



UK Bulk Material Handling Company

Dust Fan, Unbalance, March 21

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Job Title: Senior Reliability Engineer

Case Study No: 0047

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What components are at fault & fault description

The monthly vibration routines detected high vibration levels for the velocity domain on the fan bearings. The in-house analysis concluded that high levels of unbalance were the cause of the elevated vibration levels. Due to the 24 hour operation of this asset, RJW engineers monitored the trends until it was decided that the work needed to be completed at the next opportunity.



Dust Fan #2

	Pre fault identification (Velocity)	Post remedial work (Velocity)
Fan NDE Horizontal	62.8 mm/s	3.06 mm/s
Fan NDE Vertical	13.70 mm/s	1.22 mm/s
Fan NDE Axial	6.38 mm/s	3.69 mm/s

During the site visit, the RJW engineers inspected and cleaned the impeller and carried out an in-situ balance of the impeller. This work reduced the overall vibration levels to a satisfactory level.

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What would the short- and long-term impacts be if not diagnosed and repaired?

Should the vibration levels continued to increase there would have been significant damage to the structure and bearings. This fan is close to a road and walkway so should it have failed there could have been a risk to life.

What was concluded from the investigation?

From the investigation we managed to reduce the vibration levels to a satisfactory level. In the spectra below we can see the reduction in the fan 1x running speed.



What are the cost benefits of this fault?

Should the fan have failed during operations, the plant would have stopped unloading ships and halted feeding three local customers. Stoppages when unloading a ship can incur demurrage fines from the shipping company, stopping the feed to the local customers can also have impacts to their operations and the further supply chain. By balancing this fan at a time that was convenient for all parties involved any downtime or possible fines were avoided.

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