

Advanced Thermostats: What They Offer the Nonresidential Sector

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Agenda

- A definition
- Components and features
- Market transformation potential
- The learning curve

A Definition

Advanced Thermostat =
Programmable, *Communicable* Thermostat

Synonyms: web-enabled thermostat,
connected thermostat, smart thermostat

Components and Features

Hardware

- At core, they are standard programmable thermostats
 - One-to-one replacement of SPT
 - Not for multi-zone or VAV systems
- More input and output channels
 - Continuous and discrete
- Increased power needs
 - Usually not a problem



Communications

- Thermostat to the world
 - NOT thermostat to HVAC unit
- Methods
 - Wi-Fi
 - Ethernet
 - Mesh networks
- No “best” method



Software

- Mostly cloud based
 - On the web
 - Mobile platforms
- Easier to use
- Remote access
- Presentation of trends
- Alerts



Market Transformation Potential

Fulfill Original Promise of SPTs

- Standard programmable thermostats (SPTs) were kind of a disappointment
- ENERGY STAR suspended labeling
 - Lack of usability
 - Difficulty substantiating savings
- Advanced thermostats more usable!
- Will (hopefully) save the energy SPTs were supposed to

Massively Increase Data

- Collecting, transmitting, recording 24/7
 - Indoor/outdoor air, binary output controls, etc.
 - Highly frequent intervals
 - Never captured systematically before
- So?
 - At building: better understand your equipment
 - Industry: better understand use patterns/equipment

Change Maintenance Staff Role

- Reduce burden on maintenance staff
 - Remote investigation/triage/remedies = less wasted time = lower cost + more time for other projects
- New business models for HVAC contractor
 - Greater transparency to unit means cost savings and better, more proactive service

Modular, “Light” BMS

- Thermostat is not just a thermostat
 - Linchpin of software-based controls *system*
- Can control HVAC, lighting, plug-load, etc.
- Expansion is modular and piece meal
- Will not replace full BMS, but can act as cheaper “down market” substitute
 - Cost: \$750-\$1,250/thermostat (incl. labor)

The Learning Curve

Barriers to Adoption

- Power
 - Mostly NOT an issue, but can be if misunderstood
- Communications
 - There is always a solution that works...
 - ...but installers do not understand networks
- Wringing out the value
 - Features are many and complicated
 - Market/installers must grow comfortable

Programs Can Help

- Train installers on power/networks
 - How to properly configure power
 - How to setup Wi-Fi and mesh networks
- Support growth in understanding of lesser-used, value-added features
 - Case studies for distribution to wider market
 - Workshops with installers to share success stories and train on common features

Questions?

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Save the Dates

Apr. 29-May 1, 2013

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AESP's Fall Conference
Seattle, WA

Jan. 27-30, 2014

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