CUSTOMER SUCCESS STORY

Water Pumping System

Periflex® VN Couplings

PROBLEM

A robust coupling solution was needed for a large diesel-powered, artificial lift water pumping system used to push water up and over the Andes mountain range in South America. The complex system utilized a series of diesel engine powered pump stations installed on the side of a mountain to push water 4,000 vertical feet. The pipeline operators had been using manually engaged clutches that they would engage and disengage at any speed, which was destroying the clutches on a routine basis causing the entire pipeline to be shut down.

SOLUTION

To solve the problem, the manually operated clutches were replaced with large, direct-mounted **Stromag Periflex® VN (PVN)** disc couplings, which could handle the massive inertia of the whole drivetrain generated from a remote-mounted 34-stage centrifugal pump, thus eliminating the need for the clutch and its potentially damaging engagements. Stromag engineers performed extensive TVA (Torsional Vibration Analysis) work and had to design the coupling to fit inside the very limited space available within the customer's existing gearbox housing. The specific PVN units supplied feature a maximum torque of 48,000 Nm (35,402 ft. lbs.). Each pumping station contained a 12-cylinder, 1425 HP diesel engine with an SAE 21 (in.) flywheel and an SAE #00 bellhousing driving a close-coupled, bellhousing-mounted, speed-increasing gearbox with a 1:1.356 output ratio. The gearbox output shaft is connected to a large, short-coupled universal joint driveshaft which powers the centrifugal pump.

Stromag's PVN plug-in, highly flexible elastomer disc couplings feature a linear stiffness characteristic maintaining the same stiffness regardless of torque input, which is ideal for diesel engine drives. Its plug-in design provides significant installation advantages, particularly for close-coupled installations, by offering blind-fit assembly where a gearbox bell housing is mounted directly to the engine bellhousing without access to the flywheel or gearbox input shaft.

HIGHLIGHTS

- Highly flexible elastomer disc couplings with linear spring characteristics
- Axial plug-in connection for easy installation
- Torque range: 118 to 46,466 ft. lbs. (160 to 63,000 Nm)
- Heat treated steel hubs
- Aluminum alloy flywheel connection ring

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MCCSS-P-8713-SG-EN-US 01/26