

# Fan & pump analysis



## The secret to a long, productive life

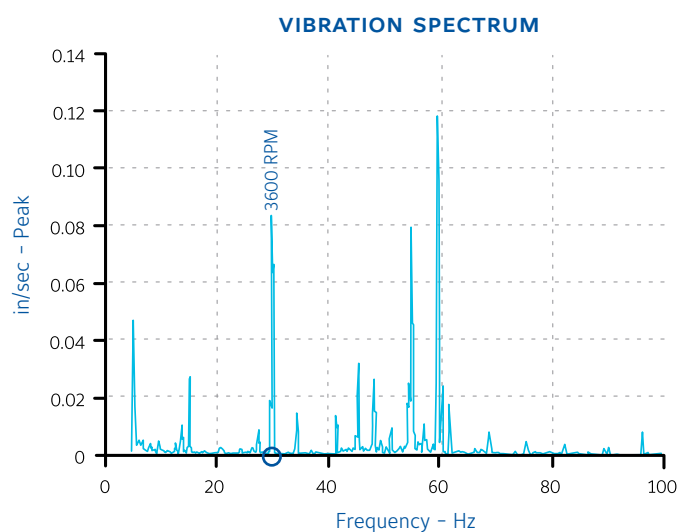
Fans and pumps are vital to the performance of critical production areas such as clean rooms, switching rooms, research labs, telecommunications facilities and data centers. Equipment failure in these areas can be catastrophic. Fan and Pump Vibration Analysis from Johnson Controls prevents and solves problems to protect you from equipment failures.

## Prevent and solve problems before they cause failures

Fan and Pump Vibration Analysis identifies the root causes of equipment problems and helps prevent secondary damage to rotors, shafts and blades. Performing repairs before secondary damage occurs eliminates emergency repairs. Vibration analysis also ensures that repairs have been made correctly when a post repair analysis is performed.

Vibration analysis identifies misalignment, imbalance and worn bearings, as well as belt, sheave, structural and electrical problems. As much as 80% of bearing failures are due to balance and alignment problems, which force you to replace bearings more often than necessary, costing you money and downtime.

Combined with proper corrective services, Fan and Pump Vibration Analysis can reduce maintenance costs and unscheduled downtime, improve energy efficiency and extend equipment life.



## Fan & pump services

### Equipment

Johnson Controls uses the latest technology to perform predictive services on equipment. This includes vibration data collectors, spectrum analyzers, balancing and laser alignment tools. This assures quick identification and corrective action to repair these problems.

### Data collection

Vibration data is collected at various measurement points on the machine. This data is used to assess the condition of bearings, sheaves, belts and rotors. It also detects the presence of imbalance or misalignment.

### Analysis and diagnoses

We collect spectral data along with other data envelope techniques that allow for early identification of bearing problems. This data is analyzed by trained and certified technicians. Johnson Controls technicians use ISO standards and specialized diagnostic rules developed by Johnson Controls vibration experts. This combined with the knowledge of our repair technicians, helps us solve problems faster and solve problems others might struggle with.

### Solutions

Using our data collection and analysis expertise, Johnson Controls repair technicians have the unique ability to arrive at solutions quickly. Fans are single or dual plane balanced. Pumps are aligned using laser alignment tools.

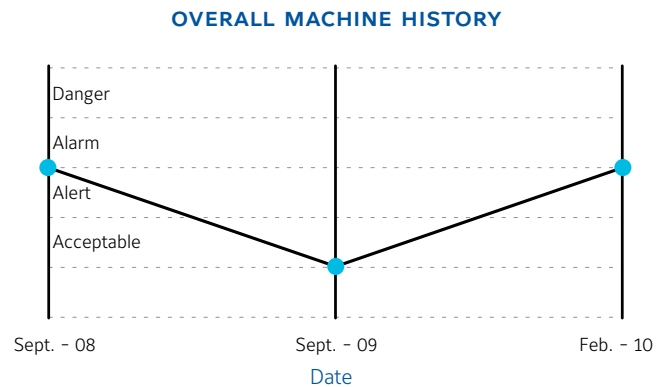
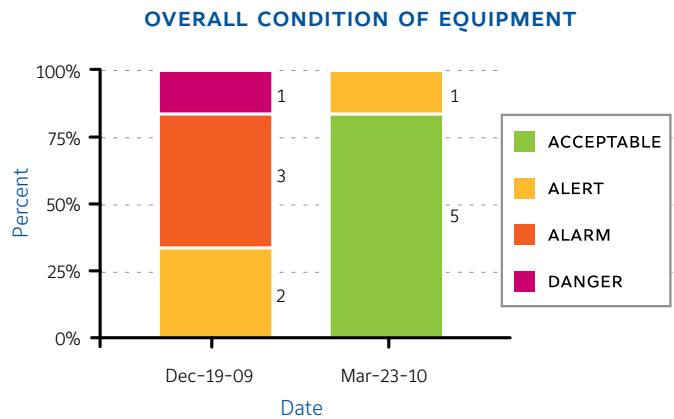
### Verification

Repairs are followed up with another vibration analysis to ensure root problems have been identified and completed. This ensures we provide the highest level of quality corrective services. Data is stored indefinitely to use as a baseline for future measurements and trending.

## Reports

Our reports not only indicate when machines need repairs, they also trend all the equipment conditions to indicate that improvements are made over time. This confirms our program is having a positive impact on improving the overall condition of your plant. For machines that are experiencing problems, we provide a detailed assessment of the problems that were found and repair recommendations to fix the problems.

- When to repair
- Cost estimate
- Repair confirmation
- What to do
- Savings estimate
- Severity of problems found



## Enterprise-wide service consistency

Johnson Controls has more than 150 service offices located across North America. As a result, we can deliver consistent service expertise and technologies to support your HVAC services needs, no matter where your facilities are located.