

## SERVICE CALLS

## MSC Vibration and Bearing Testing for Preventive Measures



A medical clinic was experiencing humidification issues with low to no humidity. A check of the ceiling revealed an alligator jumper placed across the static pressure switch, and further investigation found the CFM for the trim humidifier was turned down from a design CFM of 700 to 350. The original humidifier, now too large, was tripping the high limit. MSC corrected the problem by installing a correctly-sized trim humidifier.



A fairly new facility called MSC with complaints about a chilled water control valve and possible coil flow issues. A visual check of chilled water valve movement showed that excess insulation was interfering with operation of the control valve positioner. Our technician also found that multiple discharge air temperature sensors had been recalibrated incorrectly and were off by 2F-8F. Insulation repairs and installation of new sensors corrected the problems.

MSC offers vibration and bearing condition trending that can be performed in addition to conventional quarterly or biannual preventive maintenance.

Vibration is a common and potentially-damaging phenomenon that can occur in rotating HVAC equipment such as bearings, fans, motors, compressors, and pumps. MSC is expert in vibration testing, with certified vibration analysis specialists on staff and an arsenal of state-of-the-art vibration analysis tools.

### BEARINGS

Bearings in electric motors and other equipment commonly found in HVAC equipment typically have a service life of about 50,000 hours. Many factors contribute to bearing life span: vibration, greasing, alignment, loading, and speed, just to name a few. Until recently, the only indication of bearing and/or lubrication deficiency was loud operational noise; all too often, bearing issues only become identifiable post-failure.



Now, with new technological breakthroughs, vibration recording equipment is capable of accurately detecting extremely miniscule movements, down to vibrations caused by a ball surface contacting a spall crater less than one-tenth the depth of a human hair. This allows bearing issues to be identified and addressed early on to head off failure before it can occur.

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### EQUIPMENT VIBRATION

Equipment vibration can indicate bearing issues, misalignment, and unbalance, as well as other potential issues, but most vibration frequencies are undetectable to the human ear. Using specialized instruments, MSC is able to record and analyze equipment vibrations, translating them into components that help identify root cause. This allows for immediate repair, or further trending may be necessary to determine severity of the issue and potential for deterioration over time.

### OUR ANALYSIS

MSC first documents site conditions, mountings, and other equipment history, then collects various industry standard readings utilizing specialized instrumentation. After each data collection cycle, readings are analyzed using...

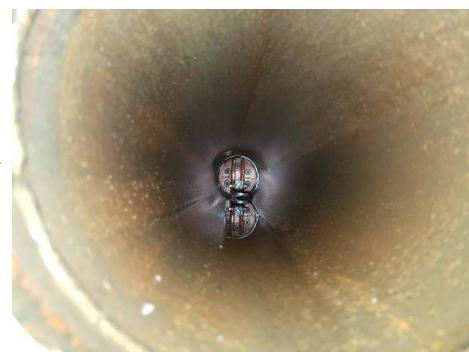
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## DATA CENTER EMERGENCY COOLING REPAIR



A data center placed an emergency call to MSC when one of two 400-ton chillers operating in parallel developed a severe leak at a flexible connector. Our technician assessed the situation and realized that what should have been a fairly straightforward repair would be more complicated than originally thought. The problem: the original installer of the chiller system failed to install isolation valves for the two units. This meant there was no way to isolate and shut down one chiller for repairs without shutting down the other – not an option for this mission critical operation – but MSC was able to quickly devise a solution.

The first step was to perform a line stop operation to isolate the leaking chiller while the other unit was kept online. Next, several sections of piping and Van-Stone flanges were



replaced in addition to the leaking flex connector to fix the problem and safeguard against further leaking issues. Isolation valves were added as well as new taps in the event connection of an emergency chiller would be necessary in the future.

In the end, the new client was extremely pleased that repairs were done swiftly and successfully while keeping the data center operating at normal capacity.

## MSC Vibration & Bearing Testing Service

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... published vibration research and the technical experience of our vibration analysis team. Findings are presented to the client in an accurate, concise report illustrating current equipment status, observed trends, and recommended solutions.

### OUR TRAINING

MSC technicians are trained in vibration analysis by an independent certification institute unaffiliated with any specific meter manufacturers, thus ensuring that technical learning is focused on the study of analyzing vibration data, not the physical operation of a specific brand of instrument or device.

### OUR REPORTING

Every MSC vibration and bearing testing report provides customers with color-coded scale of severity, a detailed description of the issues found, and informed recommendations on how to proceed. Our goal is to educate our clients on the condition of their equipment and provide them with the accurate information necessary to avoid costly unplanned downtime.

### BENEFITS OF VIBRATION AND BEARING TESTING

- Flags and identifies potential issues
- Reduces unplanned service emergencies
- Allows for pre-planning of service or equipment replacement
- Most cost effective for critical applications
- Trending of vibration or bearing damage levels enable accurate predictions and budgeting for replacement

**msc**  
VIBRATION & BEARING TESTING

Contact MSC Technical Engineer Andy Heilmann at 973-884-5000 to find out how implementing these programs in your facility can help you avoid costly, unplanned downtime and implement a more proactive approach to equipment maintenance.



## David vs Goliath: MSC Advantages Over Big HVAC Conglomerates

By Pete McGrath



MSC never set out to be the biggest fish in the HVAC Service pond. Our goal from the beginning in 1976 was always to be the best. Large-scale HVAC conglomerates may have the advantage of multi-million-dollar marketing budgets and name recognition, but family-owned MSC outperforms them when it comes to our high-quality service technicians, personalized service, and overall capability in our field. What we lack in scale, we make up in expertise and customer satisfaction.

### Training

Heavy concentration on technical training gives MSC techs the advantage over competitors in diagnosing problems and finding solutions. In addition to our significant investment in outside training, MSC technicians participate in monthly in-house training workshops led by our owner. Technicians for large conglomerates, on the other hand, are rarely given training due to cost considerations and, in fact, have very limited team interaction.

### In-House Services

As an HVAC service subspecialist, MSC doesn't subcontract specialized services, unlike the big conglomerates. We perform our own air and water balancing, vibration

analysis, thermal imaging, VFD and motor diagnostics, commissioning and retro-commissioning, and many other services beyond the abilities of the typical large-conglomerate technician.

### Parts Quality

MSC has the freedom and flexibility to select best-quality replacement parts wherever possible. Big conglomerates bid out replacement parts to obtain lower pricing, constraining them to using inferior products purchased in bulk. Parts made of thinner metal, weaker plastic, and cheaply-made electronics don't last as long and cost the customer just as much or more than MSC's higher-quality selections.

### Business Model

Large-scale HVAC conglomerates follow profit-focused business models that limit flexibility when it comes to customer service. Out-of-the-ordinary problems and callbacks don't figure into their narrow, predetermined profit margins, and most have a strict policy of not responding to emergency service calls if a client is even slightly behind in payments, no matter how dire the situation. MSC, on the other hand, values customer relationships, and we handle every call on a personal, case-by-case basis. It is our policy to always act in our clients' best interest, each and every day.

