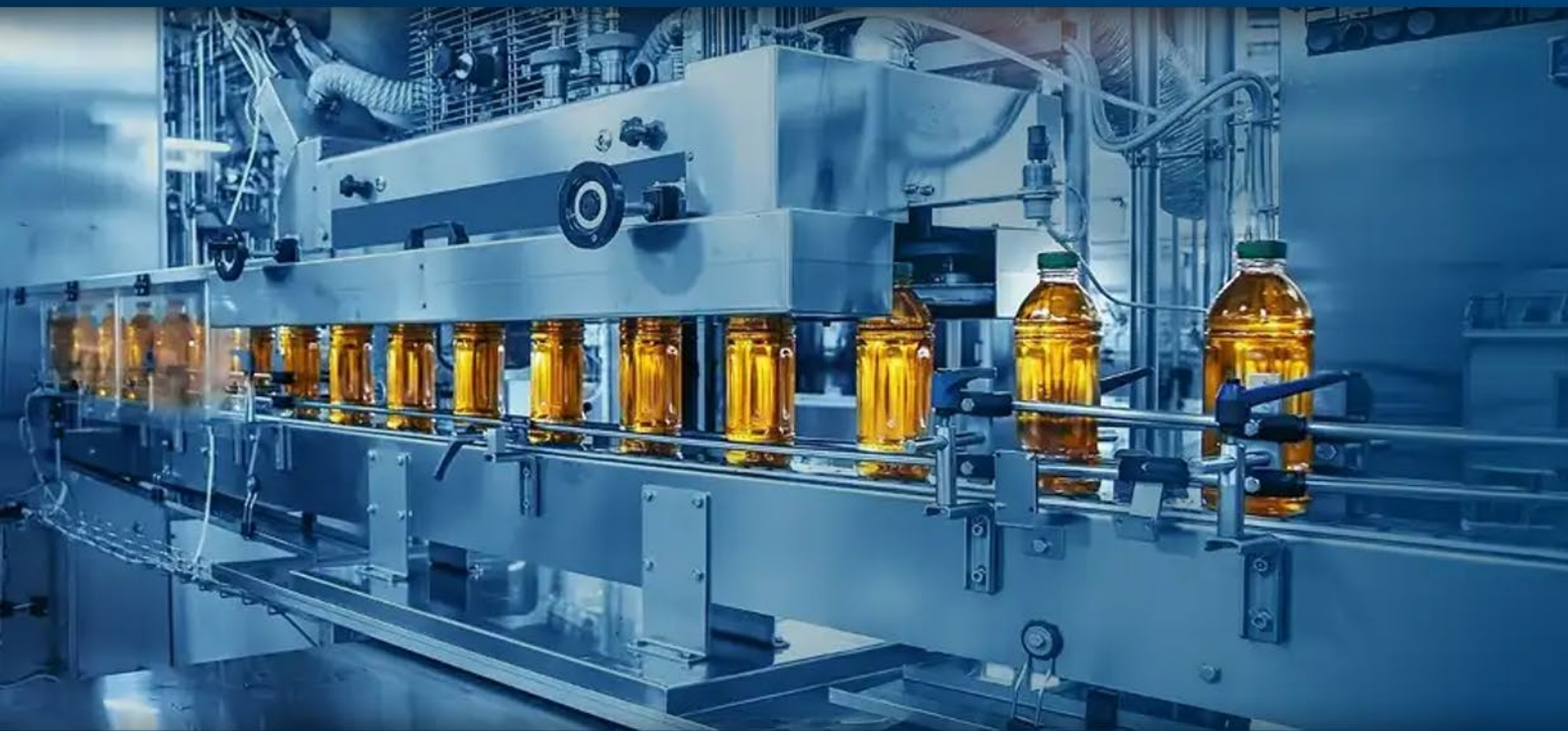


SUCCESS STORIES

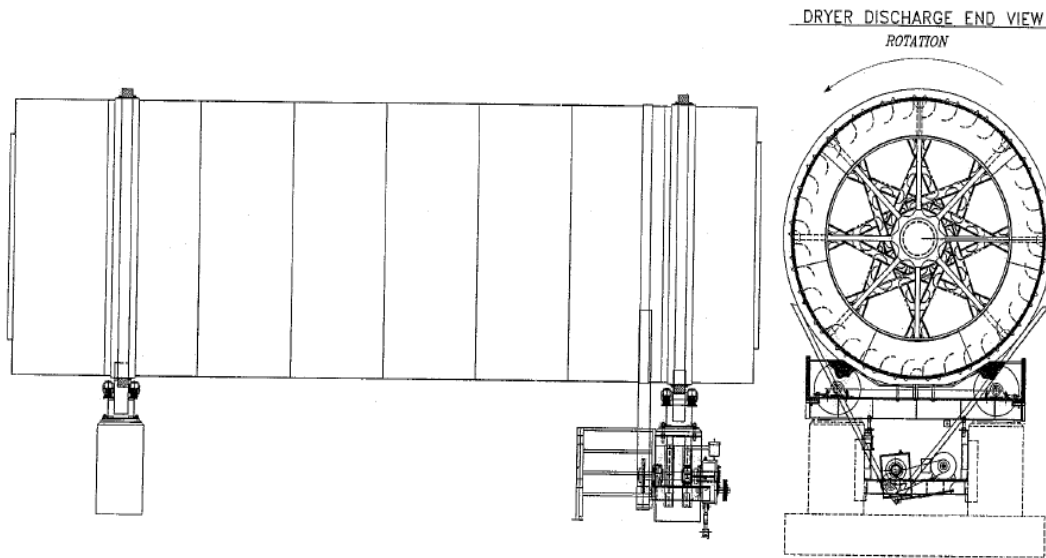
Food & Beverages



Low Speed Bearing 25 RPM

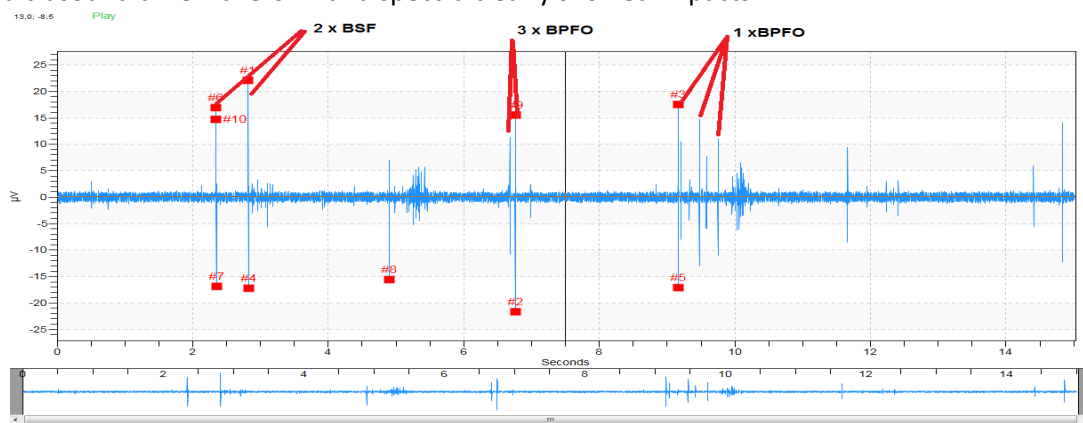
Author: SDT Ultrasound Solutions

In a factory, they have two dryers that allow them to dry a product destined for animal food. These large dryers have a drum 40 feet long, 13 ½ feet in diameter, which rotates about 4.2 RPM and has a weight of about 53 000 pounds and is supported by four trunnions. These consist of a roller that rotates at 25 RPM and two bearings Dodge P4B-IP-315R (it is a bearing 22 220 inside).

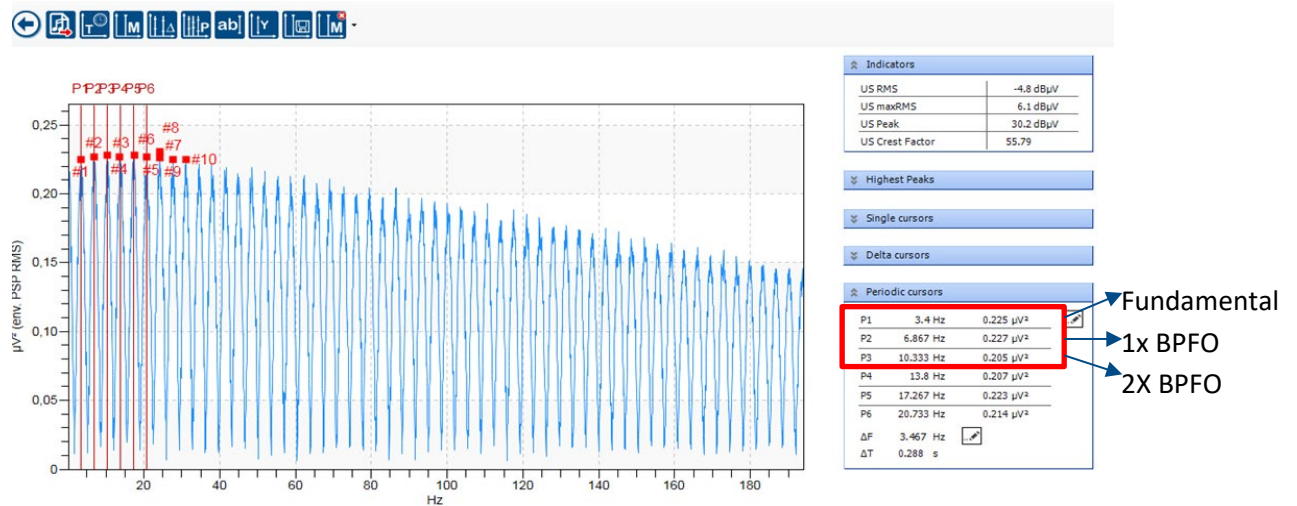


Bearing defect frequencies of DODGE 22220 (Hz)					
	RPM	FTF	BSF	BPFO	BPFI
1 fundamental	.42	.177	1.32	3.18	4.32
1 harmonic	.83	.353	2.64	6.36	8.64
2 harmonics	1.25	.530	3.97	9.54	12.96
3 harmonics	1.67	.707	5.29	12.72	17.28

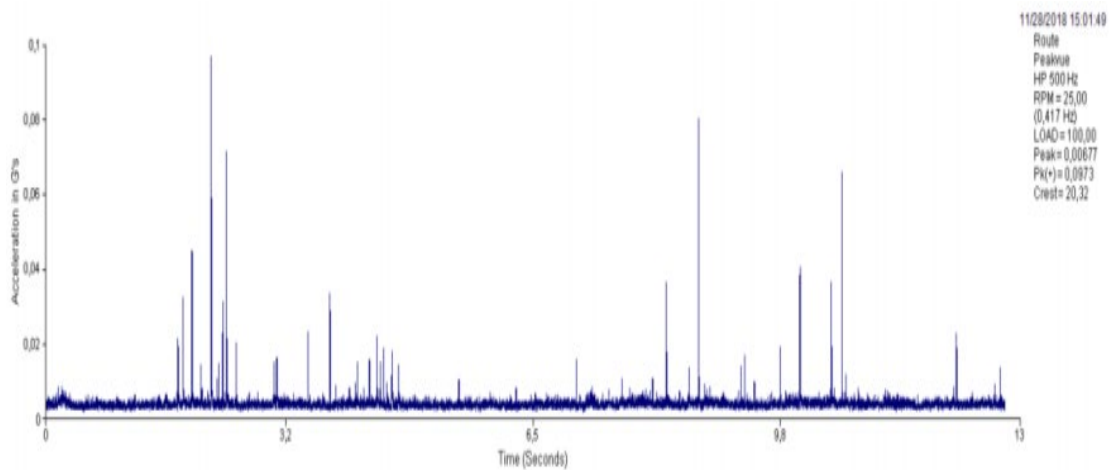
The ultrasound time waveform and spectra clearly showed impacts.

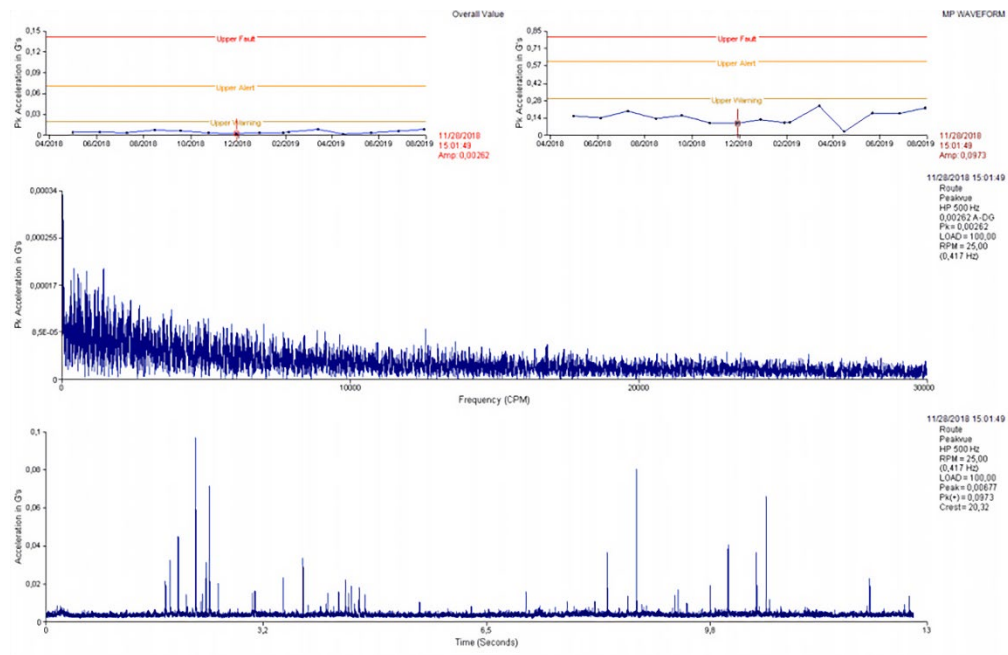


The ultrasound spectra showed the BPFO and many harmonics.

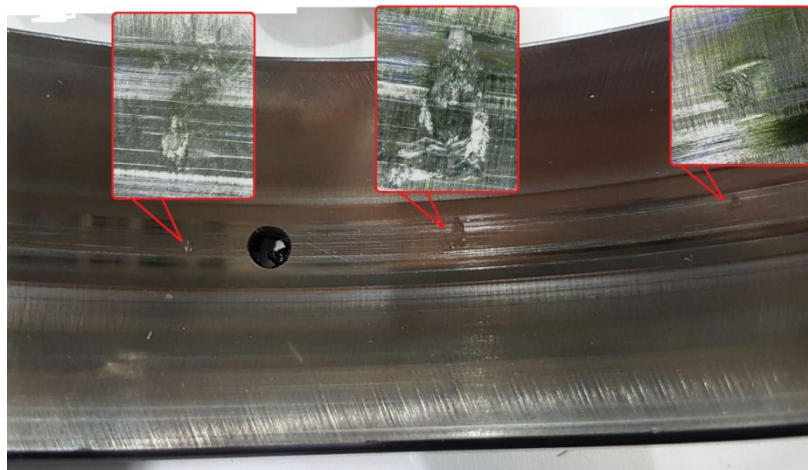


The vibration data did not reveal any noticeable problems because basically the accelerometer response is above 10 Hz.





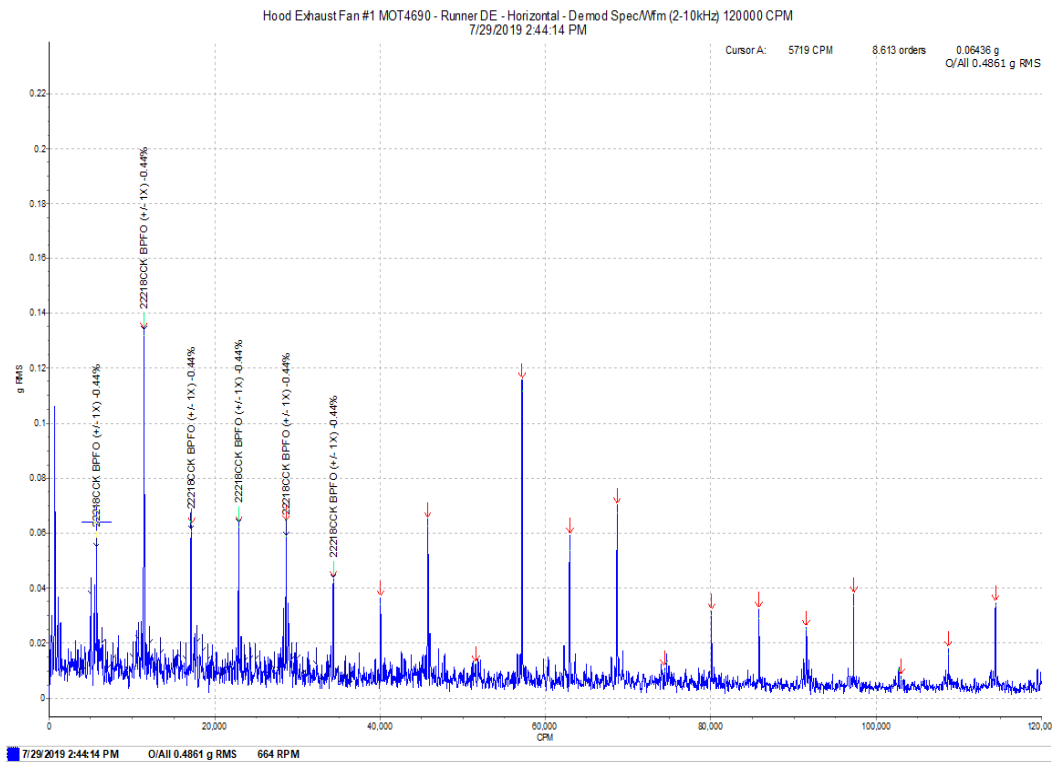
The bearing was inspected, and the outer race had cracks.



Bad bearing on Exhaust Fan

Author: SDT Ultrasound Solutions

HFE



Fan running speed 665ish

Manufacturer: SKF
Part Number: 222180CK
Description:
Shaft Multiplier: 1 (speed seen by this bearing, compared to the rpm of the recording)

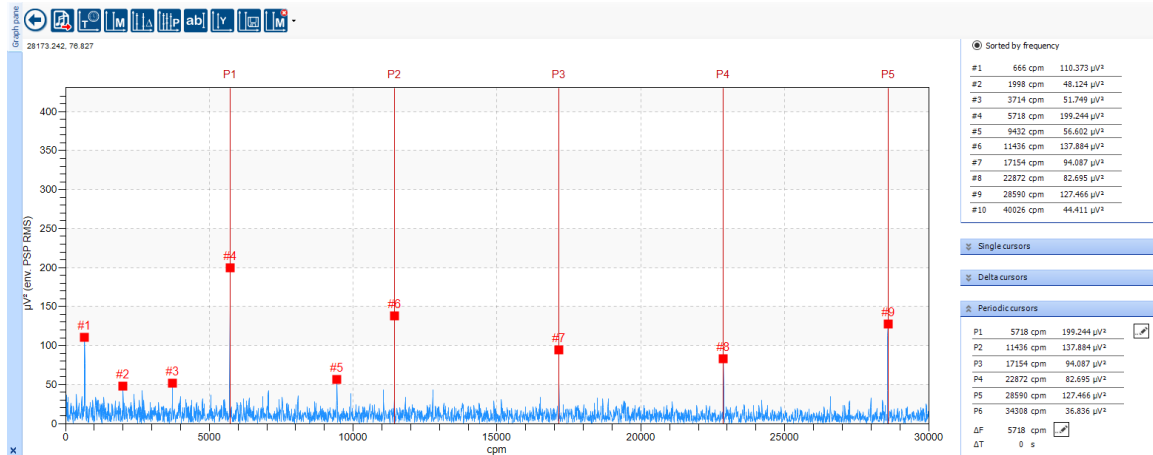
Select a different bearing...

Bearing Data Notes Interchange

Dimensions	Fault Frequencies (orders)
(d) Internal Diameter: 0 in	BPFI: 11.349
(D) Outer Diameter: 0 in	BPFO: 8.651
(B) Width: 0 in	BSF: 3.64
	FTFI: 0.433
	FTFD: 0

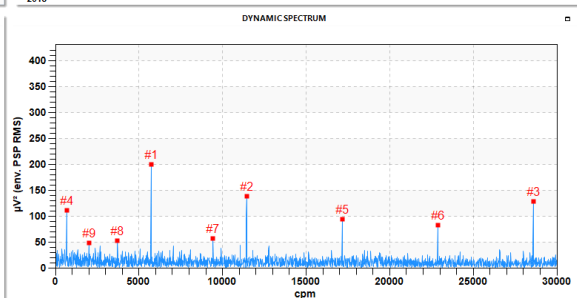
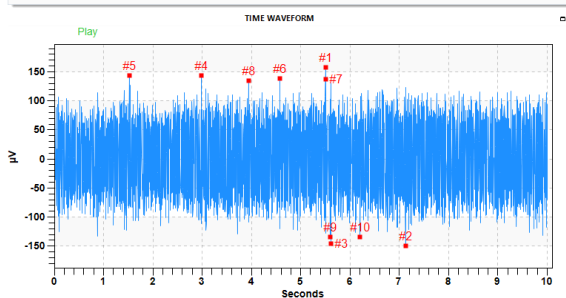
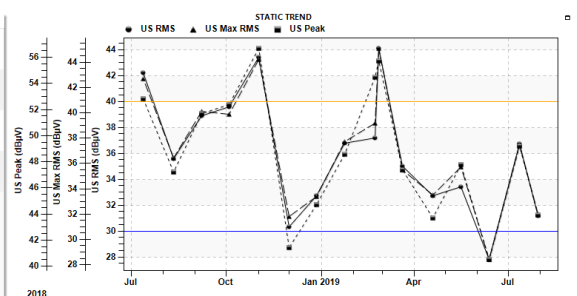
OK Cancel Help

Ultrasound



Click indicator to show/hide its curve in graph

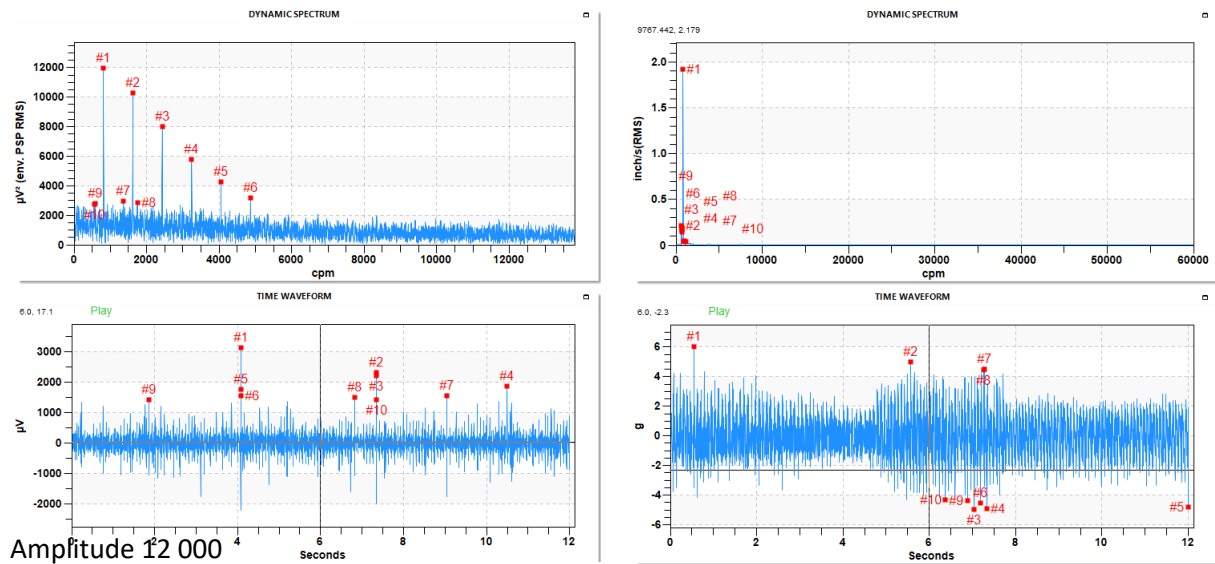
RS1NL300	31.2 dBμV US RMS	32 dBμV US Max RMS	43.9 dBμV US Peak	4.3 US Crest factor
	36.7 dBμV US RMS	37.5 dBμV US Max RMS	49.2 dBμV US Peak	4.2 US Crest factor
	27.8 dBμV US RMS	28.4 dBμV US Max RMS	40.5 dBμV US Peak	4.3 US Crest factor
	33.4 dBμV US RMS	35.7 dBμV US Max RMS	47.8 dBμV US Peak	5.2 US Crest factor



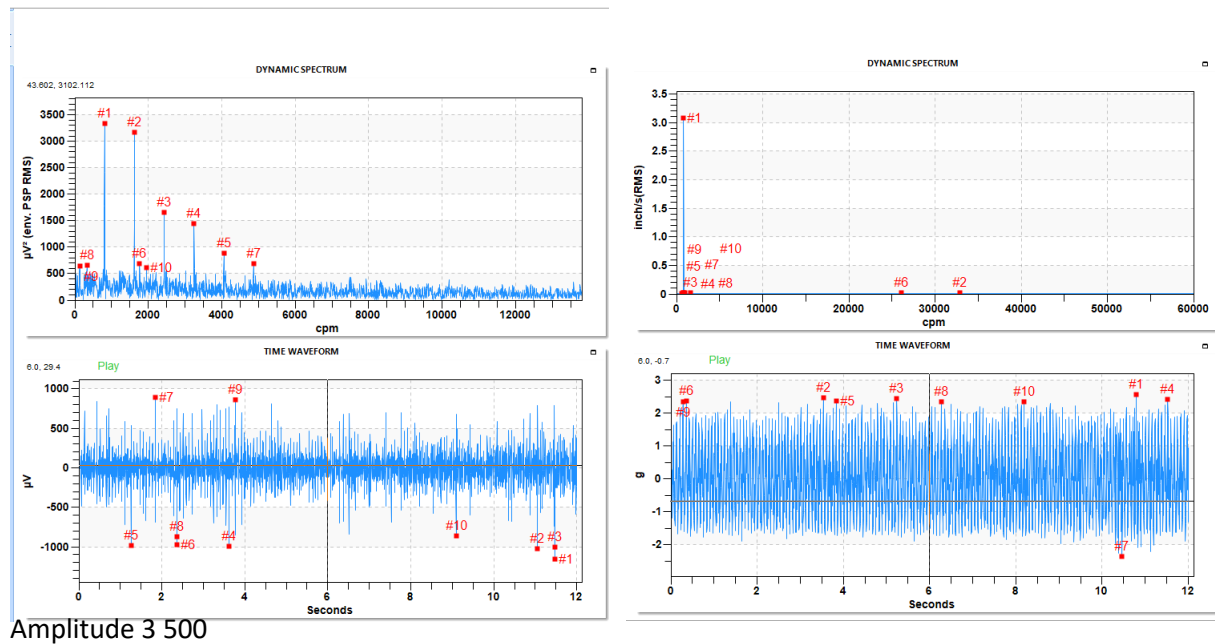
Gravel sifter bearing

Author: SDT Ultrasound Solutions

Bearing #1 drive side.



Bearing #2



Implementing Ultrasound Technology for Predictive Maintenance at ADM Razgrad

Author: Gauthier Ghislain, Emil Georgiev and Yanko Yordanov (ADM Razgrad)

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In a strategic move to enhance operational efficiency and minimize downtime, ADM Razgrad, a food processing facility located in Bulgaria, undertook the implementation of a predictive maintenance program centered around improving the reliability of its critical machinery. This initiative leveraged ultrasound technology, yielding significant benefits in preventing equipment failures, reducing costs, and ensuring the plant's uninterrupted operation.

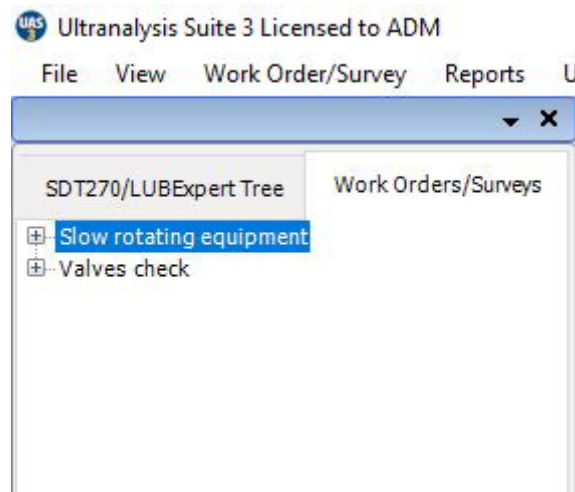
The journey began with a comprehensive reliability assessment across all machines in the plant. This assessment was crucial to identify which equipment was most critical to the production lines and overall plant operations. By pinpointing the key machinery and understanding potential problems, we were able to prioritize our maintenance efforts effectively.

Following the identification of critical machines, they conducted a thorough Reliability-Centered Maintenance (RCM) and Failure Modes, Effects, and Criticality Analysis (FMECA). The analysis revealed that the most vulnerable components across the critical machines were their bearings. Given the significant role these bearings play in machine operation, they required close monitoring to prevent costly failures and downtime.

For their slow-rotating equipment, ultrasound technology appeared to be the ideal solution for [condition monitoring](#). They chose ultrasound due to its reliability in monitoring bearings with rotational speeds below 120 rpm. Additionally, this technology proved effective in detecting compressed air and vacuum leaks, which could otherwise lead to energy losses and operational inefficiencies.

To support the implementation of this technology, they invested in an ultrasound tool from SDT Ultrasound Solutions, the [SDT270](#), and installed the accompanying software [Ultranalysis Suite 3](#) (UAS3). A comprehensive database was established, and they developed a condition monitoring program featuring monthly routes to inspect bearing conditions and detect leaks. This systematic approach ensured they maintained a clear understanding of their equipment's health, enabling proactive measures to be taken when necessary.

Building on their previous experience with vibration monitoring, they smoothly integrated the ultrasound condition monitoring program. This transition allowed them to capitalize on their existing knowledge while implementing the new technology. Early in the program, they detected damage in the support roller bearing of one of their dryers. Thanks to the early detection provided by ultrasound, they were able to continue monitoring the bearing and plan the necessary repair months in advance, preventing an unexpected shutdown.



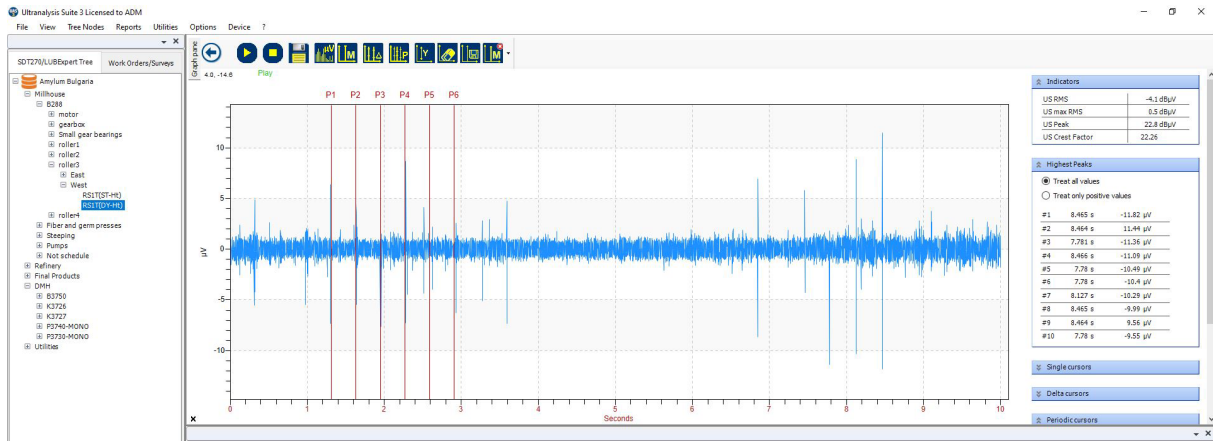


Image showing the detected bearing problem.

Precise monitoring of each activity was crucial to measuring the effectiveness of the predictive maintenance program. Through diligent monitoring efforts, they successfully prevented several major failures in their slow-rotating bearings. This proactive approach saved the company from significant repair costs and avoided prolonged downtime, which would have severely impacted production.

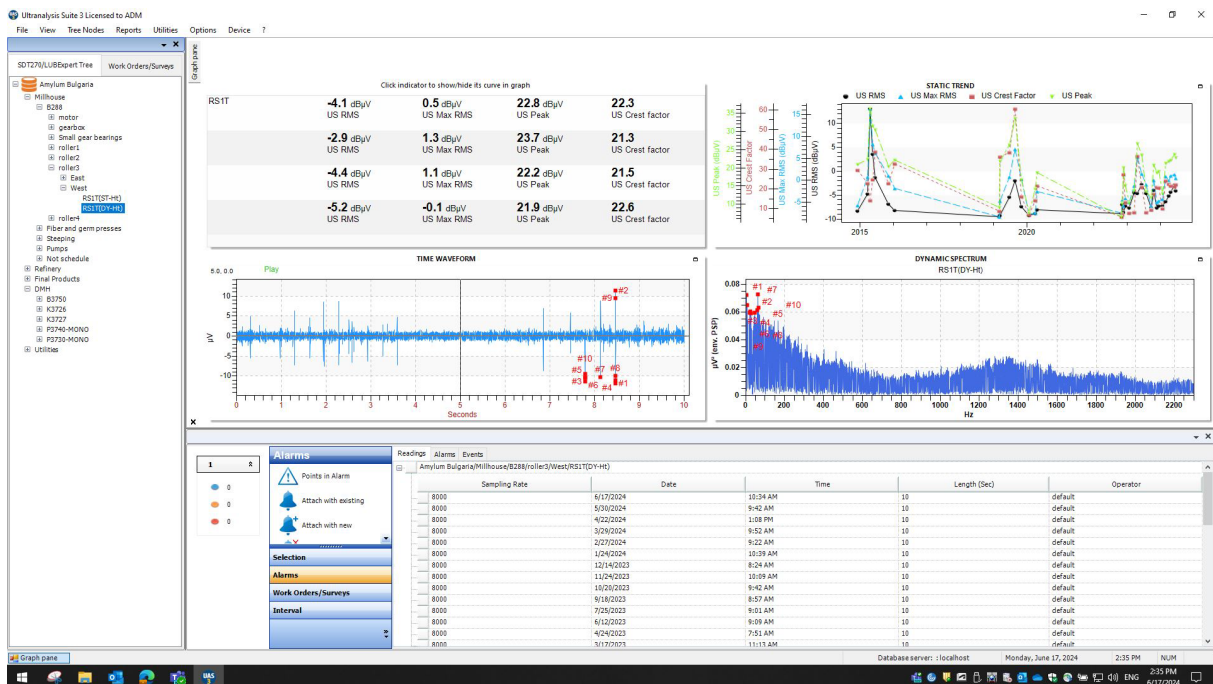


Image showing the monitoring outcomes and data trends.

For every failure they prevent, they calculate the associated cost savings and present these findings to plant management. This transparent reporting not only highlights the value of the predictive maintenance program but also ensures that the financial benefits are clearly understood and appreciated throughout the organization.

As the program matured, they developed a system for logging all detected issues and estimating the timeline for necessary repairs. By tracking the costs of avoided failures, they accurately calculated the return on investment (ROI) from the ultrasound technology. Once the investment was recouped, this success was reported to management, showcasing the financial prudence of the program.

Each year, they will compile a report detailing all the losses prevented by the predictive maintenance program. This cumulative benefit is measured against a defined gap value, and once this threshold is

reached, it is celebrated as a significant achievement. Continuous reporting of these successes will reinforce the program's value and establish it as an integral part of their maintenance strategy.

Conclusion

The implementation of ultrasound technology at ADM Razgrad has been a resounding success. By focusing on critical machinery, developing a robust monitoring program, and consistently reporting their achievements, they have not only improved the reliability of our equipment but also significantly reduced operational costs. This success story underscores the power of predictive maintenance and the importance of investing in the right technology to safeguard the future of their operations.