Vibration Analysis and Diagnostic Software for Rotating Machinery

VibAssist™

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Monitoring the running condition of plant machinery helps to get an indication of failures that could develop, causing plant shutdowns.

For over 75 years, Forbes Marshall has provided innovative products and services to help industries improve their process and energy efficiency. Through our solutions we enable plants to run safe operations and maintain an uptime of >95%.

VibAssist™ is a machinery analysis and diagnostic software specially designed for rotating machinery like turbines, compressors, fans, blowers, motors and pumps. It precisely keeps track of and quickly gives feedback on the condition of rotating machinery, which are the key production assets of plants.

The software detects abnormal symptoms from vibration characteristics or subtle changes in vibration. This helps proactive action to be taken, reducing risks of unplanned production shutdown, optimizing plant operation.

Condition Monitoring with VibAssist Analysis and Diagnostic Software

Connectivity
- High speed data acquisition
- Machine / Maintenance History
- Diagnose the machine status anytime, anywhere

Representation
- Data management & display
- Web view
- Report Management for decision making
- SMS, Emails / Mobile app
- Forecasting and optimization of plant operation

Data Analytics
- Site configuration
- User settings (custom)
- Alarm settings
- Data back up & security
- Remote monitoring

The VibAssist™ diagnosis software gives an insight into the health of the rotating machinery. Once the condition is known, the user can have the faults diagnosed. The possible reasons for failure or malfunction are displayed, in order of severity, which can be further evaluated and corrective action planned.

Possible causes of malfunction could include unbalance, permanent bow, misalignment, rotor crack, oil whirl, oil whip, gear tooth failure, looseness and bearing damage.

Benefits

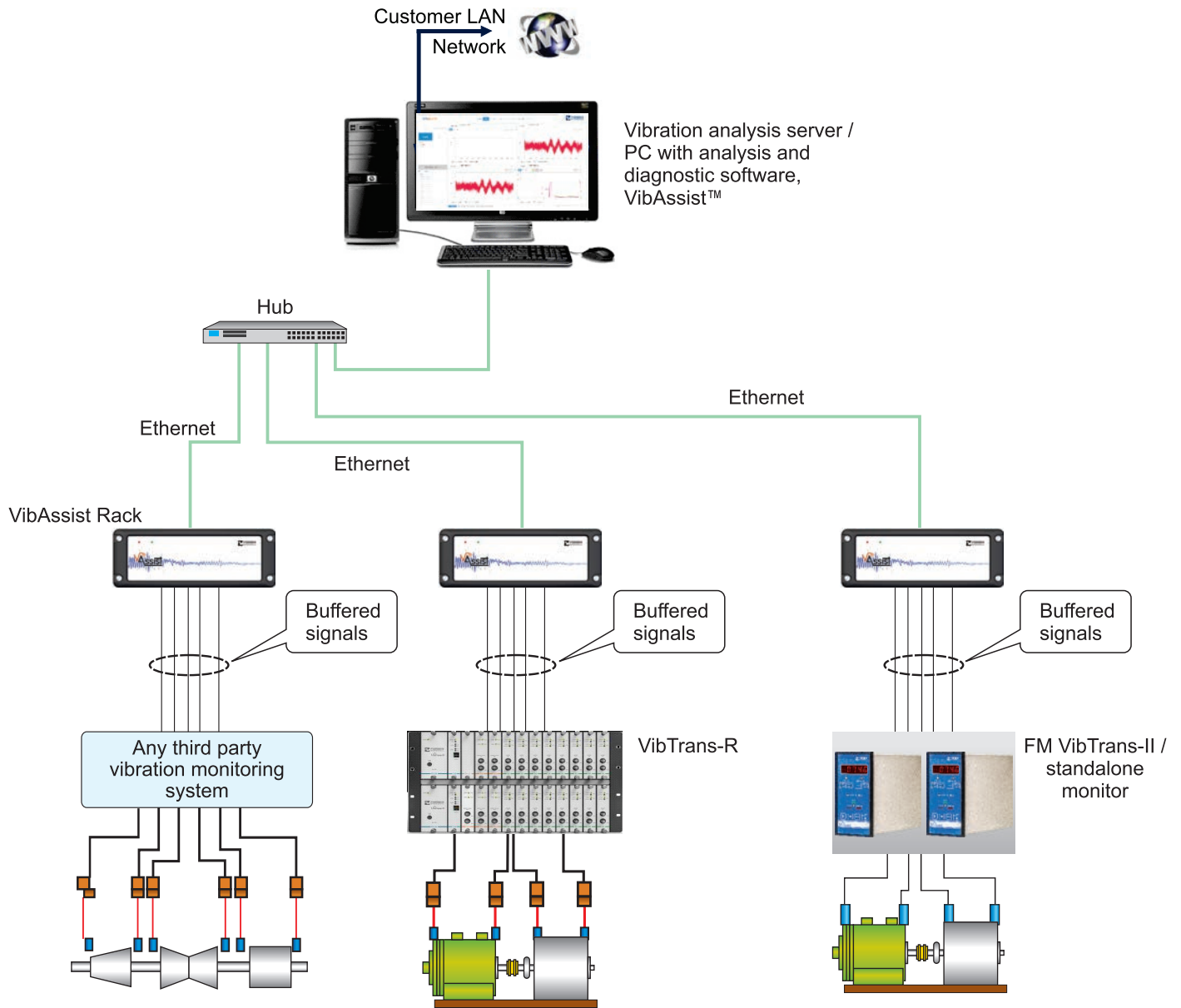|			
Reduce downtime with early detection		Optimise production schedule	
Reliable and effective maintenance of plant		Allow empirical maintenance knowledge to be passed on to plant professionals	
Reduce total maintenance cost		Minimized safety and environmental risks	

Typical Layout

- Customer LAN Network
- Vibration analysis server / PC with analysis and diagnostic software, VibAssist™
- Hub
- Ethernet
- Ethernet
- Ethernet
- Ethernet
- VibAssist Rack
- Buffered signals
- Buffered signals
- Buffered signals
- Any third party vibration monitoring system
- VibTrans-R
- FM VibTrans-II / standalone monitor

Features

High speed data acquisition during startup/shutdown and steady state

Wide range of analysis and display function (machine trains, trend graph, spectrum, shaft center line position, bode/polar plot, orbit display, vector plot, alarm status, etc.)

Browser based GUI with web connectivity

Real time display of various parameters

High resolution spectrum analysis

Rule based diagnostics

Database connectivity with MSSQL and PostgreSQL

Ethernet connectivity via MODBUS for process data

Mimic train of machinery system with online values

Alarm module with indications of any abnormal condition and instantaneous data saving for future analysis

Auto and manual back-up of data which can be viewed later at any time

Export vibration data including waveform and spectrum, in CSV format if user requires further analysis

Customisable reports

Analysis Processing Unit (APU)

Accepts inputs from any type of sensor – displacement / velocity / acceleration / process transmitter (4-20mA input)

Number of phase marker modules / rack
PM module – 04 pulse + 04 mA input channels

Maximum vibration/process modules / rack
DAV modules – 04 vibration + 02 mA channels each

24 channels vibration + 08(pulse + mA) phase marker
+ 12 nos. of 4-20 mA scalable up to 900 channels by multiple racks
(max. 25 racks)

Number of spectrum lines - 1600

Maximum sampling rate 51.2 Ks/second

Waveform storage interval 0/30/60 minutes
(user selectable)

Communication – TCP/Ethernet – 1 No

Display Graph Examples

Machine train diagram

Current value summary

Trend graph : Overall, GAP, 0.5X amp./phase,
1X amp./phase, 2X amp./phase,Not-1X amp., and RPM
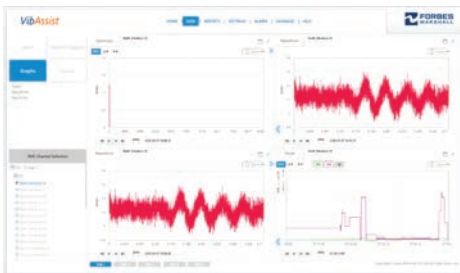
Bar graph : Overall, 0.5X, 1X, 2X, Not-1X

Waveform/spectrum

Lissajous (Orbit), Lissajous and Waveform, Vector plot

Shaft centerline (SC)

S-V graph, X-Y graph. Transient graphs (bode, trend, long term trend, waveform/spectrum, SC, polar)

Trend during alarm, system history, alarm history
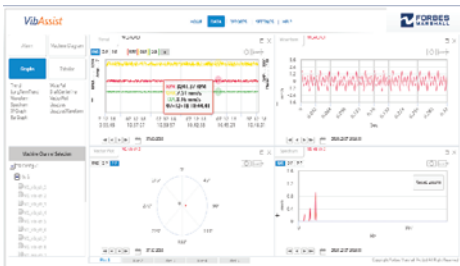
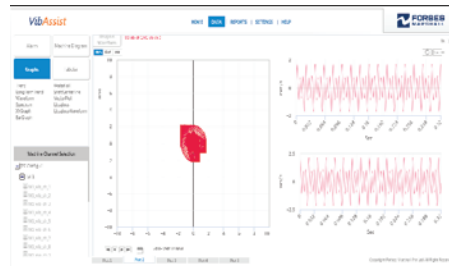## Examples of Data Displays

Spectrum

Dashboard

Trend, Shaft Centerline

Trend, Waveform,
Spectrum and Vector Plot

Lissajous and Waveform

Waterfall

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Forbes Marshall Steam Systems

Forbes Marshall Pvt. Ltd.
Opp 106th Milestone, CTS No. 2220, Mumbai-Pune Road,
Kasarwadi, Pune- 411034 INDIA
Tel: +91(0)20-68138555   Fax: +91(0)20-68138402

CIN No.: U28996PN1985PTC037806

Email : mvyas@forbesmarshall.com, ccmidc@forbesmarshall.com   www.forbesmarshall.com