

## ► Leakage Due to Thermal Degradation of Gaskets

- Application : Steam Drain Feedwater Heater for Power Generation
- Operating Period : Approximately 11 months
- Operating Fluids :  
Steam blowdown / Recovered hot water
- Operating Temperature  
Steam blowdown side: 160 °C / Water side: 59 °C
- Gasket Material : EPDM
- Phenomenon

Hardening and thickness reduction of the gasket at the steam blowdown inlet progressed, resulting in external leakage.

- Cause

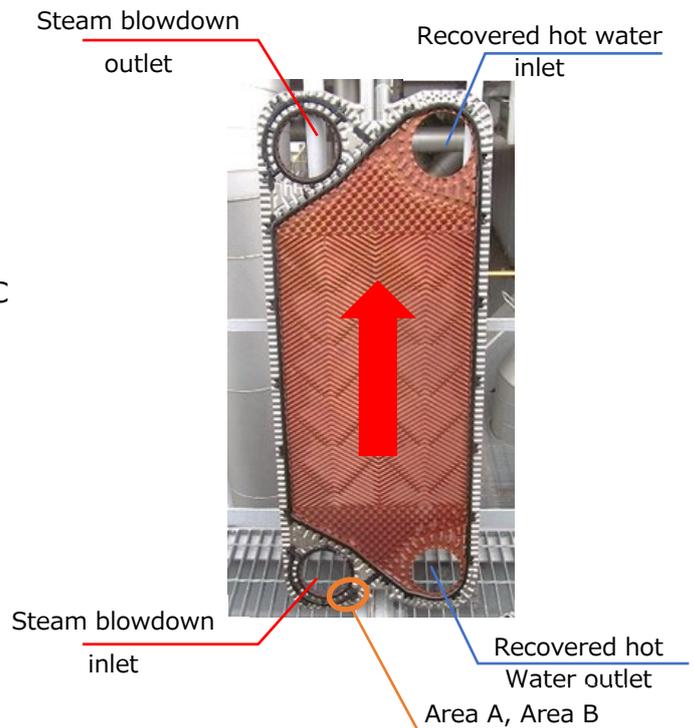
Reaction between oxygen in the atmosphere and the rubber causes hardening and permanent deformation (thickness reduction) of the gasket.

This phenomenon is referred to as thermal (oxidative) degradation. During thermal degradation, the compressive restoring force of the rubber decreases due to the loss of elasticity and thickness.

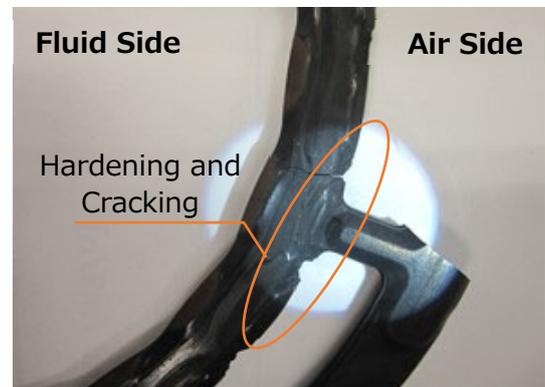
In this case, under high-temperature conditions, thermal degradation of the rubber progressed, reducing the sealing pressure of the gasket and leading to leakage.

- Countermeasures

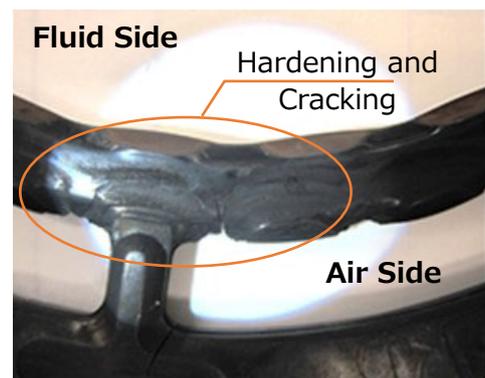
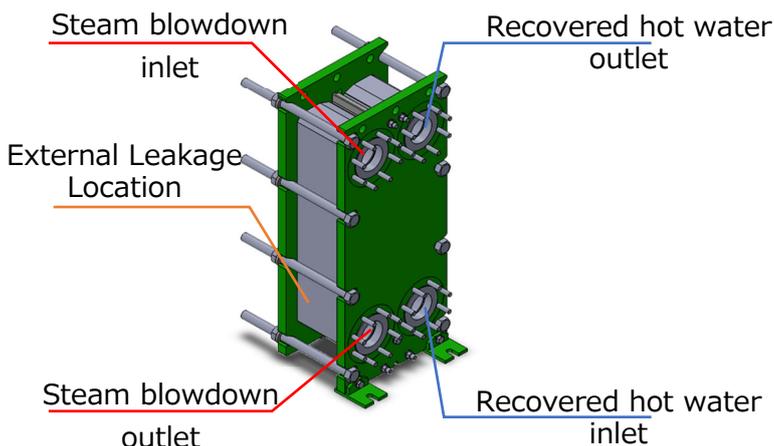
Thermal degradation of rubber due to its inherent properties cannot be avoided; therefore, periodic gasket replacement is required.



Appearance of Used Plate



Enlarged View of Area A of the Gasket at the Steam Blowdown Inlet



Enlarged View of Area B of the Gasket at the Steam Blowdown Inlet