



Success Story

MONITORING WORLD'S LARGEST GREEN ETHYLENE PLANT

High profile project requires effective monitoring

Compass 6000™ was selected for monitoring this state-of-the-art plant when it was commissioned in 2010. Braskem, the largest petrochemical producer in the Americas and the fifth largest in the world by production capacity, built the green ethylene plant in the existing Triunfo petrochemical complex in the Rio Grande do Sul state in Brazil. "Green" ethylene is derived from ethanol that is produced from the renewable source sugarcane, instead of from a fossil oil derivative. It is the largest green ethylene plant in the world, producing 200k tons/yr.

Brüel & Kjær Vibro has had a long-term partnership with Braskem/Copesul since 1997. In addition to the green ethylene plant, there are over 300 machines monitored at the Naphtha fed olefin plants, and almost 2000 machines monitored in the downstream polyethylene and polypropylene plants.

MACHINE/INDUSTRY/PROCESS

| | |
|---------------------|---|
| Machine | One charge gas centrifugal compressor and one propylene refrigerant compressor online monitored, and 58 balance of plant machines offline monitored. |
| Company/Process | Ethanol from sugarcane is catalytically dehydrated in reactors at high temperature and moderate pressure to produce ethylene. For every hectare of sugarcane cultivated for making ethylene (82 tons), 7.5 tons of CO ₂ is captured from the air. |
| Monitoring System | Compass 6000™ |
| Monitoring Strategy | No faults have occurred yet but there is a minimal risk of fouling in the compressors, corrosion in the compressors and pumps, and erosion due to long-term minimal quantities of liquid carry-over in the compressors. These potential failure modes are detected by condition monitoring. Advisor is used for automatic diagnostics. Safety monitoring is used for protecting the machines, such as during compressor surging or liquid carry-over. |

BENEFITS

The economic benefits of condition monitoring of the green ethylene plant are enormous. If a bearing fault, for example, is allowed to fail and this consequently results in a catastrophic failure of the compressor, the costs to repair/replace the machine and lost production due to downtime are in the millions. Just considering lost production, a downtime of 7 days will cost €3.9 M!



Figure 1. Propylene refrigerant compressor



Figure 2. Charge gas compressor

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