

# HYDAC INTERNATIONAL

## HYDAC Provides Solution to Remove Water Contamination from Lube Oil

### Background

A steel mill experienced high water contamination in 7,500 gallons of hot rolling mill machine gear lubrication fluid. Initial analysis of the absolute water content through Karl Fischer titration determined that the ISO VG 320 lubrication fluid contained 26,000 parts per million (ppm) of water.

### Problem

The fluid contained 20 times the maximum acceptable water content for the lubrication fluid, or approximately 200 gallons of the total fluid volume. The water content of the fluid needed to be reduced to <1,300 ppm to preserve the required lubricity and other fluid characteristics, and as importantly, the gearbox.

Because the lubrication circuit did not contain components typically suspected as contamination ingress points (e.g. water-cooled heat exchangers), it was important for the customer to carefully determine and mitigate the root cause of the water contamination—a challenge that HYDAC was confident could be overcome through systematic investigation.

### Solution

HYDAC quickly deployed an NAV30 vacuum dehydrator to effectively remove water contamination from and restore the gear lubricant fluid to its acceptable condition. Additionally, HYDAC provided on-site support for estimating the root-cause of the water contamination and therefore to enable the customer to confidently focus their mitigation efforts.

### Specifications

**Type of Machinery:** Hot steel rolling machine

**Fluids Addressed:** Gear lubricant

**HYDAC Solution:** NAV30

**Fluid Processing Rate:** 30 gpm

### Result

The NAV30 was able to reduce the water content of the fluid to <300 ppm in 30 days of commissioning, or to approximately 1% of the original content level. By restoring the fluid through effective conditioning, the customer was able to save upwards of \$100,000 in fluid replacement cost.

HYDAC helped the customer determine that one of the water ingress points were likely rooted at the seals of the fluid sample ports on the gearbox. The gearbox was routinely cleaned via pressurized water. The customer replaced sample port seals and other possible sealing points exposed to the cleaning method.

HYDAC also discovered that water condensation was occurring inside the return-line piping of the lubrication circuit. The return-line was empty of lubricant during planned shutdown periods, allowing for moisture to condense and produce free water in the piping. The free water in the piping would then be reintroduced in the lubricant at startup. Because of this discovery, the customer has modified their system to continuously circulate lubricant through the system to help minimize the occurrence of free water through condensation.

