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Maxi Water VAC Drastically Improves Water Contamination in Hydraulic Press

INDUSTRY DESCRIPTION:

Cold forming sheet metal entails shaping the metal at near room temperature utilizing specialized equipment. This process provides high levels of intricate manipulation while retaining or enhancing tensile strength and is more sustainable than hot forming, especially in the automotive industry.

Hydraulic presses or punches transform these metal sheets into form by stamping, cutting or bending the metal into shape, and their reliability is essential to production. It's well known that 80% of hydraulic failures are caused by fluid contamination. Water, often considered the second most harmful contaminant, causes corrosion, cavitation erosion, lubricant degradation and significantly degrades the lubricant's film strength leading to more mechanical wear.

THE CHALLENGE:

For Emo - Orodjarna, a manufacturer of hot and cold forming tools in Slovenia, it was discovered during periodic lab analysis that the hydraulic system for their 2,000 ton press was fully saturated and oil analysis reported 6,500 ppm of water.

This contamination ingress was unexpected since the cooling of the unit is done through air. They concluded that water may have been present in the lower waste tank of the press, and the contaminated oil was pumped back to the main oil reservoir inadvertently to arrive at this ppm level.



Maxi Water VAC

THE SOLUTION:

In order to solve for the high contamination levels, the company could either change the 8,000 liters (2,113 gallons) of oil required at an estimated cost of € 32.000 (\$37,516) or they could remove the water from the oil.

The manufacturer determined it would be more cost-effective to remove the water from the oil and reached out to an official distributor of Des-Case for a solution. The RMF Systems Maxi Water VAC (MXWV) was selected due to it being one of the most efficient and sustainable vacuum dehydrator units on the market. A fully-integrated Moisture Content Sensor (MCS) was also added to monitor the moisture levels in real time.

The MXWV works in two stages, first by removing water based on a pure vacuum evaporation process inside a vacuum chamber at a maximum temperature of 60°C (140°F). The oil is then passed through an RMF Systems glass fiber filter element where solid particles are captured at a 99.9% efficiency at 3 microns and removed from the oil.

THE RESULTS:

The MXWV with MCS was utilized for a five week span. At the start, sensor readings were at 100% relative humidity. As it continued to run and purify the oil, the MXWV was able to remove the moisture contamination down to a relative humidity of 2%, equivalent to a water concentration of 10-20 ppm. By implementing the MXWV solution, the manufacturer was able to save more than €50.000 (\$58,670) on oil change out and disposal fees.



Before

6,500
PPM WATER

100%
RH

After

12
PPM WATER

2%
RH