

Reliability Maintenance

What is it?

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Category II Vibration Analyst

Certified in Precision Alignment / Balancing

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Reliability - “the ability of a piece of equipment to perform a required function for a specific time period under stated conditions”

Precision Alignment



- Best Foundation
- Ensure most efficient transfer of power
- Belt, Seals and Bearing life
- Proper Belt Tensions
 - Load has a cubed effect on life of bearings

Precision Alignment

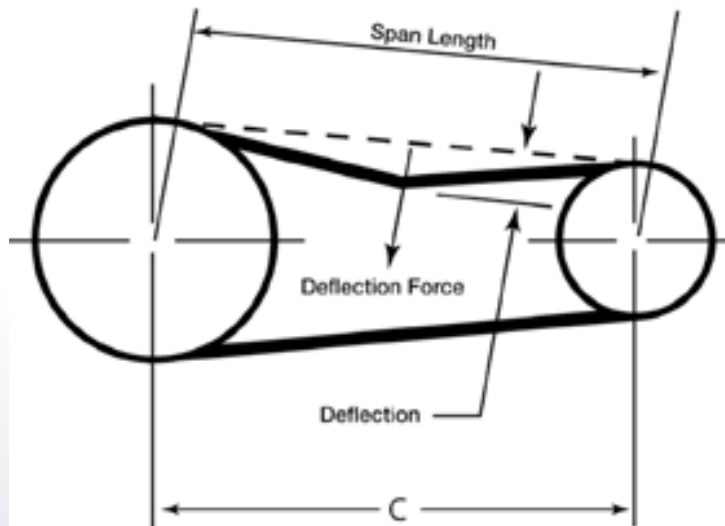


Figure 1. Belt Span Length



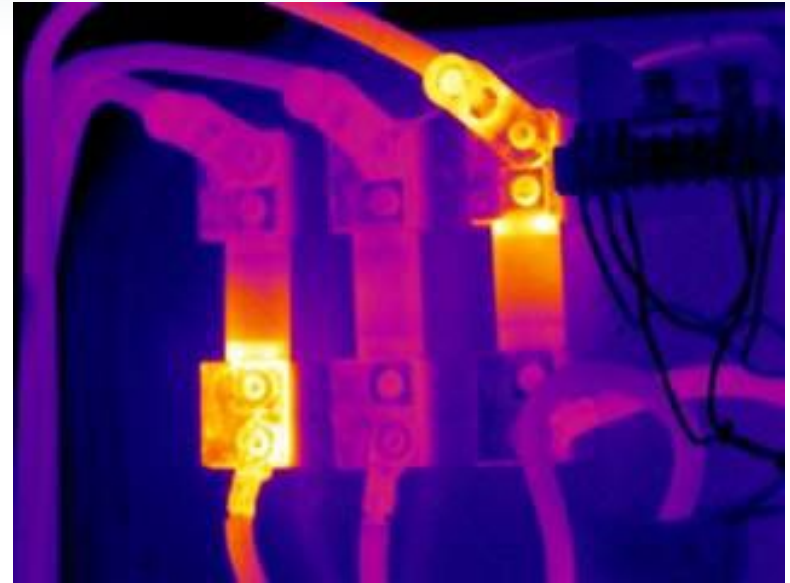
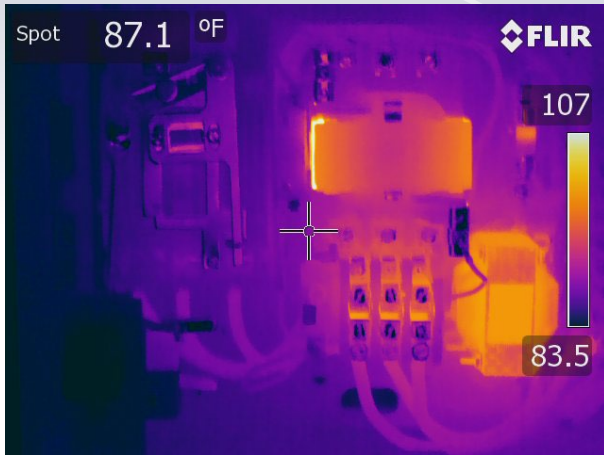
RPM	Angular Misalignment Mils per in. .001/1 in.		Offset Misalignment Mils .001 in.	
	Excellent	Acceptable	Excellent	Acceptable
3600	0.3/1 in.	0.5/1 in.	1.0	2.0
1800	0.5/1 in.	0.7/1 in.	2.0	4.0
1200	0.7/1 in.	1.0/1 in.	3.0	6.0
900	1.0/1 in.	1.5/1 in.	4.0	8.0

A close-up, circular view of a complex mechanical gear train. The gears are metallic and show signs of wear, with some teeth appearing slightly blurred. The lighting is dramatic, highlighting the textures and shadows of the metal components.

Infrared Surveys

- The only technique for locating resistance
- Ensures the best power quality to equipment
- Reduce electrical energy loss
- Reduces heat sources
- Prevent catastrophic failures

Infrared Surveys



Ultrasonics

- Motor Lubrication
- Bearing Lubrication
- Compressed Air Leak Detection

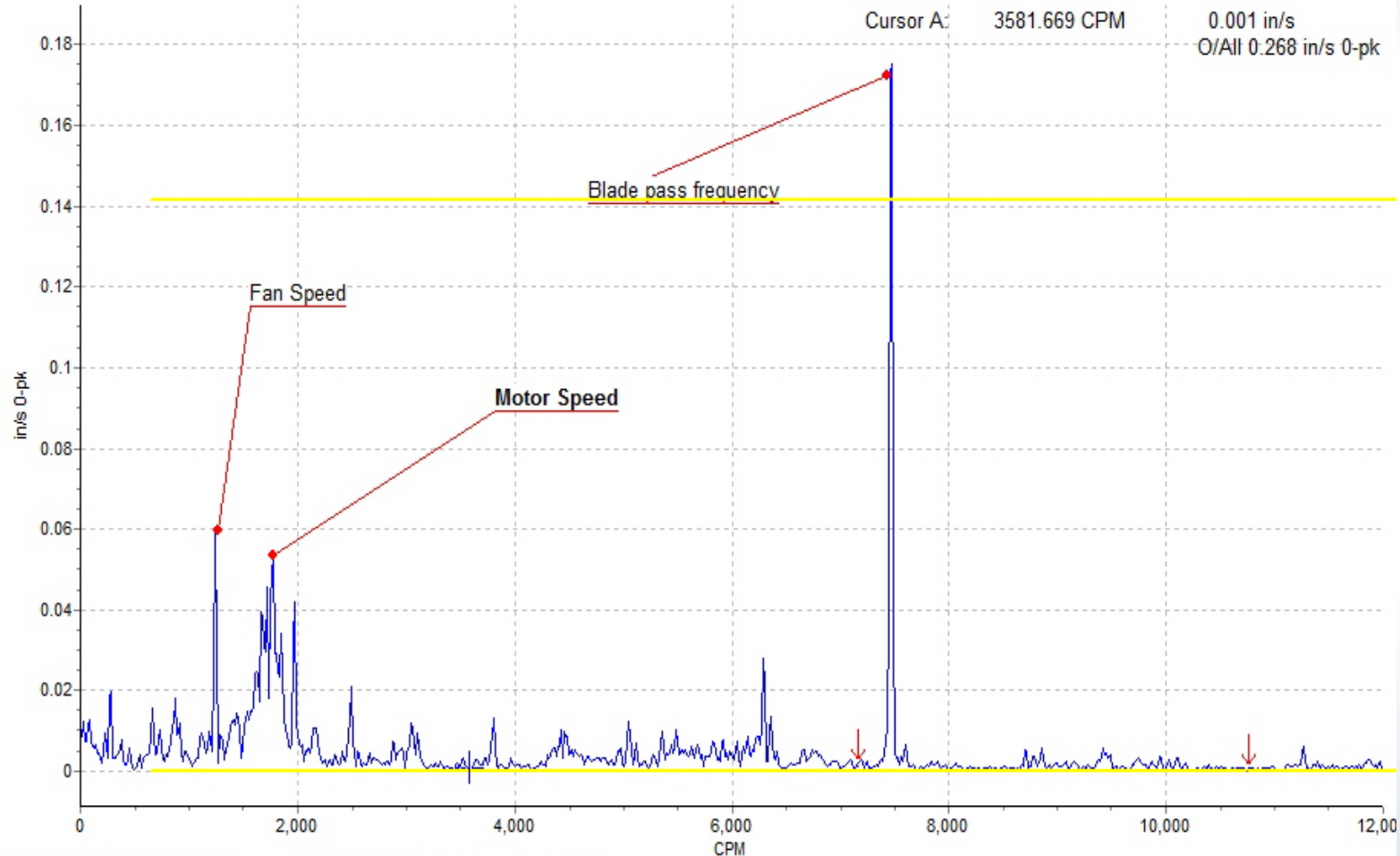
Diameter of air leak	CFM of air lost at 100 psig	x 8 = cubic ft. lost per day	Annual cost at \$0.18 per 1,000 cu. ft. *	Annual cost at \$0.32 per 1,000 cu. ft. *
1/32"	1.62	777.60	\$51	\$91
1/16"	6.49	3,115.20	\$205	\$364
1/8"	26	12,480.00	\$820	\$1,458
1/4"	104	49,920.00	\$3,280	\$5,831
3/8"	234	112,320.00	\$7,379	\$13,119
1/2"	415	199,200.00	\$13,087	\$23,267
3/4"	934	448,320.00	\$29,455	\$52,364

Source: John Henry Foster website
<http://www.jhf.com/home/services/air-compressors/cost-of-air-leaks>

Vibration Analysis

S Dust Fan - fan-ope - Axial - Vel Spec 12000 CPM
3/31/2009 12:59:24 PM

Machine Note (3/11/2008 5:32:27 PM)
25 HP



3/31/2009 12:59:24 PM O/All 0.268 in/s 0-pk <set RPM>

Continuous Monitoring

MachineDoctor™



Vibration in 3D



Acoustic Emission



Temperature



RPM measurement



Humidity



Magnetic Flux



6 in 1 Wireless Sensor



UL 746C



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Questions?

Thank you!

