



### Success Story

# EARLY DETECTION OF BEARING FAULTS SAVES EURO 300.000/DAY OF DOWNTIME

This case story demonstrates the importance of online condition monitoring of the LDPE reactor mixer.

#### MACHINE/INDUSTRY/PROCESS

Machine	Autoclave reactor (2000 bar, 6.5 x 0,53m)
Company/Process	Polyolefin plant: Low density polyethylene production (150k tonnes/year)
Monitoring System	Brüel & Kjær Vibro Compass 6000™: 4 bearings monitored by 2 accelerometers
Monitoring Strategy	Detection: Acceleration bandpass measurements (1-5 kHz). Diagnosis: Envelope, FFT velocity spectrum



#### OBSERVATION/DIAGNOSIS

Over a period of years, it has been observed that the primary failure modes for the reactor have been in rolling element bearings. These can prematurely fail due to polymer sticking to the mixer blades (unbalance), or due to excess loading from an unstable polymerization process. Sometimes the polymer finds its way into the bearing itself. In order to avoid a catastrophic failure, these faults must be detected and diagnosed early in order to plan maintenance ahead of time (Figure 1 shows a trend).

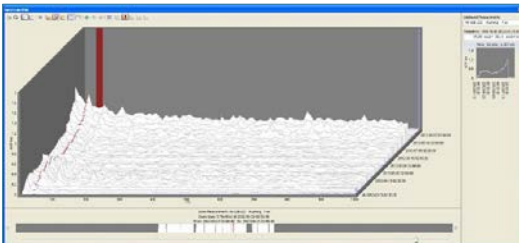


Figure 1. No matter what the cause, it is not always possible to immediately stop the machine when faults are detected. Damaged bearings are often run just before failure, as shown above.

#### BENEFITS

Condition monitoring of this critical machine is imperative. Some faults can develop quickly, while others develop non-linearly. Moreover, the cost of a catastrophic failure and the associated downtime for this machine is prohibitive. One day's production loss is approximately 205 tonnes, which is over than € 318,000 (at Jan 2013 LDPE spot prices). Brüel & Kjær Vibro Compass Monitoring System has been successfully monitoring this machine and others in the plant since 1998.

#### CONTACT

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