



Refrigerant Management

for Critical Cooling and Refrigeration

The Bacharach Parasense Platform: Refrigerant Management for Food Retail

The Parasense platform from Bacharach puts you in control of refrigerant management across your organization, from detailed single site analysis to full enterprise reporting:

- Confident compliance with legislation
- Reduce refrigerant use
- Increase plant performance
- Save operating costs, increase profit margins
- Identify maintenance requirements early
- Track and report against corporate sustainability goals
- Refrigerant intelligence providing complete visibility of consumption metrics
- Simple and easy to use system



Why Refrigerant Management?

Refrigerant Management is the efficient, safe and cost-effective operation of your refrigeration equipment. Today, this means complying with evolving legislation, ensuring product quality and the safety of colleagues and customers, reducing operating expense and improving margins, while striving for 24/7/365 equipment uptime.

Refrigerant management is not just a cost saving exercise. Effective management of your refrigeration is critical to your organization's success and ability to compete in your market. Your organization's reliance on refrigeration means that it is a strategic asset and should be treated as such.

Meeting Regulatory Requirements

Refrigeration equipment owners are required to keep robust records of 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 solution to track refrigeration assets, refrigerant usage, and leak repairs that can be securely accessed anywhere and at any time.

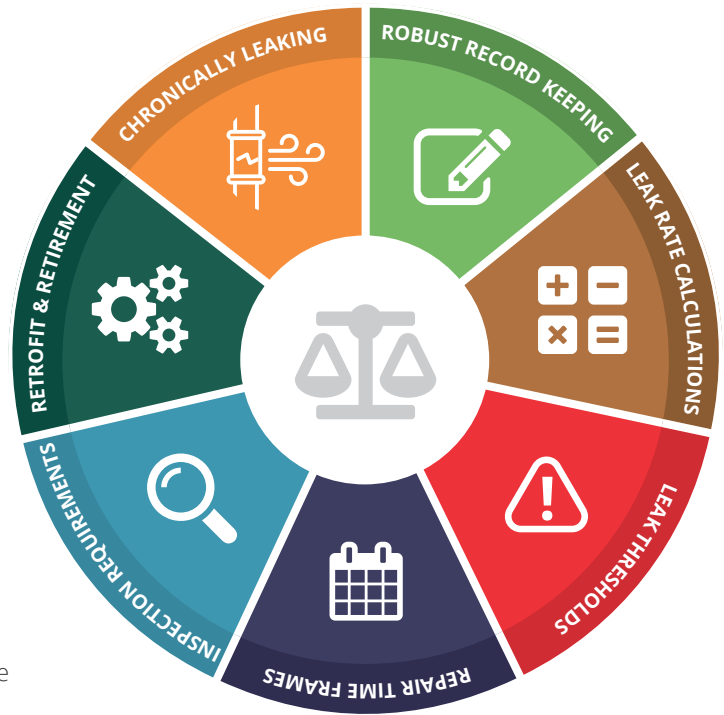


EPA Refrigerant Recycling and Emissions Reduction Program

With EPA Section 608 revisions coming into effect in January 2019, it's important to use a system that ensures your compliance with the following changes:

- Robust record keeping
- Leak rate calculations
- Equipment leak thresholds
- Leak repair time frames
- Leak inspection requirements
- Retrofit and retirement timescales
- Chronically leaking appliance reporting

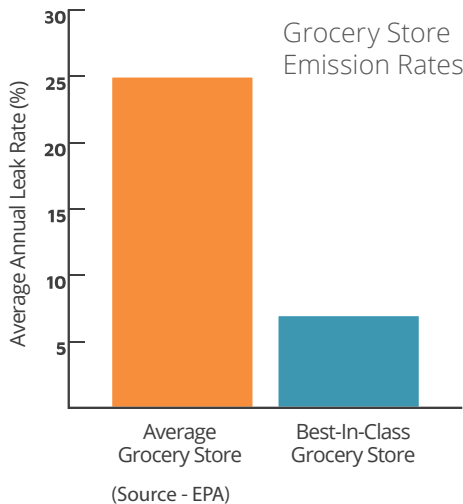
The Parasense platform from Bacharach makes compliance as simple as possible, it blends a user toolset complete with compliance calendar, automated leak rate calculator, intuitive analysis, guided data entry and compliance reporting.



Operating costs

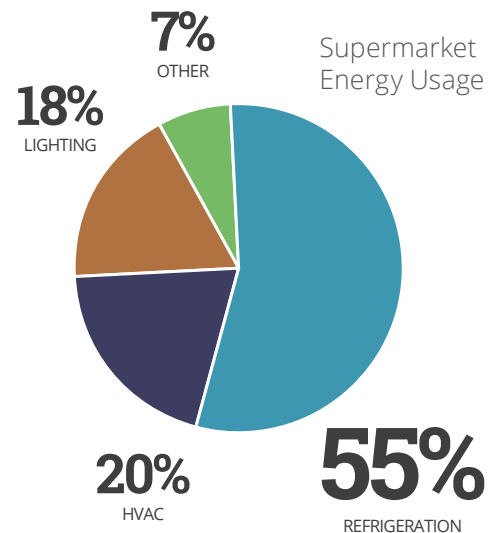
The average leak rate for grocery stores is estimated to be 25% per year. Best practice implementations can currently achieve leak rates of 7%.

As the cost of refrigerant rises, this has an increasing effect on an organization's profit. For an organization operating at 1% margin, saving \$10,000 in refrigerant re-charge is the equivalent to generating \$1,000,000 of revenue.



Energy efficiency

Combined refrigeration and HVAC can account for 75% of energy usage in supermarkets. Further, 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.

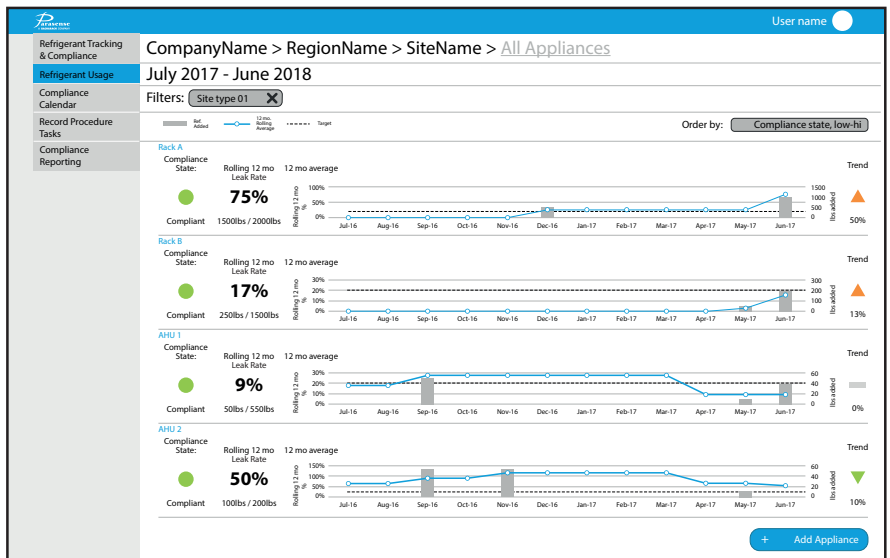


Refrigerant Tracking and Compliance

With the Bacharach Parasense platform, it's incredibly easy to keep track of your refrigerants across your entire enterprise. We recognize that achieving compliance and best in class refrigerant leak rates requires close collaboration and team work between equipment owners, internal teams, and contracted service providers. This is why the Parasense platform has been designed to empower your teams to seamlessly work together. With no user limit or cost per user fee, your whole team can access and update your system ensuring you have the most up to date information at your fingertips.

Refrigerant Review

The Parasense platform refrigerant tracking dashboards empower owners to track refrigerant across all equipment over the entire enterprise. Users can review the cause of refrigerant emissions, identify opportunities for improvement, track repairs and ultimately minimize the consumption of refrigerant.



Leak Rate Calculations

Whenever refrigerant is added to an appliance, the 12 month rolling leak rate must be calculated. This is automatically carried out in the Parasense platform along with scheduling a leak check if the threshold is exceeded.

Aggregating leak rates at site, region and company level make it swift and easy to identify where to focus and prioritize resources to achieve your goals.

Reference	Leak Events				Refrigerant Usage		Status
	Leak Index	Alert	Alarm	Critical	lb	% of charge	
Site A	26.21	73,390	26	16	902	61.9	Referred owner
Site B	12.46	54,594	24	1	690	93.2	Referred maintainer
Site C	9.58	28,311	17	21	440	23.4	Referred owner
Site D	7.19	4,257	139	10	1,174	109.7	Compliant
Site E	6.78	633	582	3	1,832	113.4	Referred maintainer
Site F	4.67	6,408	355	2	0	0	Compliant
Site G	3.03	2,079	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	Referred maintainer
Site J	1.61	376	309	62	397	87.9	Referred owner
Site K	1.54	6,031	26	35	1,030	50.0	Compliant
Site L	1.48	2,077	0	0	0	0	Compliant
Site M	1.33	561	90	63	0	0	Compliant



Reports and Notifications

Inspections can happen at any time, unannounced. When this happens, it must be simple for site managers to swiftly and seamlessly provide correct and accurate reports. One click reporting on the Parasense platform, make this as simple as possible. Meanwhile, periodic internal reports provide managers and teams visibility into the current state and performance of your refrigerant management strategy.

The screenshot shows the 'Leak Repair' workflow form. It includes fields for 'Technician', 'Date / Time', 'Component', and 'Result'. A 'Description' field is also present. On the right, a vertical progress bar shows five steps: 1. Leak Repair Report, 2. Initial Verification, 3. Add Refrigerant (optional), 4. Follow-up Verification, and 5. Confirmation.

Regulation Workflow

The regulation workflow has been carefully designed to distill regulations into clear processes, procedures and tasks that are easy to understand and follow. All users are guided through the same, correct procedure and any compliance tasks are scheduled automatically.

The screenshot shows the 'Compliance Calendar' interface. It displays a list of tasks with columns for 'When', 'Where', 'What', 'Task', 'Procedure', and 'Who'. The tasks are categorized into 'Upcoming Tasks' and 'Historical Tasks'.

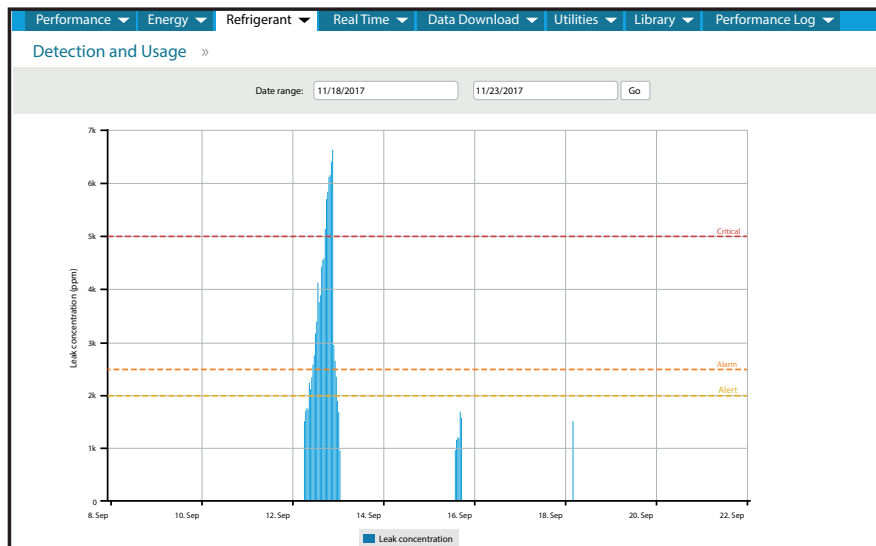
When	Where	What	Task	Procedure	Who
Today	North Region	Rack A	Follow-up verification	Leak Repair	Cool Refrigerant
Today	North Region	Rack A	Follow-up verification	Leak Repair	Sam Smith
Today	North Region	Rack A	Follow-up verification	Leak Repair	Sam Smith
Today	North Region	Site DEF	Refrigerant Added	100 lbs	Cool Refrigerant
Today	North Region	Site DEF	Initial Verification	Pass	Cool Refrigerant
Today	North Region	Site DEF	Repair	Repaired	Cool Refrigerant
Today	North Region	Site DEF	Leak Inspection	Leak Found	Cool Refrigerant
Tomorrow	South Region	AHU	Follow-up verification	Leak Repair	Cool Refrigerant
Tomorrow	South Region	Site XYZ	Follow-up verification	Leak Repair	Sam Smith

Compliance Calendar

Any up-coming actions and required compliance tasks are automatically scheduled by the compliance calendar. This provides ample opportunity for planning and collaboration between teams. The full history of all activities is also available here making it simple to retrieve and cross-reference historical events.

Automatic Leak Detection

Integrating leak detection with the Parasense platform gives the opportunity for rapid response times empowering engineering, refrigerant and maintenance managers to achieve the highest operational performance with the lowest refrigerant emissions and operating expenses.



Reducing Refrigerant Emissions

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.

Low-level leaks, from around 1 - 50PPM, 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 leak detector with 1PPM detection capability is used.

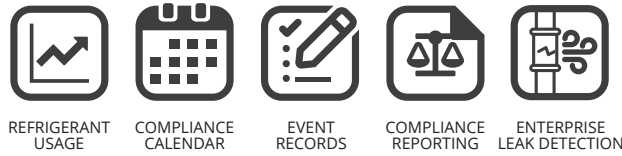
High Performance Refrigerant Monitoring

Bacharach's Multi-Zone (MZ) leak detection unit delivers the best refrigerant leak detection available, with industry-leading minimum detection levels of 1PPM for halogenated gases, the fastest sampling frequency and the widest range of refrigerants accurately detected, with 16 zone detection and over 60 gases.

The Bacharach MZ enhances effective refrigerant management, detecting leaks early to enable cost savings by reducing refrigerant recharge, enhancing energy efficiency and reducing risk of refrigeration failure and produce loss. The unit connects seamlessly with the Parasense platform providing live data feeds for refrigerant analysis and reporting.



Enterprise Level Features



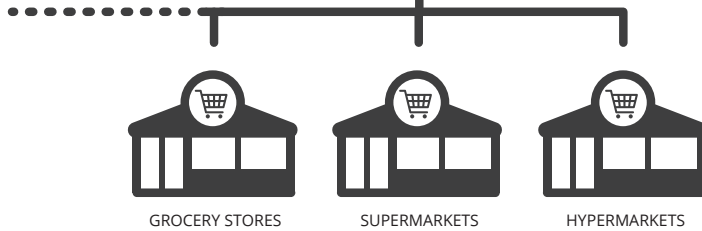
Full suite of data capture, data analysis and compliance reporting tools, from the get-go.

The Parasense platform is a centralized system so information can be accessed anywhere, at any time and by a variety of different platform users, enabling team collaboration and swift responses.



PLATFORM USERS

- REFRIGERATION CONTRACTORS
- HVAC CONTRACTORS
- STORE FACILITIES MANAGEMENT
- STORE HQ ENERGY MANAGERS
- STORE HQ REFRIGERATION MANAGERS
- PARASENSE SUPPORT TEAM

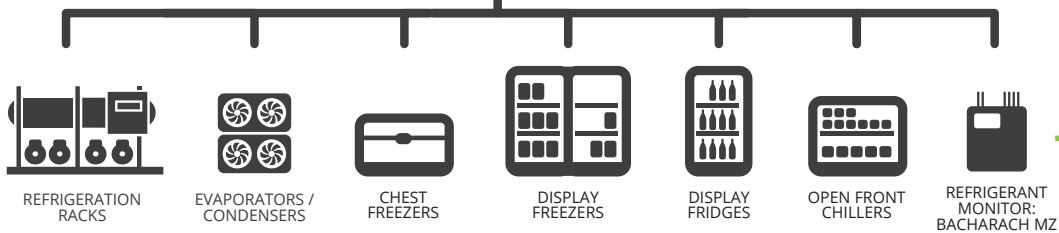


With multiple sites using the same platform, enterprise level data capture and reporting is possible- helping you see asset or site performance instantly.

The inclusion of the powerful Parasense DC01 allows live data to be securely streamed up to the platform automatically.



Integrated leak detection monitors such as the Bacharach MZ, provides full leak detection alarms and reporting direct within your workflow.



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

Enterprise Services That are Right For You

Not everyone has the team or resources to dedicate to implement an effective refrigerant management strategy so we have a tiered service model to help make your organization a leader of sustainability.



Platform Only

For customers that are comfortable managing their refrigerant tracking and compliance internally, but want to use the best tool to make them most effective.

Team Services

For customers that have an internal team and are looking for support and guidance with respect to their refrigerant tracking and compliance. Our knowledgeable experts will guide you, your team and your contractors so you know all is being done to comply legislation and reduce leak rates.

- Email and phone compliance guidance
- Data, document, certificate validation
- Highlight areas of concern
- Team compliance training

Professional Services

For customers that want to outsource refrigerant tracking and compliance so internal teams can be dedicated to strategic projects and initiatives. Our experienced team are your partner to ensure refrigerant management and compliance, coordinating contractors and providing all reports to regulatory bodies.

- Contractor management and coordination
- Compliance submission
- Periodic reviews
- Refrigerant management strategy guidance

Expert Consultation

We have a range of specific, expert consultancy services we can provide. From site surveys to strategy, from data import to custom investigations, we can build a specific service tailored to support your particular needs at a specific time.



Contact us now

Contact an expert at Bacharach for a consultation, demonstration, or even register for a free, no obligation trial now. See how Bacharach's Parasense platform can help you manage your refrigerant and help you become a leader in lowering refrigerant emissions. Visit our website: www.mybacharach.com/refrigerant-management or call: **540-543-3041** to find out more.



THE MEASURABLE DIFFERENCE