

Leak Containment System (LCS)

What is LCS?

LCS is an *auto-calibrating, continuous monitoring leak detection system* designed to detect even the *smallest refrigerant leaks*, and execute appropriate steps for *immediate leak containment & remediation* using *state-of-the-art solenoid valve technology*.

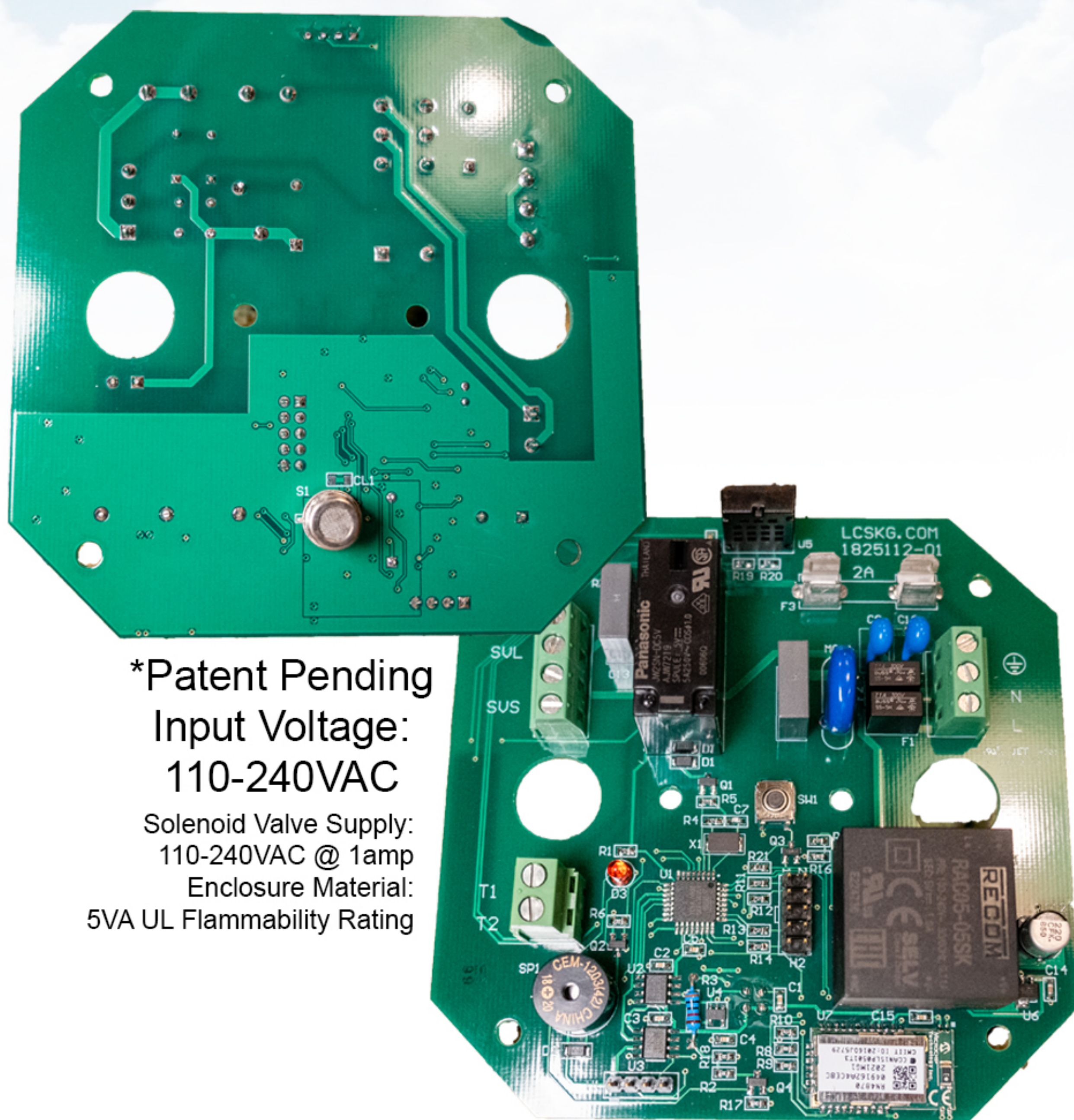


Who can LCS benefit?

- **Comfort Cooling Industry**
 - *Hotels, Dorms, Nursing Homes, Etc.*
- **HVAC Industry** - *Commercial & Residential*
- **OEM Companies & Commercial Manufacturers**
 - **ALL Users of VRF Technology**

LCS Key Features:

- **Automatic Dynamic Sensor Calibration**
- Once a refrigerant leak is detected, state-of-the-art **SOLENOID VALVE TECHNOLOGY isolates leaky coil in system, engages alert/notification system*** & **executes immediate steps for remediation**
- **Satisfies EPA Leak Inspection Requirements**
Effective Jan. 1, 2019 for Comfort Cooling Industry -
*Requires Leak Inspections 1x\Year When System Full Charge Equal or Greater Than 50LBS Refrigerant***
- **Records System Data for EPA Compliance Audits**
- Detects **R32, R125, R134A, R404, R407C, R410, R417, R507, R422D, 448A** Refrigerants & Flammable Refrigerants - **R290 & R600**
- **Gas Detection Range: 50-1000ppm**



*Patent Pending
Input Voltage:
110-240VAC
Solenoid Valve Supply:
110-240VAC @ 1amp
Enclosure Material:
5VA UL Flammability Rating

*ADA Compliance Features & Fire Alert System Connectivity Features Available (see back for more information)

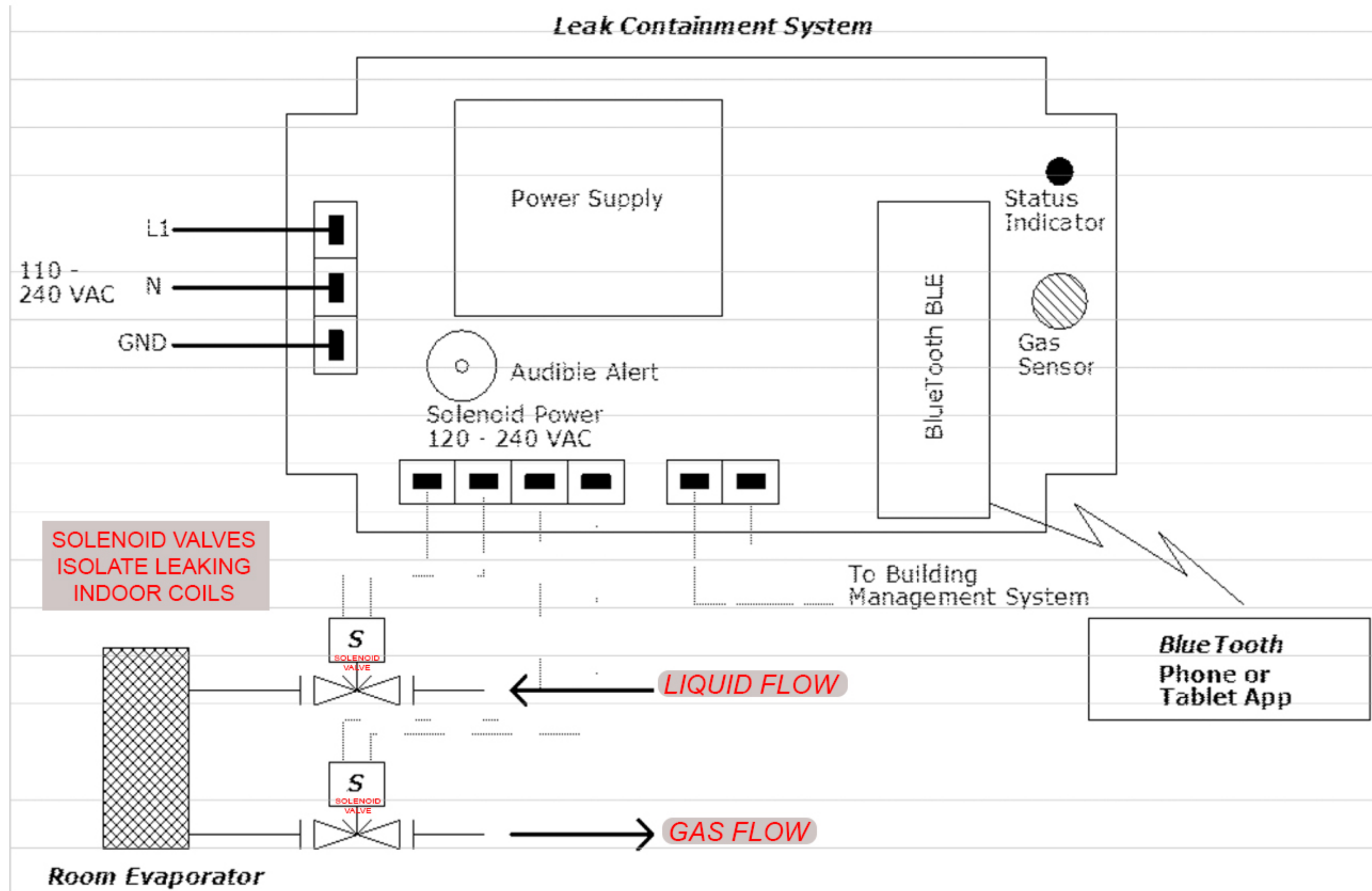
**Per EPA Requirements, leak inspections "are not required on appliances continuously monitored by an automatic leak detection system that is audited & calibrated annually.



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Benefits of LCS Implementation

- **Continuous Leak Detection** gives advanced notice of problem coils & prevents unnecessary expenses
- **Leak Immediately Isolated by System** - No Multi-Room Evacuation Needed = No Loss of Income
- **Auto-Calibration Technology** ELIMINATES need for Manual Calibration
- **Bluetooth Enabled Software Application & POE** (Power Over Ethernet) - See "LCS Software Application Features" below for more information
- **Eliminates Catastrophic Leaks** = SAVE \$\$\$
- **Protects Company Reputation & Prevents Lawsuits**
- **Operations & Maintenance Expenses Minimized**
- **ADA Compliance Capabilities** - Output of relay can be connected to strobe or vibration unit in rooms

Features In Development

- **Exhaust Fan** - Activated to Clear Control Space
- **Ionizer** - Anti-Viral, Anti-Bacterial, Anti-Fungal, Etc.
- **UVC Light w/Burn Out Notification** - Kills Viruses & Bacterial Pathogens

With LCS:

EARLY DETECTION
+
INSTANT ALERTS
=
SAVE \$\$\$

(LIMITED DOWNTIME,
BACK TO BUSINESS ASAP)

Without LCS:

HVAC REPAIR
=
LOSS OF BUSINESS
=
LOSS OF INCOME

(ENTIRE FLOOR CLOSURES,
LEAK DETECTION DELAYS)

LCS Software Application Features

- **Bluetooth Enabled** with **iOS & Android/Google** Wireless Interface
- **Cloud Based** Information Technology
- **QR Code Reader Enabled** - Easily ID Replacement Part #'s
- **Records System Data**
 - Daily Modes of Operation Being Performed
 - Refrigerant Leak Levels
 - Part #, Model #, Serial #, Room#
 - Installation Contractor Contact Information
 - Type of Charge on System
 - Amount of Refrigerant in System
 - EPA Required Audit Data
- **Alert/Notification System Connects to Local Audible/Visual Alarms**

Certifications:

UL 60730 - 1:2016 Ed.5 Construction & Safety
UL 60730 - 1:2016 Ed.5 Automatic Electrical Control - Part 1
CAS E 60730 - 1:2015 Ed.5 Automatic Electrical Control - Part 1

Industry Drivers

- Updates to ASHRAE 15/34 & UL60355-2-40 Safety Standard
 - May Require Built in Detection Systems to Monitor Refrigerant Leakage
 - May Require Additional Mitigation Systems
- International Mechanical Code 2018
 - Adds Restrictions of Refrigerant Piping in Egress Corridors
- California R-410A Refrigerant Phase Out Starting 2024 (<750 GWP Required)
 - Forces VRF into Low Flammability A2L Refrigerant
 - RCL as low as 4.8lbs/1000ft³ vs. 26lbs/1000ft³ of R410A
 - Other Markets Following for Low GWP push (2088 GWP ≥ 675 GWP)
- Hotel Standards for VRF Systems



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