Continuous Monitoring for High Performance Buildings
Hello!

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I am here to introduce AFDD and Continuous Monitoring for High Performance Buildings

You can find us at www.remotehvac.com
What is High Performance in Buildings?

...and how is it achieved?
Optimise total building lifecycle cost:

- Comfort & wellness
- Energy Efficiency
- Equipment life
- Maintenance
Commercial constraints

Design & Construction Stage

- Limitations on the design & configuration of HVAC and BMS systems
- System commissioning is severely time constrained. Test & Balance.

Building Operation Stage

- Don’t have the skills to deal with multiple complex systems
- Don’t have the time to fully investigate problems
- The resources are not available
Software

For Continuous Monitoring & High Performance
Ongoing/Continuous Commissioning delivers *15-45%* observed energy savings, through the *continuous identification* of simple operation and maintenance improvements.

ASHRAE Journal April-2011, P.22
The energy-saving potential of \textit{Fault Detection and Diagnostics} is estimated at 10–40\% of HVAC system energy consumption.

\textit{Lawrence Berkley National Laboratory, United States}
AFDD & Analytics

AFDD
Identification of faulty HVAC plant, control issues and inappropriate user intervention

Performance Scoring
Analytics and Key performance indicators for occupant comfort, energy efficiency, asset performance over time

Reporting
Automated email reports highlighting key analytics and insights on all systems and buildings.
The Well building

Summer Heat Wave

- Overheating in zones
- HVAC plant struggling
- Increased energy costs
Drop in Zone Performance

Board Room

Home / Leinster / The Well / Zone Dashboard

COMFORT SCORE

60

High Criticality

Zone Temperature Vs Setpoint

Conditions Analysis Faults Assets History

Boardroom AC Zone Air Sensor

Zone Air Temperature: 23.50°C
Zone Air Temperature Setpoint: 21.00°C

25 Jun 03:00 06:00 09:00 12:00 15:00 18:00 21:00

Zone Air Temperature Zone Air Temperature Setpoint
Drop in **Asset Performance**
Detect & Diagnose

AFDD & Analytics

- Low Zone Performance Score (All zones)
- Low Asset Score (Lossnay)
- Fault: Incorrect Operating Mode on Lossnay Unit

Diagnosis

- Lossnay saturated core
- Blocked air intake duct
Difficult to find faults

...which are easily picked up with AFDD!
Heat Stratification in Large Retail Store

Supply Air Temperature: 35.35°C
Return Air Temperature: 23.26°C
Zone Air Temperature Setpoint: 22.00°C
Zone Air Temperature: 19.12°C

Gas Heater Active: 100.00%
Setpoint Hunting in Rooftop AHU
Boiler Active **Out-of-Hours**, Office Block

**Boiler Temperature Profiles**

- Boiler LPHW Flow Temperature: 54.14°C
- Boiler LPHW Return Temperature: 51.51°C

**Charts**  
**Faults**  
**Interactions**

- Previous Day
- 21 Feb, 2019 - 23 Feb, 2019
- Next
Useful Resources….

- Schein et al, **A rule-based fault detection method for air handling units**, National Institute for Standards and Technology, April 2006,
Thanks!

Any questions?

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