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July 1 2022

Tim Busby
Mark Busby
Atlantic Dry Ice
Brandon, MS

Tim/Mark,

The following is a summary of findings from the quarterly vibration survey on the Ammonia Compressors at the Brandon, MS plant. Please let us know if there are any questions or comments.

QualiTest® uses a four step rating system for defects.

Class I: Defect is present, but effect on reliability is not clear; no immediate action is required. Continue to normally monitor.

Class II: Defect (s) present that may cause problem in long term (2-6 months). Repair during normal maintenance scheduling. Continue to monitor.

Class III; Defect (s) present that may cause failure in short term (less than 2 months). This should be addressed as soon as practical, with a high maintenance priority. Increase monitoring frequency.

Class IV; Defect (s) present that makes continued reliability unpredictable, and possibility of secondary damage is high. Repairs should be made ASAP. An unscheduled shutdown should be considered for repairs

C-1 Ammonia Compressor

Data indicates higher than normal 1 and 2 x rpm vibrations in the motor. This indicates coupling and or alignment issues. It is highly recommended to inspect the couplings for wear and ensure alignment is within tolerances. Hi-Speed provides alignment services. We have many years in shaft alignment experience and would be glad to perform this work for you. Rated as a **CLASS II** defect.

C-2 Ammonia Compressor

Motor remains to have a 120 Hz (2 x line frequency) vibration which may indicate some slight electrical issues in the rotor and or stator. Motor may have soft foot and stator could be slightly distorted and could be causing air-gap variations between rotor and stator. Compressor data still shows some signs of internal wear of the compressor. We will continue to monitor this closely. Motor is rated as a **CLASS I** defect and compressor is rated as a **CLASS II** defect.

C-3 Ammonia Compressor

Vibration data showed no issues were present during this survey. No actions recommended at this time.

Abbreviated Last Measurement Summary

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Database: Atlantic Dry Ice.rbm
Area: Brandon MS Plant
Route No. 1: ADI BRANDON MS

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD
C-1 - C-1 AMMONIA COMPRESSOR	(29-Jun-22)	
	OVERALL LEVEL	1K-20KHz
MOH - MOTOR OUTBOARD HORIZONTAL	.379 In/Sec	.667 G-s
MOV - MOTOR OUTBOARD VERTICAL	.216 In/Sec	.263 G-s
MIH - MOTOR INBOARD HORIZONTAL	.212 In/Sec	.904 G-s
MIV - MOTOR INBOARD VERTICAL	.244 In/Sec	.316 G-s
MIA - MOTOR INBOARD AXIAL	.263 In/Sec	.376 G-s
CIA - COMPRESSOR INBOARD AXIAL	.142 In/Sec	.463 G-s
CIH - COMPRESSOR INBOARD HORIZONTAL	.137 In/Sec	.330 G-s
CIV - COMPRESSOR INBOARD VERTICAL	.152 In/Sec	.396 G-s
COH - COMPRESSOR OUTBOARD HORIZONTAL	.113 In/Sec	.419 G-s
COV - COMPRESSOR OUTBOARD VERTICAL	.128 In/Sec	.159 G-s
C-2 - C-2 AMMONIA COMPRESSOR	(29-Jun-22)	
	OVERALL LEVEL	1K-20KHz
MOH - MOTOR OUTBOARD HORIZONTAL	.105 In/Sec	.599 G-s
MOV - MOTOR OUTBOARD VERTICAL	.135 In/Sec	.597 G-s
MIH - MOTOR INBOARD HORIZONTAL	.128 In/Sec	1.742 G-s
MIV - MOTOR INBOARD VERTICAL	.101 In/Sec	.604 G-s
MIA - MOTOR INBOARD AXIAL	.115 In/Sec	.570 G-s
CIA - COMPRESSOR INBOARD AXIAL	.294 In/Sec	.372 G-s
CIH - COMPRESSOR INBOARD HORIZONTAL	.126 In/Sec	.439 G-s
CIV - COMPRESSOR INBOARD VERTICAL	.473 In/Sec	.342 G-s
COH - COMPRESSOR OUTBOARD HORIZONTAL	.113 In/Sec	.933 G-s
COV - COMPRESSOR OUTBOARD VERTICAL	.167 In/Sec	.623 G-s
C-3 - C-3 AMMONIA COMPRESSOR	(29-Jun-22)	
	OVERALL LEVEL	1K-20KHz
MOH - MOTOR OUTBOARD HORIZONTAL	.075 In/Sec	.553 G-s
MOV - MOTOR OUTBOARD VERTICAL	.088 In/Sec	.500 G-s
MIH - MOTOR INBOARD HORIZONTAL	.093 In/Sec	1.611 G-s
MIV - MOTOR INBOARD VERTICAL	.063 In/Sec	.608 G-s
MIA - MOTOR INBOARD AXIAL	.038 In/Sec	.283 G-s
CIA - COMPRESSOR INBOARD AXIAL	.139 In/Sec	.243 G-s

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   CIH - COMPRESSOR INBOARD HORIZONTAL          .074 In/Sec       .483 G-s
   CIV - COMPRESSOR INBOARD VERTICAL            .128 In/Sec       .260 G-s
   COH - COMPRESSOR OUTBOARD HORIZONTAL         .056 In/Sec       .552 G-s
   COV - COMPRESSOR OUTBOARD VERTICAL           .112 In/Sec       .297 G-s

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   Clarification Of Vibration Units:
      Acc       -->  G-s      RMS
      Vel       -->  In/Sec   PK
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As always, it has been a pleasure to serve Atlantic Dry Ice. If there are any comments or questions, do not hesitate to contact us.

Sincerely,

ISO Certified Vibration Analyst, Category III

HI-SPEED INDUSTRIAL SERVICE

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