

SERVICE CALLS

Steam Condensate Flooding - Managing steam condensate is particularly important when it comes to trim humidifiers. When designing and installing condensate piping, it must be determined whether there will be any pressure to lift the condensate or it will be necessary to drain by gravity. Condensate flooding and water damage are common occurrence when the appropriate piping requirements are not met.



MSC installed data loggers to test temperature sensor accuracy in response to a high temp complaint. The sensors were found to be off by 2°-4° and required calibration. Sensors require annual calibration, but maintenance personnel had allowed 19 months to elapse. MSC also replaced a failed RH sensor with a factory-calibrated device, as well as several neglected HEPA filters and pre-filters, illustrating the importance of proper PM.



HEAT RECOVERY WHEEL TECHNOLOGY

A heat recovery wheel is a rotating heat exchanger that transfers sensible heat between two air streams with different temperatures. An energy recovery wheel, or enthalpy wheel, is similar, transferring both heat and moisture. These wheels are highly effective, economical, and environmentally friendly.

The core of a heat recovery wheel is a matrix of material, usually aluminum, in a corrugated configuration that forms thousands of small flow channels through the wheel. One half of the wheel housing is situated in the supply air stream of an air handling unit while the other half is in the exhaust. As the wheel turns within its housing, the matrix picks up heat from the exhaust, then rotates to the cooler supply air stream, where heat transfer takes place. This principle also works in reverse, exchanging heat from supply to exhaust. Heat recovery wheels and energy recovery wheels require routine inspection and maintenance to ensure maximum efficiency.



When MSC was called in by a client to address temperature complaints, technicians quickly zeroed in on several 11 year-old heat recovery wheels. This led to analyses of operating conditions, bearings, seals, casing drives and sensors to identify specific problems. One of the issues uncovered was the bypass of air through seals between supply and exhaust. *Continued On Page 2*

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HUMIDIFICATION Vital for Health, Comfort & Energy Costs

Winter is here, and having the proper relative humidity (RH) levels at home, school and work environments is very important during these cold, dry months. A properly sized, well-maintained humidification provides numerous health, productivity, and economical benefits.

Relative humidity, the amount of moisture within the air at a given temperature, is a key component of environmental comfort. An RH level of 35% to 40% is ideal for occupant comfort and static control, but certain environments, such as healthcare facilities and certain types of manufacturing, may require higher RH levels up to 55%.

Properly humidified air is healthier and more comfortable than dry air. Heating systems rob indoor air of humidity, causing mucous membranes in the skin, throat, nasal passages, and sinuses to dry out and providing the ideal breeding ground for viruses and bacterial infections. Humidification eases the discomfort from dryness and significantly decreases occupant susceptibility to infection and illness. Also, moist air allows oxygen to be more easily absorbed in our blood system, reducing the fatigue, headaches and lethargy that decrease productivity.

Because dry air feels colder, maintaining proper RH levels helps reduce heating costs. When air is at the proper relative humidity, the rate of moisture evaporation on the skin is reduced, and we feel warmer and more comfortable. Humidified air that is 68 degrees feels more like a comfortable 71, even on the coldest days, enabling you to lower the thermostat and save energy. Other benefits of humidification include: dissipation of static electricity, which causes shocks, interference with computers and office equipment, and problems with static-prone materials; reduction of dust levels; and the prevention of drying and cracking of wood furniture, fixtures and flooring.

There are various types of humidification systems available for different environments and applications. Most are derived from either steam (boiler steam, clean steam, canister steam, etc.) or cold water (centrifugal, ultrasonic, atomized, fogging, etc.). Each has unique advantages, drawbacks, and maintenance considerations, and they vary in energy efficiency. MSC can provide expert selection guidance, installation, preventive maintenance, troubleshooting and repairs for all types of humidification systems. Please contact us at (973) 884-5000 for more information or to assist you with any of your indoor humidification needs.



HEAT RECOVERY WHEEL TECHNOLOGY *Continued From Page 1*

Referring to original design and manufacturer guidelines and information, MSC replaced all seals around and across the wheels. To address a rise in differential pressure across the wheel, which lowered CFM and heat transfer potential, the wheel matrix was HEPA vacuumed and blown out with clean compressed air to remove accumulated dust and particulates that had been impeding air flow. Purge damper settings were adjusted to proper DP and original factory settings. Remaining wheel assembly components, including wheel media, rim, bearings, casing, drives, and sensors, were inspected and found to be in good condition and free of corrosion. Finally, MSC measured upstream and downstream temperatures, performed a traverse of the supply and exhaust, checked and recalibrated DP sensors, and verified proper RPM to confirm that issues had been corrected and the wheel was operating to the original heat transfer delta T.



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973-884-5000

LYOPHILIZER Maintenance, Diagnostics and Service

A lyophilizer, or freeze dryer, is among the most essential pieces of equipment in a pharmaceutical plant. These complex machines include a refrigeration system among their most important components. As with most process cooling, whether the lyophilizer is a small lab unit or a truck-sized production dryer, preventive maintenance and testing is necessary to ensure high product quality standards and to prevent costly equipment failure.

With many types of lyophilizers available – reciprocating or screw compressors, DX coils or heat exchanger with low-temperature glycol, etc. – service contractor knowledge and experience is a necessity for effective lyophilizer maintenance, diagnostics and repair. A contractor must understand the lyophilizer process and be aware of inherent problems and failure points, particularly in screw-type machines. MSC has built a solid reputation as a leading expert in lyophilizer maintenance, diagnostics and service.

Many lyophilizers have a built-in function testing system that should be run annually at minimum, and as often as monthly depending on the facility's standard operating procedures (SOP). The function test checks refrigeration and mechanical components including compressors, refrigerant charge, valves, heat transfer systems, etc. Common lyophilizer issues include refrigerant leaks, electrical relay failures, and valve failures.

For expert lyophilizer service and maintenance, please contact MSC / Mechanical Service Corp. at 973-884-5000.



TAKE 5: Preventing Winter Freeze-Ups

With Arctic air bringing record low temperatures across much of the U.S., here are five ways you can help prevent freeze-ups:

- Check cooling tower sump heaters for proper operation
- Make sure pipe heat tracing is monitored and alarmed
- Install temporary heaters in building cold spots and freeze-vulnerable areas
- Keep water circulating in closed loop systems and use freeze protection pumps
- Check glycol concentration levels, which can dilute or diminish over time

