

## Process Steam Turbine

Make: Dresser Rand

Model: DR353

Industry: Oil Refinery - Saudi Arabia

### Challenge

Excessive steam leakage caused by carbon ring wear lead to rust in the gland box, accelerated wear and premature bearing failure due to ingress of condensate in the bearing housing.

### Solution

Replaced two upstream carbon rings on each side of the exhaust and steam ends with Inpro/Seal® Sentinel® Floating Brush Seals (FBS). The Sentinel FBS is designed as a drop in replacement for existing carbon rings so rotor removal is not always necessary and only minimum housing modifications may be required for location of the anti-rotation pin.

Bearing protection was further enhanced by installing Inpro/Seal Steam Turbine Bearing Isolators to protect the bearings from steam leakage entering the bearing housing.

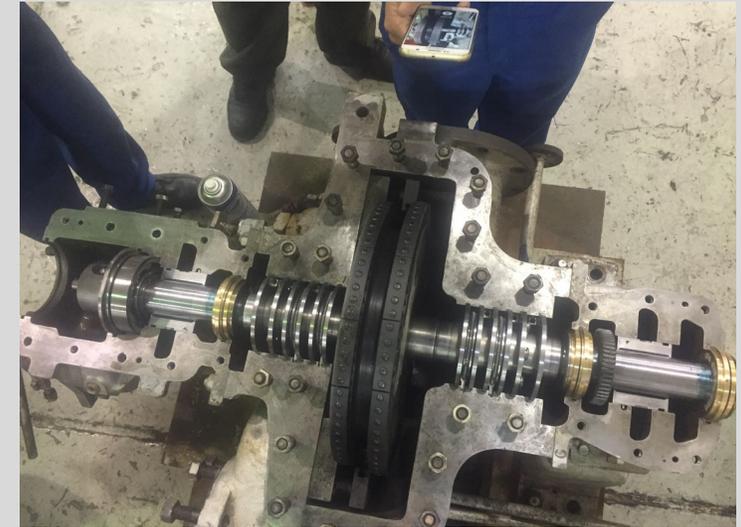
### Result

Steam leakage was dramatically reduced, increasing mean time between repair (MTBR), reducing maintenance costs and improving health and safety.

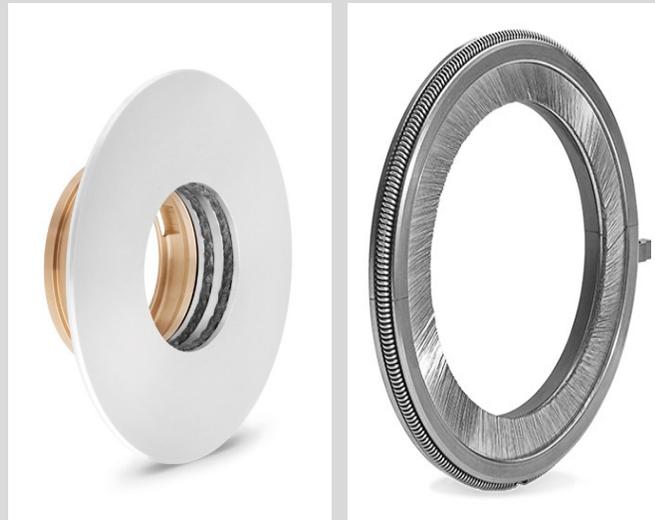
The seals have been running trouble free for more than 4 years. The customer has since further upgraded four more of their DR353 turbines.



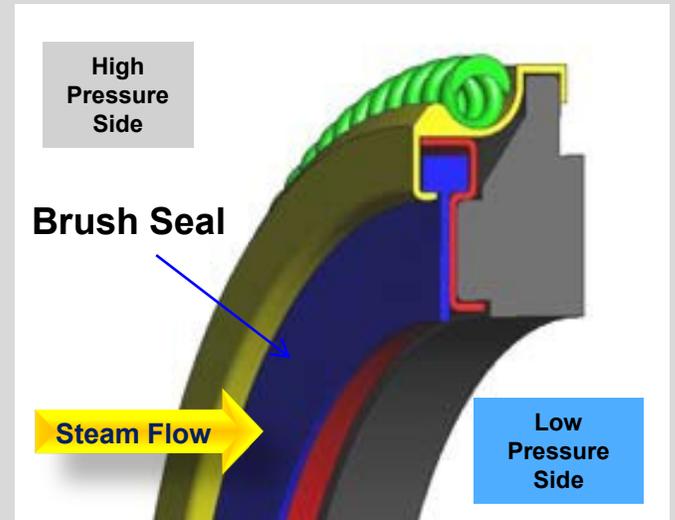
**Before:** Excess steam leakage



**After:** Installation of Sentinel Floating Brush Seals and Bearing Isolators



Inpro/Seal Steam Turbine Bearing Isolator & Sentinel Floating Brush Seal (FBS)



Inpro/Seal Sentinel Floating Brush Seal (FBS)