

CASE STUDY

CHEMICAL CLEANING OF BOILER FEEDWATER / HIGH TEMPERATURE BLOWDOWN HEAT EXCHANGERS



SCOPE

Chemical cleaning of boiler feedwater / high temperature blowdown heat exchangers using **PENBLITZ 688L** and **TETRAGARD**.

The PROBLEM

A major western Canadian oil producer was experiencing production losses due to fouling of heat exchangers in one of its SAGD production facilities.

Corrosion products were being transported from upstream equipment like OTSG tubes, piping and steam separator. The build up of these scales caused fouling of downstream exchanger tubes and localized under deposit corrosion.

PREVIOUS efforts

Chemical cleaning had been tried previously using a competitor's products, but was unsuccessful.

Our SOLUTION

The heat exchangers were cleaned using a chemical process recommended by West Penetone, consisting of three different stages:

- **Stage 1** was the circulating **PENBLITZ 688L** degreasing cleaning of the heat exchangers to remove any oils and grease process fouling deposits.
- **Stage 2** was the circulating **TETRAGARD** chemical cleaning of the heat exchangers to remove magnetite, iron oxide scales and silica process fouling deposits.
- **Stage 3** was the neutralization and passivation of the system to ensure that any residual chemical solutions are completely neutralized prior to returning the heat exchangers back to service.

This chemical cleaning process took a total of 12 hours.



RESULTS ACHIEVED

Upon completion of the chemical cleaning, the heat exchangers were brought back on-line at full rates with substantial gains in both BFW temperature and reduction of the ΔP across the heat exchangers.

- Higher BFW temperature resulting in lower natural gas consumption (saving 2,000-3,000 m³/d of trans gas). The successful chemical cleaning saved the SAGD facility operator over \$100,000/annually in gas savings.
- The facility operator was able to return operation of OTSG's to the original design rate, this resulted in 32 m³/d of increased oil production (or over 6,000 BBL per month) compared to production trends before the performance of the chemical cleaning.

BFW / HT heat exchanger bundle before chemical cleaning process



A comprehensive and integrated approach

With over 100 years of product development, manufacturing and application experience, the West Penetone family of companies has designed and patented many products to satisfy the needs of our clients world wide.

Our technical group provides customers effective support to ensure that contaminants are paired with the right chemistry for any task.

Establishing and maintaining a collaborative approach with our customers in tackling their operational and maintenance challenges is key to realizing efficiencies and cost savings.

Questions? solution@westpenetone.com

Canada

WEST PENETONE INC.
10,900 Secant St
Anjou, Quebec H1J 1S5
1.800.361.8927

WEST PENETONE INC.
11411-160 Street
Edmonton, Alberta T5M 3T7
1.866.454.3919

United States

PENETONE CORPORATION
125 Kingsland Avenue
Clifton, NJ 07014
1.800.631.1652

PENETONE CORPORATION
8201 4th Street, Unit G
Downey, CA 90241
1.800.421.6211



www.westpenetone.com

www.penetone.com