Operator Effectiveness with Building Automation Systems

*Information & Action*

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Research Focus:
DEEZ GUYS ..... & THEIR BAS
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The Standard BAS Interface

Real-time “snapshot”
Patterns over time?
Incorrect Outside Air. Very expensive. Quite common.

TEACHABLE? ACTIONABLE?
After just a little practice, you can readily see that this is ...

Constant off-set - Sensor probably out of Calibration
Operator Feedback

USABLE?

ACTIONABLE?

“YES”
Many points for trending...

Problem is.....

with so many possible plots,

What to look at?

• On-off scheduling
• Static pressure
• Fan speed
• Supply & Return Air Temperatures
• Coil actuation & valve leakage
• VAV box positions
• Re-heat actuation
• Central Plant equipment
Designing how to get there with dashboards and drill-downs

**KPI**
- Whole building KPIs
- System Level KPIs
- Equipment KPIs

**Energy as an Indicator**

**Alarms, Action Recommended**

**Diagnostics**

**GRAPHS**
- Preformatted graphs
- Customized graphs

**AHU 1**
- Air handler Units Retuning
  - AHU Heating and Cooling Control
  - Monitoring Heating Valve Leakage during heating season
  - Monitoring Cooling Coil Valve Leakage during cooling season
  - Monitoring Primary pump speed and status
  - Monitoring Chiller Flow rate
  - Monitor fan speed, pressure, frequency Hz

**AHU 2**
- Duct Static Pressure Reset Control
  - Fan reset schedule based on Static pressure and set point
  - Monitoring plaster temperature and set point
  - Monitoring Individual Zone Temperature and set point

**Whole Building Level**

**System Level**

**Whole Building KPIs**

**System Level KPIs**

**Equipment KPIs**

**Energy as an Indicator**

**Dashboards and drill-downs**
Better HMI for better performance?

Can these “Key Intermediaries” work with visualized “big data”?

Enthusiastically, YES.

Proven training product – Building Re-Tuning
For more on…

• **Building Re-Tuning,**
  see the Pacific Northwest National Lab website
  [www.buildingretuning.pnnl.gov](http://www.buildingretuning.pnnl.gov)

• Operators figuring out better operation in their plants,
  see CUNY School of Professional Studies YouTube video series *[Heroes in the Basement]*

• On-going BAS work at the CUNY Building Performance Lab, contact
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