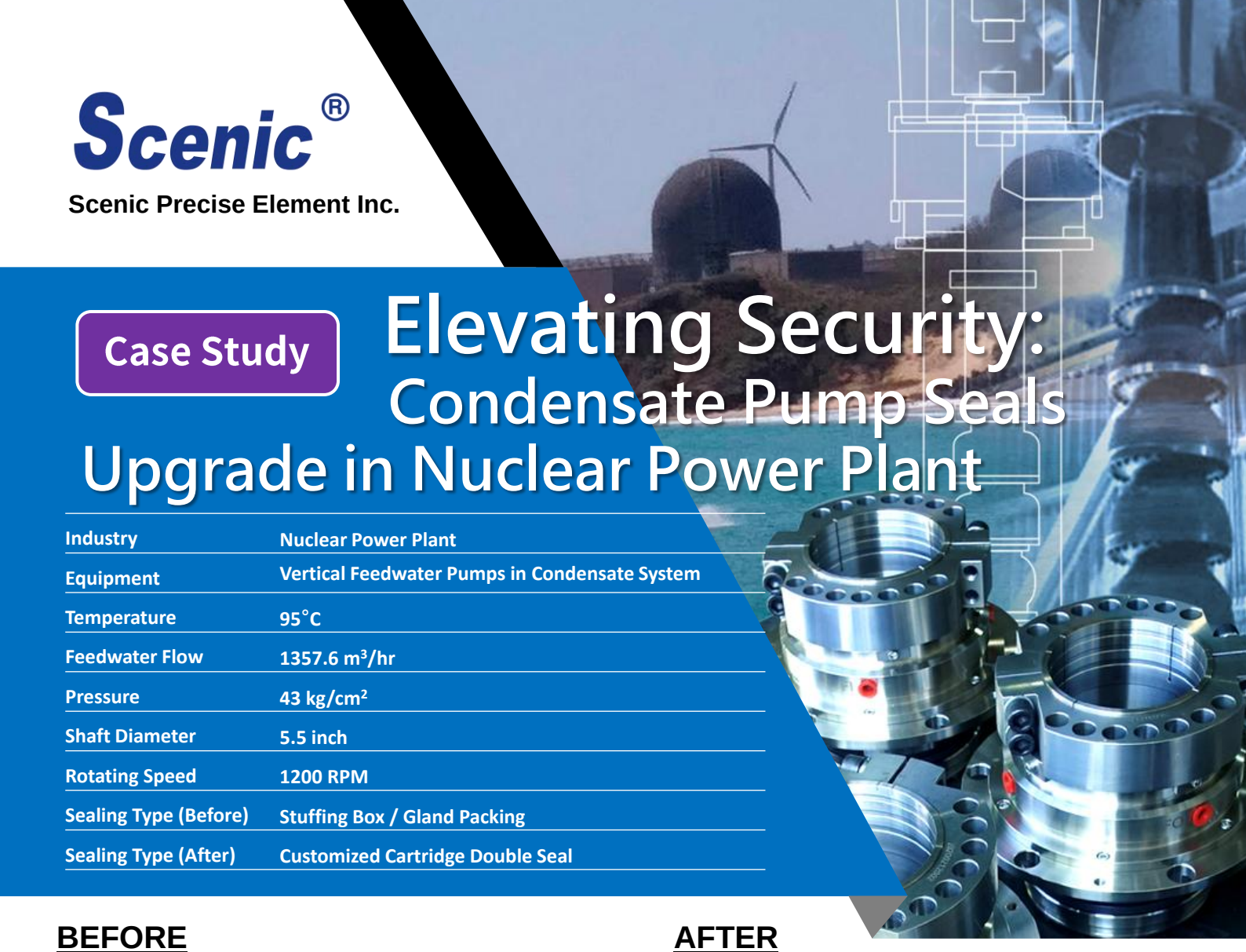

Case Study

Elevating Security: Condensate Pump Seals Upgrade in Nuclear Power Plant

Industry	Nuclear Power Plant
Equipment	Vertical Feedwater Pumps in Condensate System
Temperature	95°C
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.