ON-SITE R-SIDE® SERVICES

CHILLER DECONTAMINATION SERVICES

System Dehydration
Moisture Reduction
Chillers Damaged by Ruptured Tubes
Rust or Particulate Reduction
Excess Oil Reduction
Cross Contamination of Oils
Chemical Decontamination
Hermetic Motor Burnout
Lithium Bromide Recovery, Disposal, & Analysis
Glycol Recovery, Disposal, & Analysis

OTHER SERVICES

Refrigerant Recovery
SF6 Recovery
POE Conversions
Chiller Conversions
Refrigerant Chemistry Oil and Analysis Services

PRODUCTS

Refrigerant Sales
Refrigerant Buyback

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SYSTEM DEHYDRATION

ISSUE

Moisture has fully entered your system, requiring a dehydration. Our process can reduce the presence of residual contaminants, which can be left in the system when using traditional methods such as vacuum pumps and air-drying.

HUDSON SOLUTION

- Equipment and knowledge to cut weeks off the dehydration process
- Reduces chiller downtime
- Rapidly dehydrates air-cooled units
- Frees your technicians for other profitable work
- Reduce residual contaminants
- Minimizes the chance of rust or corrosion
- Salvages the maximum amount of refrigerant, saving on the cost of replacement refrigerant

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MOISTURE REDUCTION

ISSUE

Moisture reductions can be performed on wet systems that are not completely saturated with water. Depending on the current level of moisture, your refrigerant may require moisture reduction.

HUDSON SOLUTION

- On-site moisture reduction can be performed using our unique and proprietary ZugiBeast®
- Reduces chiller downtime
- Frees your technicians for other profitable work, thereby increasing your service revenues
- Salvages the maximum amount of refrigerant, saving on the cost of replacement refrigerant

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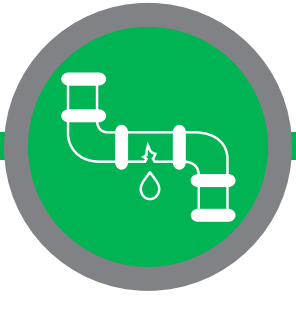
CHILLERS DAMAGED BY RUPTURED TUBES

ISSUE

Water can get into refrigerant from ruptured evaporator/condenser tubes, leaking tube sheets, tube leaks, or ice trapped in refrigeration circuits. The smallest amount can lead to expensive repairs. Even more costly is when moisture ingresses into compressors and motors.

HUDSON SOLUTION

- Decontaminate your refrigerant at benchmark speeds
- Minimizes expensive water damage to compressors and motors
- Reduces all water and other contaminants from the refrigerant
- Fast response and rapid evacuation of the system
- Salvages the maximum amount of refrigerant, saving on the cost of replacement refrigerant



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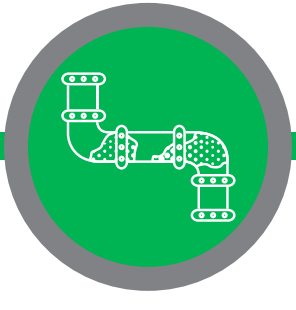
RUST OR PARTICULATE REDUCTION

ISSUE

With so many ways for moisture to enter a system, rust and related particulate contamination has always been a problem for chiller and refrigeration systems. Tubing with rust buildup can degrade chillers performance so much that it must be shut down.

HUDSON SOLUTION

- Reduces rust and other particulates from tube surfaces
- In some cases, may eliminate the time and expense of re-tubing
- Regains lost system capacity
- Restores heat transfer efficiency
- Depending on the severity of the issue we have a number of remedial solutions available



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EXCESS OIL REDUCTION

ISSUE

Over time, oil can build up in your chiller. This causes your chiller capacity to decline, degrading your energy efficiency. As more oil contaminates the refrigerant, the more efficiency is lost, and the more money is spent on energy. A decrease in capacity increases the risk of a potential breakdown.

HUDSON SOLUTION

- Restores lost chiller capacity and energy efficiency
- Minimizes or eliminates downtime
- Targets all refrigerant and system contaminants including acids, oil, moisture, and particulates

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CROSS CONTAMINATION OF OILS

ISSUE

Mixed oil can find its way into your chiller system. Cross-contaminated oils can cause a variety of issues that may range from decreased cooling performance and increased energy use, to significantly reducing the operating life of the equipment, and even equipment failures.

HUDSON SOLUTION

- Depending on the severity of the issue we have a number of remedial solutions available
- Restores lost chiller capacity and energy efficiency
- Minimizes or eliminates downtime

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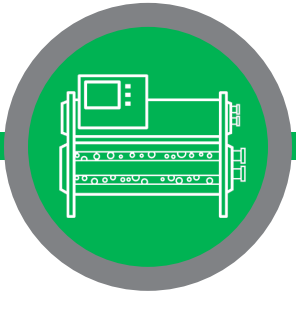
CHEMICAL DECONTAMINATION

ISSUE

Chemicals, acids, and other contaminants in your refrigerant ultimately affect efficiency, can lead to downtime and possible catastrophic failure. Contaminated refrigerants cause a variety of issues that may range from decreased cooling performance and increased energy use, to significantly reducing the operating life of the equipment, and even equipment failures.

HUDSON SOLUTION

- Restores system efficiency
- Reduces chemical contaminants
- Salvages the maximum amount of refrigerant, saving on the cost of replacement refrigerant
- Avoids lengthy downtime and repairs normally associated with this problem



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HERMETIC MOTOR BURNOUT

ISSUE

Hermetic motor burnout is one of the most time consuming and expensive repairs chiller owners face. If the contaminants are not thoroughly removed, a costly secondary burnout becomes more likely.

HUDSON SOLUTION

- Decontaminates centrifugal screw or reciprocating chillers in hours not days
- Reduces contaminants the first time
- Reduces the need for cleanup kits, extra filter cores, and suction dryers
- Reduces chance of a second premature burnout

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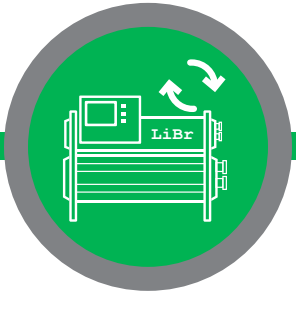
LITHIUM BROMIDE RECOVERY, DISPOSAL, & ANALYSIS

ISSUE

If you have service work to do on your system, you may need to recover and store your lithium bromide chemicals. Also, for absorbers that are being demolished, modified, or renovated, you may need to recover, store, or even dispose your lithium bromide.

HUDSON SOLUTION

- Lab analysis of lithium bromide solution
- Full recovery services
- If necessary, disposal of your used lithium bromide as well as complete documentation of the disposal services
- Frees your technicians for other profitable work, thereby increasing your service revenues



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GLYCOL RECOVERY, DISPOSAL, & ANALYSIS

ISSUE

If you have service work to do on your system, you may need to recover and store your glycol. Also, glycol and brine systems that are being demolished, modified, or renovated, you may need to recover, store, or even dispose your glycol.

HUDSON SOLUTION

- Lab analysis of glycol solution
- Full recovery services
- If necessary, disposal of your used glycol as well as complete documentation of the disposal services
- Frees your technicians for other profitable work, thereby increasing your service revenues

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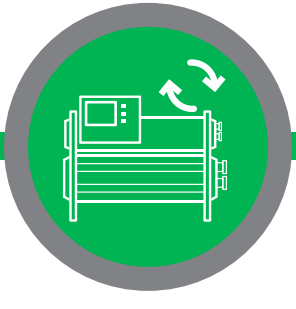
REFRIGERANT RECOVERY

ISSUE

Refrigerant recovery is often necessary for system repairs, when a chiller has reached end of service life, or for system conversion. Regardless of the reason Hudson can help! When looking to convert existing equipment to alternate refrigerants, system managers are confronted with the issue of time. Downtime can be extremely costly, and every minute equipment is down results in a loss of production.

HUDSON SOLUTION

- High speed on-site recovery reduces downtime for repairs
- High speed on-site recovery speeds conversion
- Reduces all traces of mineral oil
- Hudson ensures that even the largest conversions or recoveries can be completed in the minimum possible time



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SF6 RECOVERY

ISSUE

SF6 recovery is often necessary for system repairs or for system conversion. As equipment ages, it is being repaired or replaced with more efficient equipment which typically uses 1/3 the quantity of SF6. This creates a need to recover the SF6 for recycling or disposal.

HUDSON SOLUTION

- We recover and reclaim your SF6 at your job site nationwide.
- We help minimize down time with our fast response and rapid evacuation of SF6 systems.
- We recover the maximum amount of SF6 gas possible.
- We provide complete handling, recycling and disposal documentation for use in your EPA reporting

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POE CONVERSIONS

ISSUE

During refrigerant conversions it is important to ensure the correct oil is utilized. The transition from mineral oil to POE oil is a critical element of overall system conversion.

HUDSON SOLUTION

- Fast conversions reduces downtime
- Reduces all traces of mineral oil the first time
- Dramatically reduces cost by eliminating the need to flush with POE
- Provides full system decontamination including moisture, particulate, and acid
- Reduces the risk of sludge buildup

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CHILLER CONVERSIONS

ISSUE

When chillers are being converted to operate with HFC refrigerants, building managers and service contractors are looking for ways to reduce the cost of this expensive and time-consuming procedure. Technicians at Hudson developed an innovative method to speed up the process and save money at the same time.

HUDSON SOLUTION

- Fast conversions reduces downtime
- Recovers and reclaims your CFC or HCFC refrigerants at benchmark speeds at your job site
- Reduces all traces of mineral oil
- Saves money by eliminating the need for costly POE oil change outs

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FLUID CHEMISTRY™

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With Hudson's Fluid Chemistry™ services, you can benefit from both refrigerant and compressor oil testing and analysis. The process examines the relationships between the fluids, providing a more complete picture of their overall condition and impact on the system's operating efficiency and reliability.

FLUID CHEMISTRY™ SERVICES INCLUDES

- Refrigerant testing at Hudson's AHRI-certified lab, including for purity, acidic byproducts, moisture, chlorides, non-condensables, oil, and particulates.
- Oil Testing (Spectroscopy), including viscosity @40C, elemental analysis by RDE, moisture using crackle test, and total acid number (TAN)
- Reporting and Recommendations, a comprehensive refrigerant rating, oil rating and lubricant condition report that includes an expert engineering assessment and any applicable recommendations

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CHILLER CHEMISTRY®

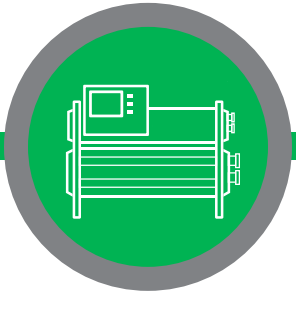
ISSUE

Chiller Chemistry® identifies our unique approach to studying the relationship of refrigerants, oil, and all types of contaminants on the performance of chillers, cooling equipment and refrigeration systems. In turn, this allows us to provide the best-in-class solutions to address refrigerant-related problems.

Sampling both oil and refrigerant is essential in ensuring the timely identification of potential problems before they become serious.

CHILLER CHEMISTRY® SERVICES INCLUDES

- A certificate of analysis
- A chemist's interpretative report
- A comprehensive engineering review with specific service recommendations
- If necessary, an expert engineering assessment and any applicable recommendations



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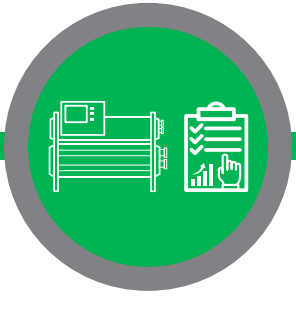
CHILLSMART®

ISSUE

This service includes both Chiller Chemistry® and Performance Evaluation in one unique package and is available for both air and water-cooled chillers. This state-of-the-art evaluation is based on chiller operating data plus a fluid (refrigerant, oil, and water) chemical analysis. It is available in both the IP and SI (metric) systems.

CHILLSMART® SERVICES INCLUDES

- A complete chemistry and engineering-based review that compares and correlates the relationship between the fluid samples
- Performance Evaluation results, including: Chiller system efficiency, potential energy and cost savings, heat exchanger performance, compressor performance, electric motor, steam turbine, and gas-fired engine performance
- An interpretation report of the findings, interrelationships, and recommendations for remedy
- A certificate of analysis



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