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Air Conditioning Contractors of America

Industry Standards & Quality Installation = Efficiency & Comfort

CEC Commissioner Workshop
Promotion of Regulatory Compliance in the Installation
of Central Air Conditioning and Heat Pumps
Industry Standards & Contractor (& Technician) Training
Friday the 3rd of August 2018

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President & CEO

Aire Rite Air Conditioning & Refrigeration

2017 Chairman of The Board

Air Conditioning Contractors of America

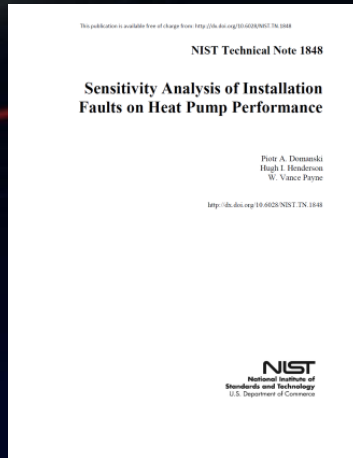


What will be covered in this Presentation

This is a 30,000 ft. overview of the industry standards and training resources ACCA can provide to various stakeholders who want residential and light commercial HVAC systems to operate reliably and provide the comfort and efficiency they SHOULD be designed to deliver.



Heat Pump RTU Efficiency Study



A newly-released NIST research report, entitled *Sensitivity Analysis of Installation Faults on Heat Pump Performance* (September 2014), details that substantial energy efficiency is lost due to design and installation deficiencies. Not following the requirements in the ACCA 5 QI Standard can increase annual energy consumption by 30% or more.

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Examples: Single-Fault Effects

- **Duct leakage** → The most influential fault on performance
 - Impact: 10 - 30% energy penalty on annual energy consumption
- **Refrigerant charge** → The 2nd most influential fault
 - 30% undercharge: 20% energy penalty
 - 30 % overcharge: 10 to 15% energy penalty
 - 10% undercharge: 2 to 3% energy penalty.
- **Undersized cooling TXV** → pronounced in localities with a high number of cooling mode operating hours
 - 14 % more energy used in Houston (40 % undersize)
 - 3 % energy penalty in Chicago.
- **Non-condensables / improper voltage / equipment size**
 - Energy penalty is ~4% (for the studied ranges).

Obviously, these faults have a substantial impact on *1st cost, equipment durability, occupant comfort, and degraded moisture control capability.*



Examples: Double-Fault Effect on Annual Energy Consumption

Multi-fault Set: 3 (Houston)		20% Duct Leakage	40% Duct Leakage
		9%	28%
15% Undercharge	5%	15%	36%
30% Undercharge	21%	32%	56%

Multi-fault Set: 10 (Houston)		- 15% Airflow	- 36% Airflow
		4%	12%
15% Undercharge	5%	7%	11%
30% Undercharge	21%	23%	27%



Poor QI Practices Result In –

HVAC Systems do not operate efficiently ...

Consumers do not get what they paid for ...

{making them hard-pressed to repay the project financing if savings don't materialize}

State Energy Offices, utilities, and efficiency financing programs fail to achieve their objectives.

What can we do to turn the tide of poor installation practices?



Follow the Industry Standard Quality Installation (QI)



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- For the customer let the electric meter and their comfort be the validator for making the financial commitment.
- For the government regulators we need an alternative method to current energy code requirements.
- For the utilities make it easy for businesses to enroll online and choose from a series of energy efficiency incentive programs that are simple to implement.
- For local municipalities better training and support for code enforcement.

To move the market place forward all stakeholders need to understand that without high performance HVAC contractors....real progress will be difficult.



Happy to Answer Questions

