



Refrigerant Management
for critical cooling and refrigeration

Refrigerant Management

Expanding government regulations and the increasing cost of refrigerants make it imperative for refrigeration equipment owners to have a strategic approach to refrigerant management. Refrigerant management includes tracking and reporting the use of refrigeration and HVAC assets as required by regulation, and a proactive approach to reducing the amount of refrigerant used by implementing automated leak detection and other best practices.

Meeting Regulatory Requirements

EPA Section 608, CARB, F-Gas

Refrigeration equipment owners are required to track the use of refrigerants, including the type and amount of each refrigerant in each piece of equipment, as well as the repair of identified leaks within a specified time range. For large, multi-site supermarkets, food processors, cold storage facilities, or data centers, this is a complex process that involves people at multiple locations, as well as repair and service contractors. For these organizations, managing refrigerant usage with spreadsheets is not a realistic option. Refrigeration equipment owners need a cloud-based software solution that helps them track refrigeration assets, refrigerant usage, and leak repairs.



Reducing Refrigerant Leak Rates

Find Small Leaks Before They Cause Big Problems

The cost of refrigerant is a major factor for implementing automated leak detection. Leak detectors designed for safety compliance (e.g. ASHRAE 15, EN 378) are not suitable for detecting low-level leaks. In addition, refrigeration equipment uses significantly more energy when the refrigerant charge is less than optimal. Ignoring the impact of low-level leaks on energy consumption is an ongoing and hidden cost. Low-level leaks, from around 1 - 50 ppm, need higher performance detection technology, as well as the flexibility to detect different refrigerant gases in the same environment. In areas that have frequent air exchanges, low-level leaks will simply not be found unless an automated infra-red leak detector with 1 ppm detection capability is used.

How We Can Help

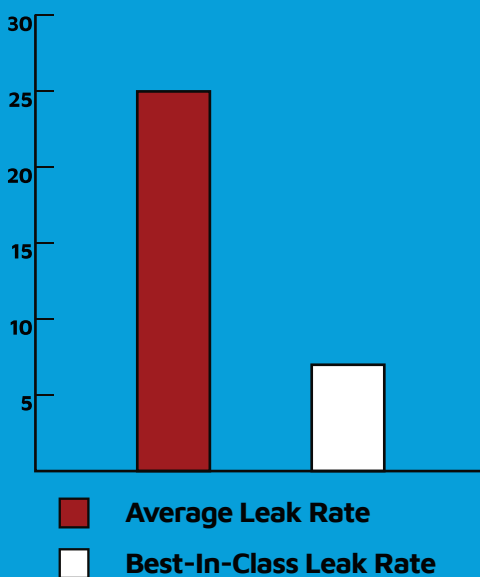
The Parasense platform is the only solution that is purpose-built to capture the proper refrigerant usage data, enable multi-user and multi-site workflow, provide real-time leak alerts, and support reporting for trending and regulatory compliance.



The average leak rate for grocery stores is estimated to be 25% per year. Best practice implementations can currently achieve leak rates of 7% through:

- Clear Refrigerant Strategy
- Automated Leak Detection
- Refrigerant Tracking and Leak Detection Reporting Software
- Effective Teamwork and Coordination
- Standardized Refrigerant Design

Grocery Store Leak Rates



*Source - EPA

The Parasense Platform

The Parasense enterprise-scale refrigerant and energy management platform helps multi-site owners of commercial cooling and refrigeration to monitor, identify, track, and reduce refrigerant leaks and usage. Connecting to your equipment to gather information across your enterprise, the Parasense platform continuously monitors refrigerant leak detection equipment. With multi-party alerts, the system notifies you and your local contractors to the presence of a leak for fast troubleshooting and repair.

The Parasense platform enables operations and facilities managers to achieve substantial gains in efficiency, reliability, and asset performance across the enterprise. With clear dashboards, powerful analytics, and configurable alerts, the Parasense platform draws on live operating data to give you essential insights into refrigeration system and energy performance.

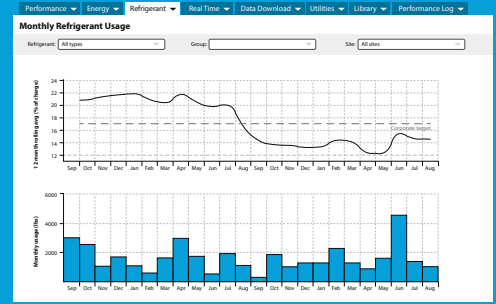
You can access your information anywhere, at any time, on any device. Supported by professional services, the Parasense platform provides the insights you need to understand how equipment and systems are performing across all of your sites.

Refrigerant Tracking

The Parasense platform refrigerant tracking dashboards empower owners to track refrigerant use across all appliances, components, and equipment across the entire enterprise, review the cause of refrigerant leaks, identify problems and track repairs.

Refrigerant Leak Detection

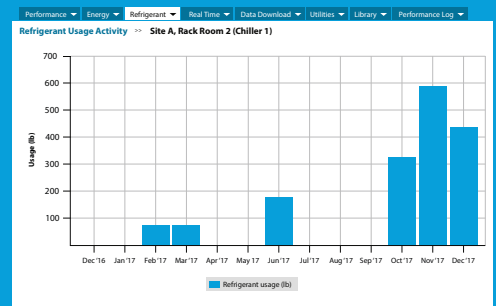
Automated leak detection is powered by Bacharach's MZ refrigerant leak detector. With 1 ppm minimum detectable level and support for 60+ refrigerants, the MZ platform is the industry-leader for identifying low-level refrigerant leaks. When connected to the Bacharach MZ, the Parasense Platform enables refrigeration and facility managers to get real-time alerts and historical views of leak events for each refrigeration circuit.



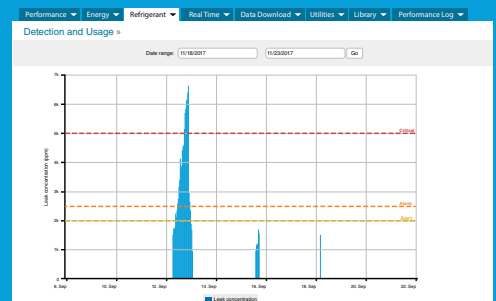
Track refrigerant usage monthly by site, company-wide, or by individual appliance, allowing you to find leaking equipment faster and more easily.

Reference	Leak Events			Refrigerant Usage		Status	
	Leak	Alarm	Critical	lb	% of charge		
Site A	26.21	73,300	26	16	902	61.9	Refrigerant maintenance
Site B	12.46	54,094	24	1	690	92.2	Refrigerant maintenance
Site C	9.58	28,311	17	21	440	25.4	Refrigerant maintenance
Site D	2.19	4,257	139	10	1,774	109.7	Compliant
Site E	6.78	433	582	3	1,832	114.4	Refrigerant maintenance
Site F	4.67	6,486	202	2	0	0	Compliant
Site G	3.83	2,879	8	1	0	0	Compliant
Site H	2.66	3,736	0	0	50	7.3	Compliant
Site I	1.73	168	157	26	980	45.6	Refrigerant maintenance
Site J	1.61	376	309	42	397	87.9	Refrigerant maintenance
Site K	1.54	6,031	26	35	1,820	26.0	Compliant
Site L	1.48	2,077	0	0	0	0	Compliant
Site M	1.33	561	90	43	0	0	Compliant
Site N	1.20	16	47	16	375	67.4	Refrigerant maintenance

Instantly view compliance status, leak records, refrigerant usage data, and leak events in a given date range.



Viewing refrigerant usage and leak rate by individual appliance helps you target poor performing equipment quickly

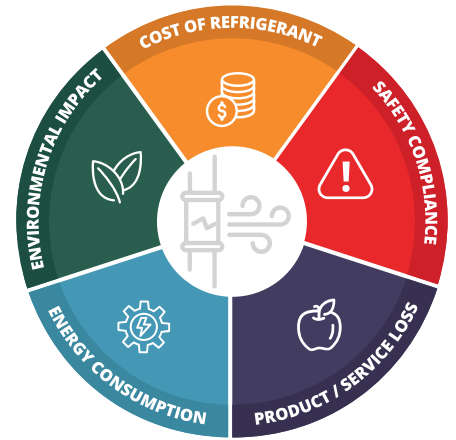


Constant monitoring helps find small leaks that only emerge when particular operating conditions are in place.

Cost of Refrigerant Leaks

Refrigerant leaks have a broad impact, and their cost encompasses more than just the cost of refrigerant. The Parasense refrigerant and energy management platform, supported by Bacharach automated leak detection, helps food retailers and other organizations to reduce the direct and indirect costs and potential risks of refrigerant leaks.

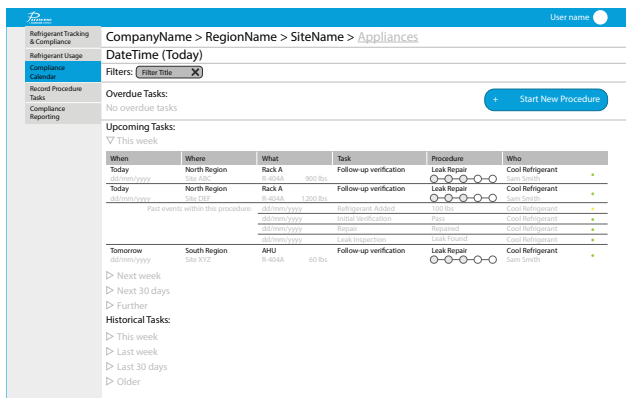
Refrigeration can account for ~60% of energy usage in supermarkets. Effective refrigerant management strategies can reduce energy costs by helping to ensure that the system remains efficient.



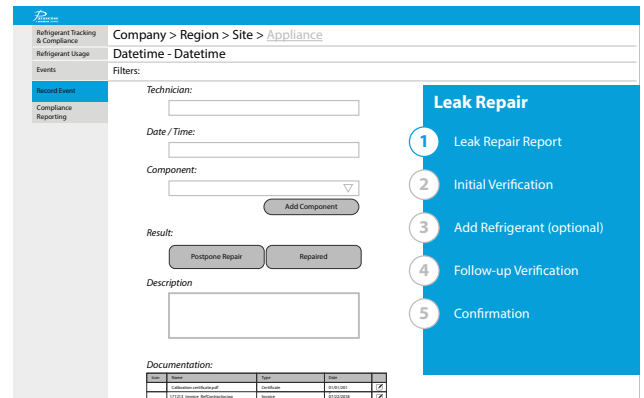
2019 Regulatory Changes - Are You Ready?

The EPA has additional refrigerant tracking and reporting requirements starting in 2019. Parasense has working relationships with government regulatory agencies and industry experts that help guide our product development to ensure you have the right tools available for achieving compliance.

In the software release for supporting the 2019 regulations, Parasense is implementing the following additional capabilities:



Compliance Calendar - Schedules every next and follow-on event for each piece of equipment, providing clear visibility of upcoming compliance tasks



Regulation Workflow - A step-by-step map of each compliance framework identifying all information or documentation required for each case

Talk to an expert at Parasense for a free consultation related to these changes, or visit www.parasense.com



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