February 2026 ASHRAE Journal Online Content

On the following pages is supplementary information for the following article in the February 2026 issue of *ASHRAE Journal*:

A Framework for Optimizing Your Building Control System: Fault Detection & Diagnostics

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FCU-FD-013 Cooling or Heating Valve Leaky while FCU Shutdown

Fault Information ⓘ — View Logic ⚙

Fault Name : FCU-FD-013 Cooling Or Heating Valve Leaky While FCU Shutdown
Equipment Name : FCU-0205
BAS Point Name : Drivers.LonNetwork.FCU-0205.Points.ChwVlvPos,Drivers.LonNetwork.FCU-0205.Points.HwVlvBalPosIN,Drivers.LonNetwork.FCU-0205.Points.SaFanSts,Drivers.LonNetwork.FCU-0205.Points.SaFanCmd
Space Name : CERL > CERL > Infill Building
Category : Maintenance
Priority : High
Duration(Hrs): 24.19
Count : 9

Fault Trend ⓘ

— FCU-0205 cooling Valve Feedback   — FCU-0205 Heating Valve Feedback

Running / Not In Fault / In Fault (High)

Work Order Info ⓘ ⚙

Status: Work Order not raised

Email | Create Work Order

Activity ⓘ ⚙

No activity found.   Add a Note

Equipment & Fault Relationships ⓘ

FCU-0205
FCU-FD-007 Equipment Manually Operated
FCU-FD-013 Cooling or Heating Valve Leaky while FCU Shutdown
FCU-FD-016 Check if the Equipment is Accustomed to Weekend Operation

Served By

Spaces Served: Infill Building

Serving

CERL — Swivel | Table | Equip

All Sites | Select ▼ | < | 2022 | > | Rules | Options

All Sites | CERL

Site	Rule	Duration	Cost	Feb	Mar	Apr
CERL >	ⓘ AHU Cooling & Heating	6.27day				
	ⓘ Cooling Not Efficient	5.91day				
	ⓘ Data Gaps	20hr				
	ⓘ DAT Outside Range	5.32day				
	ⓘ FCU Fan Over Cycling	667.21day				
	ⓘ Heating Not Efficient	5.96day				
	ⓘ Stale Sensor	916982.27day				
	ⓘ Zone Not Cooling	149.42day	$0.00			

US Army Corps of Engineers ·

Dewberry / Army Corps of Engineers / Buildings / Construction Engineering Research Laboratory / Systems / AHU_3_001 / Insights

AHU_3_001 : Insights

Dashboard | Vault | Insights

Displaying 2/4

Selected 0

Rules currently active ▼ | ☐ Subscribe | Fault Detection Classic (Widget)

Priority ▼	System	Message	Rule Type	Last Occurrence
Medium	AHU_3_001	Primary air system has been operating outside scheduled hours. Verify equipment scheduling and sequence of operations.		Aug 21, 2022
Medium	AHU_3_001	Calculated outdoor air fraction is below the desired minimum.		Aug 21, 2022

Floorplan View | FCU Table View

Occupied and Cooling, currently 81°F with a 74°F Setpoint

2 days since a change in alarm

Zone Schedule #2 | Equip Inventories

FCU-2038 — 83°F   **Office 2038**

OAT / ZN-T / ZN-T-SP

Closed | Open | 85%

155°F

HW Plant: Okay

Fault #18: DAT is higher than it should be

Description: based on coil valve commands and fan status, this discharge air temp is higher than expected for more than 15 minutes

Recommendations:
1. **Confirm ChW source**: is temperature and flow okay?
2. **Check ChW valve and actuator**: can it actually open?
3. **Check HW valve and actuator**: pinhole leaks or closure failure?
4. **Check ChW strainer**: is it clogged and needs cleaned out?
5. **Check DAT sensor**: does it need calibration or replacement?

DAT is lower than it should be
DAT is higher than it should be
Fan will not turn on
Fan will not turn off

🔍 Understanding Key FDD Terms

FDD terms are often used interchangeably despite distinct meanings. Clarity on these terms supports procurement transparency, vendor comparisons, and more effective FDD management. Suggested definitions are:

- **Fault Condition**:
A specific pattern or anomaly to be identified
(e.g., reset sequence limited by a rogue zone)

- **Fault Rule**:
When and how a fault condition is evaluated
(e.g., fan is on, average demand is low, and max actuator is the same zone past the time threshold)

- **Fault Algorithm or Logic**:
The actual fault code or function being ran
(e.g., the script that executes rogue zone detection)

- **Fault Pseudocode**:
Readable syntax-free version of an algorithm
(e.g., a rogue zone equation for non-coder review)

- **Fault Notification**:
Indication to FDD users when a fault occurs
(e.g., rogue zone details being sent or displayed)

🔍 A Note on Artificial Intelligence (AI) in FDD

Some FDD vendors are beginning to incorporate **AI and machine learning** to identify complex patterns, automate diagnostics, or predict faults. While these advancements are promising and rapidly developing, they can also introduce challenges including potential false positives, uninterpretable analyses, and increased cybersecurity risk.

For organizations pursuing AI-enhanced FDD, consider the following best practices:
  1. **Require Evidence**: Vendors should demonstrate reliable data-driven results for your specific use case or equipment type using visual proof and relevant metrics to show actual system improvements or fault detection accuracy.
  2. **Establish Guardrails**: Define acceptable operating ranges (e.g., minimum flow rates, temperature limits) to ensure systems remain functional and safe with or without AI assistance.
  3. **Maintain Human-in-the-Loop Oversight**: Ensure that facility staff or system analysts remain engaged in reviewing and validating AI-driven outputs. AI should support (not replace) expert judgment.