Case Study #175

Durable Solution Against Abrasion in Production Facilities: Pexgol at YPF

Performance evaluation of Pexgol lining under extreme service conditions.

YPF
Argentina | 2018

- **Working Conditions**
  Temperature: 75°C / 167°F
  Pressure: 8 kg/cm²
  Fluid components: Hydrocarbons and produced water from wells (with sand presence)
- **Pexgol Pipe**
  Pex-lined elbow
- **Application**
  Pex-lined reducing elbow in oil production facility – Abrasion
- **Length**
  N/A

The Challenge

YPF, Argentina's leading oil and gas exploration and production company, was facing recurring failures in various components of the Aguada Toledo 3 Production Facility (Bat-AT3), particularly in the pump discharge circuit.
The failures were identified in flow restriction areas such as pump discharge reducers, flow control valves, and orifice plates. These components were internally coated with epoxy layers ranging from 250 to 650 µm in thickness.

YPF's internal studies identified two main deterioration mechanisms:

- **Flow-assisted corrosion**, considered the most likely cause.
- **Localized corrosion due to occluded cells**, caused by partial detachment of the internal epoxy lining.

Material loss was estimated at 7 to 9 mm of wall thickness per year under continuous operation, with damage concentrated in reducers and elbows. Considering that the 6" circuit and the 6" to 3" reducing elbow had a wall thickness of 7.11 mm (SCH 40 steel pipe), these failures posed a serious risk to system safety and operational continuity.

The Solution

To mitigate the issue, YPF proposed testing a carbon steel component internally lined with Pexgol to assess its performance under real operating conditions. A 6" x 3" reducing elbow connected to the discharge of one of the pumps was selected for this trial.

The component was manufactured and inspected at Golan's facility, where the internal Pexgol lining was applied. Once installed and put into operation, the elbow remained in service for 7 years without damage, despite the severe operating conditions.

The implementation of the Pexgol lining proved to be a highly effective solution, eliminating previous failures and significantly extending the system's service life—without costly maintenance or unplanned shutdowns. This case reinforces Pexgol's reliability in critical applications where corrosion and abrasion are ongoing challenges.

Pexgol

The Advantages of Pexgol Pipe Systems

High resistance to wear
Pexgol is the preferred solution for abrasive materials transportation. Typically resists three times more than HDPE and twice more than steel.

Excellent chemical and corrosion resistance
Pexgol pipes can resist a wide range of chemical agents, slurries, toxic and radioactive materials.

High temperature resistance
Working temperatures can range from -50°C / -58°F up to 110°C/230°F.

Superb internal and external corrosion resistance
Our pipes are proven to withstand decades of exposure to corrosive environments, with nonstop performance in some of the world's harshest environments.

Long pipe sections
Pexgol pipes can be supplied in long coil lengths, reducing number of joints, installation time and risks.

Creep and impact resistance
Pexgol pipes can withstand high amounts of axial and radial stresses and are highly resistant to impact, fracture and fatigue. Furthermore, Pexgol pipes are completely resistant to cracks even when dragged over sharp rocky terrain and coagulated salt crystals.

For more information please visit:
pexgol.com