



Success Story

EARLY FAULT DETECTION OF AIR-COOLED HEAT EXCHANGERS

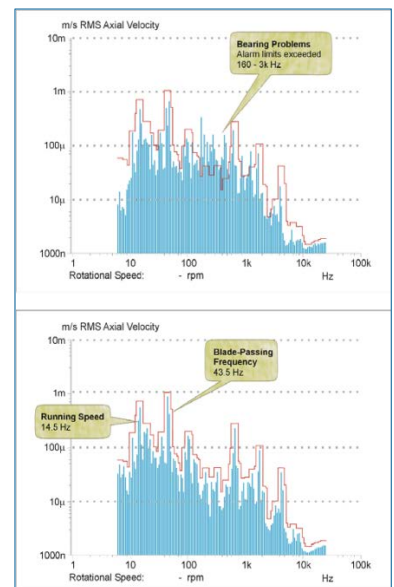
Protective and health monitoring are important for the air-cooled heat exchanger (also called fin-fan or simply air cooler). There are a number of potential failure modes that can occur in the motor, shaft, bearings and drive system of these machines, and there are a number of issues that can determine how effectively these can be monitored. Air coolers typically turn at low speeds and the relatively weak amplitude of the vibration signal can be influenced by a number of other factors such as wind speed and direction, weather, loading, motor speed and blade pitch. For this reason early fault detection and trending can be difficult for many of the typical monitoring systems used with these machines. Compass offers an effective solution by employing specialized measurements under different operating conditions.

MACHINE/INDUSTRY/PROCESS

Machine	Roller-element bearings of the induced/forced draft air-cooled heat exchangers
Company/Process	Petroleum refining, oil & gas production and transport, power generation, etc.
Monitoring System	Compass machine condition monitoring system
Monitoring Strategy	Detection: 6% CPB (constant percentage bandpass). Diagnosis: SED (selective envelope detector). Machines should be online monitored for the different operating conditions.

BENEFITS

By using effective monitoring techniques, this reduces the chance of an air cooler failing and the consequential reduction of cooling capacity of the process. This in return reduces the risk of reduced plant production during peak demand. By avoiding a catastrophic failure of the induced draft air cooler, e.g. the lower bearing breaking apart and the entire fan/shaft/anti-rotation gear assembly collapsing on top of the tube bundle, you avoid a gas leak to the environment that could occur if the tubes are ruptured.



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