Chemical Manufacturer Saves $2,000,000 Using Transient Analysis Capabilities

RESULTS

- $2,000,000 compressor chiller saved
- Design flaw discovered in $50,000 coupling
- Weeks of lost production avoided

APPLICATION

New 7500 ton refrigerated water turbine chiller process equipment

CUSTOMER

Large manufacturer of plastics feedstock

CHALLENGE

The production of plastic monomers - used by manufacturers of cars, paints, adhesives and many other consumer and industrial products - requires water at constantly controlled temperatures. The demand for this product is constant, and the machinery used to maintain the water temperature can cost millions of dollars if damaged and take months to replace. A flexible dry coupling was installed in a new turbine compressor at this monomer manufacturing plant at the same time the plant was in the process of changing out its online monitoring system.

SOLUTION

The plant selected Emerson's CSI 4500 Machinery Health™ Monitor as its new online monitoring system. With this new system they were able to use the unique transient analysis capability to view real-time data during startup of the turbine compressor in the AMS™ Suite: Machinery Health Manager software. The startup data revealed a problem with the new coupling. "We caught it with the transient data. Had we not had it online, we wouldn't have seen it," said the Rotating Equipment Engineer.

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>
> **Rotating Equipment Engineer**

AMS Suite

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www.assetweb.com

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"Even though every effort was made to assure a good running train with all lateral critical above the running range, when tested it shut down on high vibration." Further analysis of the data indicated a critical frequency at the bottom end of the operating range which was attributed to the coupling. Some adjustments were made to the coupling installation so that production could resume, but the critical frequency remained at lower amplitude. Plant personnel discussed the coupling design with the vendor, and adjustments were made in the design to eliminate this problem in the future. If not identified at startup, this problem would have eventually caused operational and maintenance headaches leading to coupling and bearing failures plus weeks or even months of lost production.

With the timely installation of the CSI 4500 with transient analysis capability, the root cause of the problem was identified in the coupling frequency before it could create a catastrophic problem for plant operations.

"Transient is the only state to monitor those transitions. Otherwise, you would not see the phase change and see that the critical was there."

Rotating Equipment Engineer

Emerson Process Management
Machinery Health™ Management
835 Innovation Drive
Knoxville, TN 37932
T (865) 675-2400
F (865) 218-1401
www.mhm.assetweb.com

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Online Machinery Health Management powers PlantWeb through condition monitoring of mechanical equipment to improve availability and performance.

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