



**VIBES Corp<sup>®</sup>**



Est. 1967

**V**ibration **I**ndustrial **B**alancing & **E**quipment **S**ervices, Corporation

720 - 999 W. Broadway, Vancouver, BC V5Z 1K5

[www.vibescorp.ca](http://www.vibescorp.ca) email: [info@vibescorp.ca](mailto:info@vibescorp.ca)

Phone: 604 - 619 - 9381 (24/7)

**SERIOUS SERVICE<sup>®</sup>**  
*Professional Machinery Health Care*  
**(Fan Doctor<sup>®</sup>)**

## **SERIOUS SERVICE<sup>®</sup>**

**It is not about our trademarks or meaningless words but  
only the beginning of the commitment to our clients for the  
last 50 years in business.**

**We dedicate our experience and resources so you don't  
have to worry about machinery vibrations and get back to  
what really matters.**

**"PEACE OF MIND AT WORK, MORE TIME WITH YOUR  
FAMILY, FRIENDS AND NATURE"**

**Garrett Sandwell, MET, CVA, ASNT 3  
CEO**



**Vendor Compliant for International Firms, Property Owners & Managers of Commercial Towers,  
Hospitals, Industrial Plants & Infra-Structure Facilities**



# Introduction to **VIBES Corp.**<sup>®</sup>

## Why work with us? Serving Canadian Industry for over 50 Years.

VIBES Corp's reputation was built and established on thousands of promises fulfilled over 50 years in business across Canada. Superior quality service, sales and training courses provided on the intelligent specialist level has been the standard and always will be since our vibration and balancing business was formed in Calgary, AB, in 1982. (Formerly Industrial Balancing Ltd. Est. 1967) In the final real-time analysis VIBES Corp will deliver more value and peace of mind.

## What do we do? Expert technical services and preventative maintenance programs using advanced instruments and tools to solve various vibration, balance and mechanical noise related problems.

Factory trained and repair specialists on HVAC, fans, blowers, cooling towers, pumps, motors, industrial rotors. FlaktWoods Varofoils and Aerofoils, Sheldons Axico, Aerovent, Novenco, New York Blower, Chicago Blower, Canadian/Buffalo Blower, CML Northern Blower, Joy Axivane, Twin City, Alphair, Allied Blower, Markhot Varivane, Loren Cook, BAC, Evapco, Marley, Hoffman, Spencer, Baldor, Reliance, Trane, Carrier, Eng.Air, Haakon, WEG, Leeson, GEC, GE, Emerson, Westinghouse, Toshiba, Siemens, US Electric, Delhi, PennBarry, Armstrong, Westcan, Bell & Gossett, and most types of rotating, diesel engines & reciprocating machinery.

## What do we sell, supply, install & service?

- WEG Electric Motors.
- Canada Support - AZIMA/DLI a FLUKE Reliability Company - Engineered Vibration Solutions & Client Training
- COOLBLUE - Inductive Absorbers & Chokes = VFD any motor shaft current bearing damage protection
- DRIVE SYSTEM PARTS: Fans, Bearings, Sheaves, Couplings, Belts, Shafts, Misc
- VIBRATION CONTROL, Isolation & thrust spring mounts, monitoring, trending, alarm/trip switch 24/7 machine protection
- EASY LASER - Portable Laser Alignment tools for all requirements
- CTM - Cooling Tower (all makes) Parts, Inspections & Repair Services

The machinery under our professional health care program = **VIBES-GUARD Pdm Program**<sup>®</sup> are treated as if our own. We use proven technologies and methodologies along with our multi-technical and electro-mechanical (VIV, ASD, VPM, CPM, VFD, EIBD, EDM, Shaft Currents, etc.) training, skills, and experiences for total overall analysis and evaluations. When the total analyzed facts about a machine, motor or engine are known we formulate an accurate condition report and recommend the best possible solutions. We work with clients to organize necessary actions in order of urgency or budgets.

## Where do we work? (Commercial Towers, Infrastructure Facilities, Industrial Plants, Lumber Processing & Marine Ports, etc.)

Our service area is mainly BC Lower Mainland and Vancouver Island. If requested we can service other areas.

## Who have we worked with?

VIBES Corp service capabilities have been used and accepted by high-ranking officials in:

- |                                |  |                                   |                            |
|--------------------------------|--|-----------------------------------|----------------------------|
| • other service companies      | • power plants and dams                | • transportation and construction | • saw mills                |
| • manufacturing and processing | • sewage and water treatment plants    | • commercial towers               | • pulp and paper           |
| • engineering firms            | • government infrastructure facilities | • agricultural                    | • research and development |
| • universities                 | • oil and gas                          | • mining                          | • machining / fabrication  |
| • colleges                     | • biogas energy systems                | • ski hills                       | • chemical plants          |
| • hospitals                    |  | • marine-terminals & ships        | • restaurants              |
| • cold storage                 |  | • asphalt and cement              | • skytrain tunnels         |

**VIBES Corp accepts: EFT, VISA, Mastercard, Discovery, Debit & SWIFT**



**We take due diligence to the highest level on all projects regardless of size or budget.**

## **Learn About Articles**

You can download educational articles from our home page at [www.vibescorp.ca](http://www.vibescorp.ca). Here are five:

- 1) Learn About Vibration Volume 1: Basic Understanding Of Machinery Vibration.
- 2) Learn About Vibration Volume 2: Advanced Vibration Analysis.
- 3) Learn About Electrically Induced Bearing Damage & Shaft Currents.
- 4) Failure Prevention Of Variable Pitch in Motion Axial Fans and Controllable Pitch In Motion Axial Fans.
- 5) Learn About Agricultural Machinery Vibration Solutions.

The photos below show typical projects that we have completed.

Fig 1. The failure was due to defective bearing.

Fig 2. The stainless steel guard helps prevent moisture contamination in cooling tower fan bearings (a very common problem).

Fig 3. A new fan was installed due to a complete failure of the original.

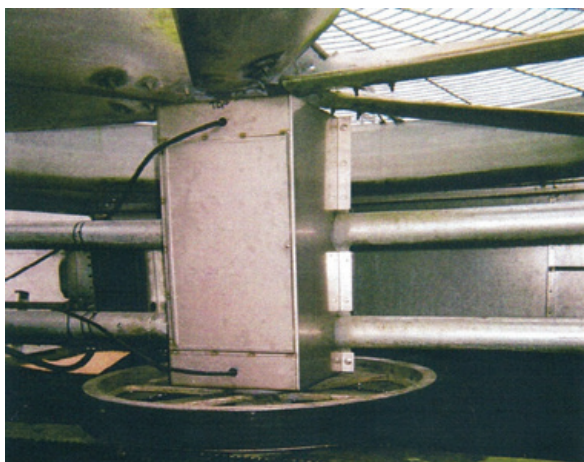
Fig 4. Shows a 200HP motor and fan repair/replacement.



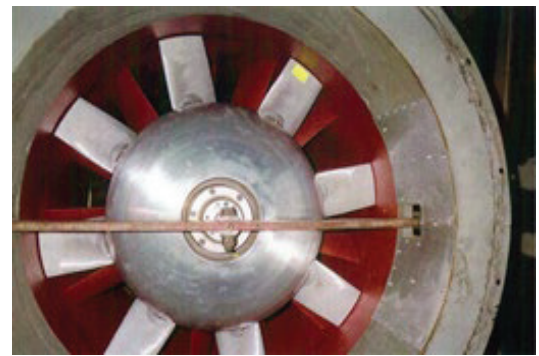
*Fig. 1*

**Solution to Fig. 1** Replaced both Fan Bearings & New Motor Required.

**Solution to Fig. 2** The Guard has prolonged the Life Span of the Fan Bearings from 3 years to over 14 years.



*Fig. 2*



*Fig. 3*

**Solution to Fig. 3** Installed Brand New Controllable Pitch Fan & Repaired Motor.

**Solution to Fig. 4** Replaced the Old Motor based on 20 years of running time and Completed Variable Pitch in Motion Fan Maintenance.



*Fig. 4*



For more information & quote please visit our website [www.vibescorp.ca](http://www.vibescorp.ca)

**WEG  
Low Voltage  
Motors**



**WEG  
Generators**

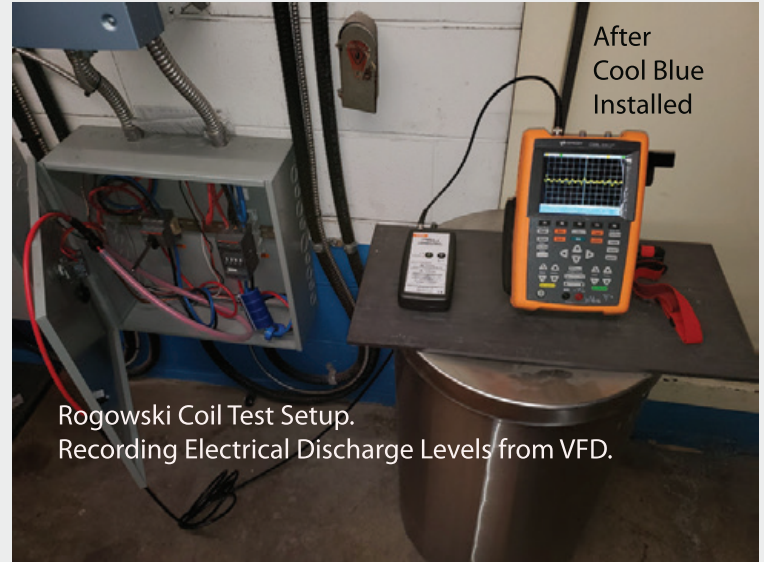
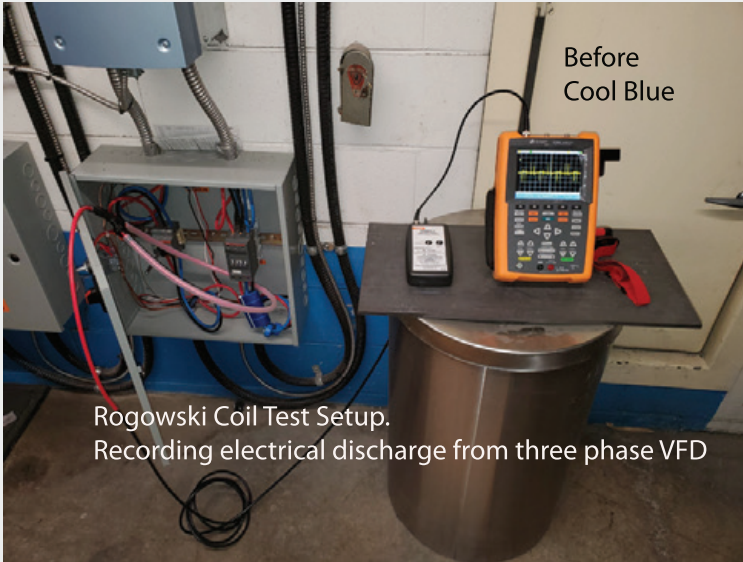


**WEG Larger  
Electric Motors  
and Machines**



**CoolBLUE® Inductive Absorbers**

Absorb the energy caused by the VFD'S at the source...before getting the mottor.



Elimination of Shaft Currents that were causing consistent motor bearing failures at this site.





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## Projects completed at these locations







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## Projects completed at these locations



New Cooling Tower  
40 HP motor installed

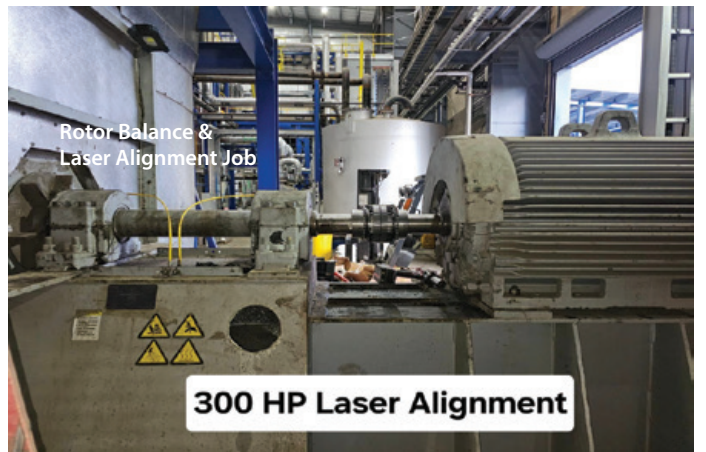
Custom  
Repairs



Cooling Tower  
emergency motor install



Custom Repair on Cooling Tower



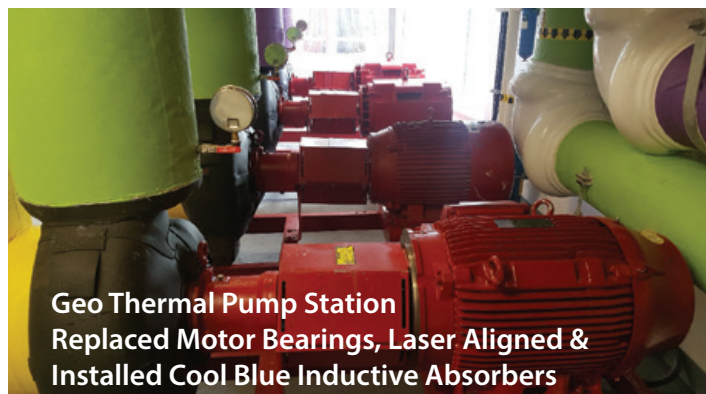
Rotor Balance &  
Laser Alignment Job

300 HP Laser Alignment



We go to any heights for our clients

CN Train  
Tunnel  
Jet Fan  
Balancing



Geo Thermal Pump Station  
Replaced Motor Bearings, Laser Aligned &  
Installed Cool Blue Inductive Absorbers





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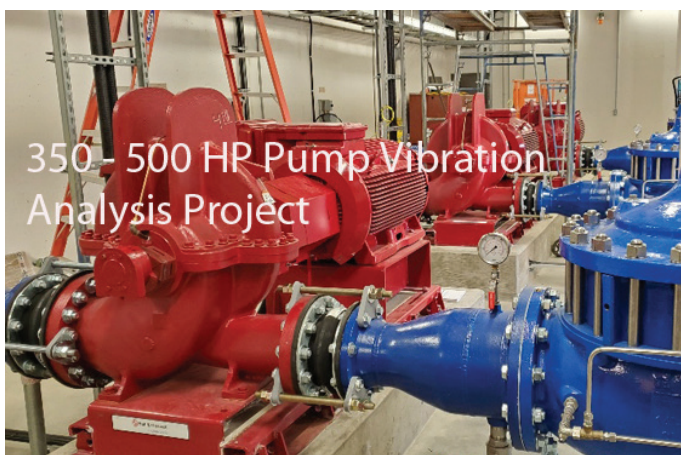
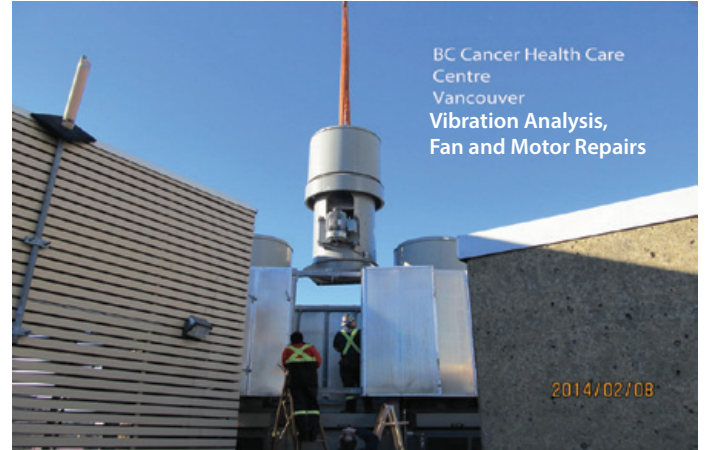
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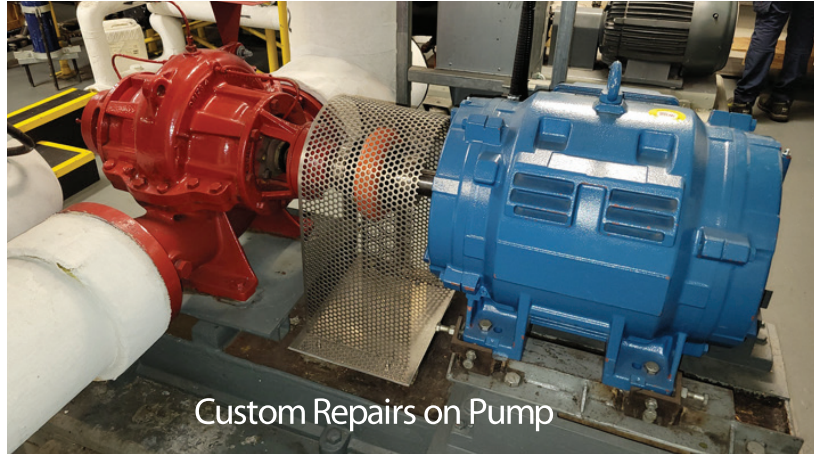
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## Projects completed at these locations



400 HP Motor & Compressor  
Food Processing Plant  
Vancouver  
Vibration Analysis and  
Laser Alignment

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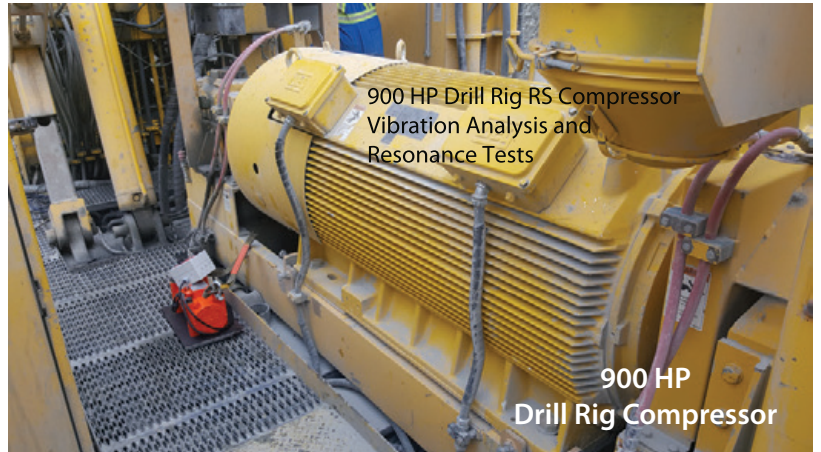
Custom Repairs on Pump



Vibration Analysis

Pleasure  
Cruise  
Ship  
Engines  
Vancouver

2014/10/17



900 HP Drill Rig RS Compressor  
Vibration Analysis and  
Resonance Tests

900 HP  
Drill Rig Compressor



100 HP  
Woods Fan-Variable Pitch in Motion Services



60 HP  
Joy Fan-Controllable Pitch in Motion Services





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# Projects completed at these locations



Customized motor plates and slide base installation



EF G 04 New Impeller

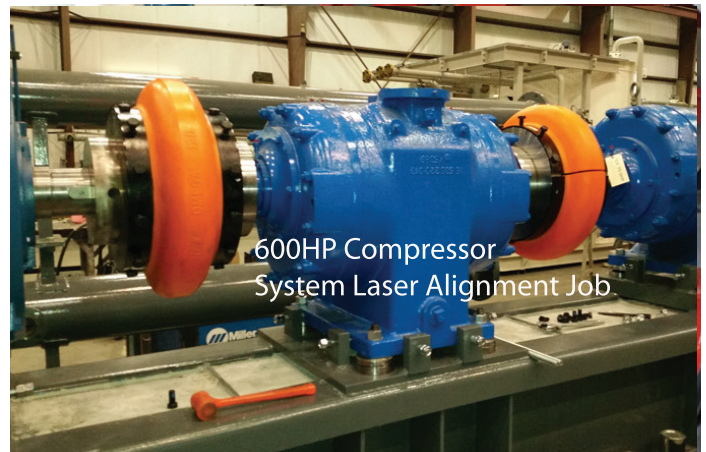


Sea Water Pumps & Motors Retrofit

Fluxdrive Magnetic ASD Conversions on 16 Exhibition Hall Fans

Vancouver Convention Centre West

2014/08/07



600HP Compressor System Laser Alignment Job



350 HP Gantry Crane Motor & Gearbox Vibration Analysis



Sky Train Tunnel Fan Vibration & Balance Job.





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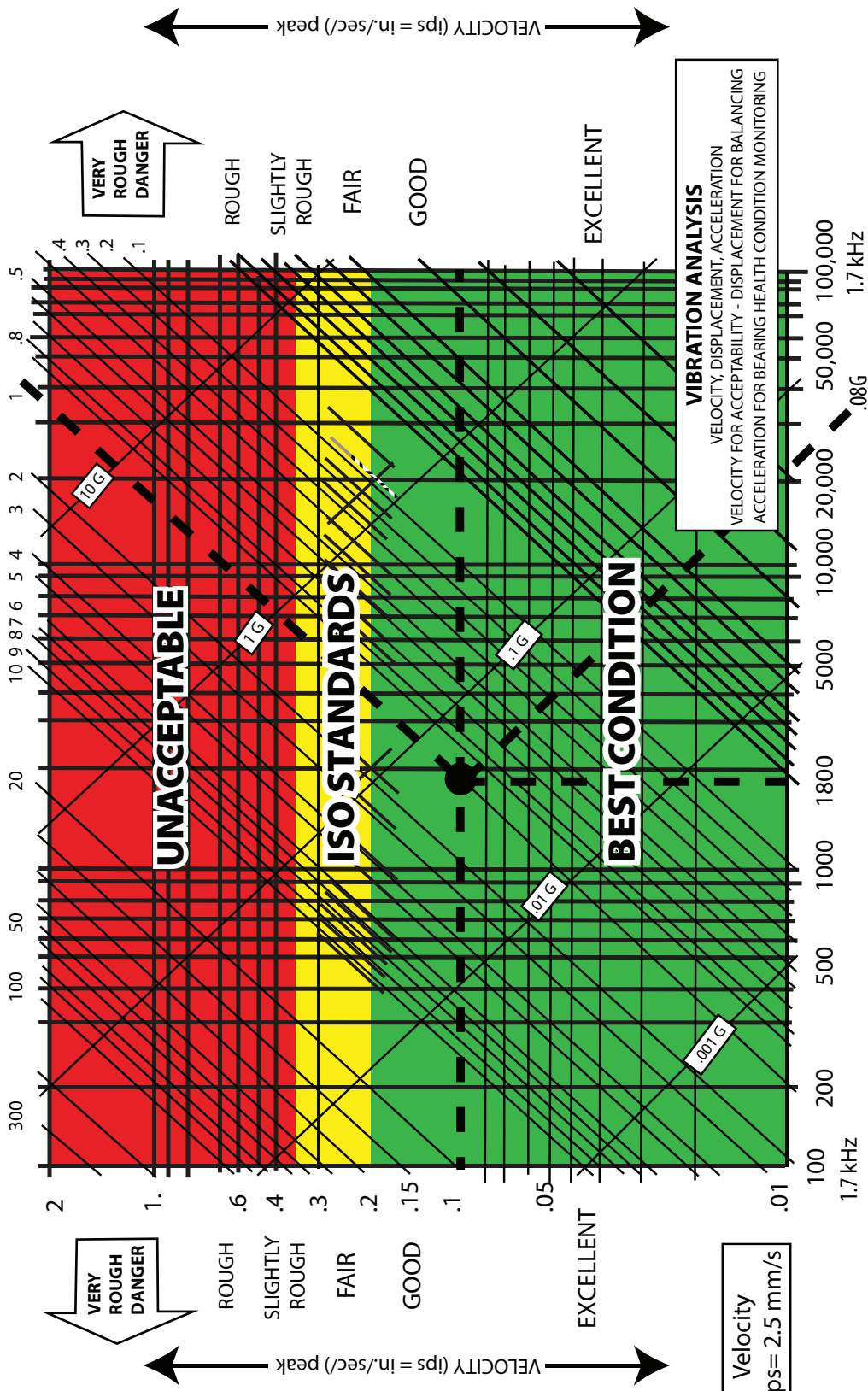
**VIBRATION SEVERITY GRAPH FOR GENERAL ROTATING MACHINERY**

This Chart is based on ISO 10816-3

AMPLITUDE

Displacement  
1 mil = 25 microns

DISPLACEMENT Mils (x.001") peak to peak



**VIBRATION ANALYSIS**  
VELOCITY, DISPLACEMENT, ACCELERATION  
VELOCITY FOR ACCEPTABILITY - DISPLACEMENT FOR BALANCING  
ACCELERATION FOR BEARING HEALTH CONDITION MONITORING

**REFERENCE POINT ●** = 1800 rpm machine/ motor excellent condition

ACCELERATION or FORCE OF GRAVITY "G" (ips<sup>2</sup> = in./sec<sup>2</sup> for simplicity)  
ACTUAL G = 32 fps/s = 9.8 m/s/s

Note: the yellow area on chart represents issues that often can't be resolved due to time and cost.





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## Vibration Sources Identification Guide

CAUSE	FREQUENCY	AMPLITUDE	PHASE	COMMENTS
Unbalance	1 x RPM	Highest in Radial Direction- Proportional to Unbalance	Single Mark (Steady)	A common cause of vibration.
Defective Anti-Friction Bearings	Very High-Often From 10 to 100 x RPM	Use Velocity	Unstable	Velocity readings are highest at defective bearing. As failure approaches, the amplitude of the velocity signal will increase and its frequency will decrease. Cage frequency is approximately 0.6 x RPM x number elements.
Misalignment of Coupling or Bearing	1, 2 or 3 x RPM	High Axial Axial 50% or more of Radial	Often 2, Sometimes 1 or 3	Use phase analysis to determine relative movement of machine or bearings. Use a dial indicator if possible. Often diagnosed as a bent shaft. Can be caused by misalignment of V belts.
Sleeve Bearing	1 x RPM	Not Large Use Displacement Mode Up to 6000 CPM	Single Reference Mark	May appear to be unbalanced. Shaft and bearing amplitude should be taken. If shaft vibration is larger than the bearing, vibration amplitude indicates clearance.
Bent Shaft	1 or 2 x RPM	High Axial	1 or 2	Similar to misalignment. Use phase analysis.
Defective Gears	High No. Gear Teeth x RPM	Radial	Unsteady	Use velocity measurement. Often affected by misalignment. Generally accompanied by side band frequency. Pitting, scuffing and fractures are often caused by torsional vibrations. Frequency sometimes as high as 1 million CPM or more.
Mechanical Looseness	2 x RPM Sometimes 1 x RPM	Proportional to Looseness	1 or 2	Check movement of mounting bolts in relation to the machine base. Difference between base and machine indicates amount of looseness.
Defective Drive Belts	1 or 2 x Belt Speed	Erratic	Use Strobe to Freeze Belt in OSC Mode	Calculate the belt RPM using: $\text{Belt RPM} = \frac{\text{Pulley Diameter} \times 3.141}{\text{Belt Length}} \times \text{Pulley RPM}$ Look for cracks, hard spots, soft spots or lumps. Loose belt. Changes with belt tension.
Electrical	1 or 2 x Line Frequency (3600 or 7200 CPM for 60Hz Power) May appear at 1 x RPM	Usually Low	1 or 2 Marks Sometimes Slipping	Looks like mechanical unbalance until power is removed. Then drops dramatically.
Oil Whip	45 - 55% RPM	Radial Unsteady	Unstable	Caused by excessive clearance in sleeve bearings or by underloaded bearings. Will change with viscosity of oil (temperature).
Hydraulic-Aerodynamic	No. Blades or Vanes x RPM	Erratic	Unsteady	May excite resonance problems.
Beat Frequency	Near 1 x RPM	Variable at Beat Rate	Rotates at Beat Frequency	Caused by two machines, mounted on same base, running at close to same RPM.
Resonance	Specific Critical Speeds	High	Single Reference Mark	Phase will shift 180° going through resonance (90° at resonance). Amplitude will peak at resonance. Resonance in frame can be removed by changing rotor operating speed or by changing the stiffness of the structure.

There are several additional detailed articles that identify more complicated vibration sources at [www.vibescorp.ca](http://www.vibescorp.ca) titled:

- 1) LEARN ABOUT VIBRATION VOLUME 1: BASIC UNDERSTANDING OF MACHINERY VIBRATION
- 2) LEARN ABOUT VIBRATION VOLUME 2: ADVANCED VIBRATION ANALYSIS
- 3) LEARN ABOUT ELECTRICALLY INDUCED BEARING DAMAGE & SHAFT CURRENTS
- 4) FAILURE PREVENTION OF VARIABLE AND CONTROLLABLE PITCH IN MOTION AXIAL FANS
- 5) LEARN ABOUT AGRICULTURAL MACHINERY VIBRATION SOLUTIONS



