NAECA III Generation Water Heaters & Their Performance Measurement

2016 ACEEE Hot Water Forum

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Discussion Topics

- NAECA III Generation Water Heaters and innovations beyond minimum standards
- New Trends: Air & Water Integrated Systems
- EF to UEF Transition
NAECA III: Recap by the Numbers

NAECA III – new DOE energy efficiency requirements effective April 16, 2015

What it means for product design –

Gas
- 20-55 gallon capacity: increase of 2-3 pts. EF
- >55 gallon capacity: increase of 21+ pts. EF

Electric
- 20-55 gallon capacity: increase of 2-5 pts. EF
- >55 gallon capacity: increase of 110+ pts. EF

Impacted Models – >80% of the industry’s models affected

Impact to Rheem and other manufacturers:
- $Millions invested in redesign
- Multi-year R&D project
- Changes to product designs
- New Manufacturing Equipment
- New Tools and Dies
- New Supplier Tooling
- Test and Quality Assurance Equipment
- Extensive pilot runs and design validation work
- Extensive testing and lab expenses
- Global supplier support & validation
- Multiple public awareness campaigns
- 2015 UED conversion costs
Residential Gas – Product Innovations

Performance/Attributes

- EF 0.62
  - minimum standard

- EF 0.67
  - powered damper
  - diagnostics

- EF 0.70
  - +49% recovery

- EF 0.82
  - condensing
  - diagnostics

+ fan assisted
+ diagnostics
Residential Electric – Product Innovations

- EF 0.95
- EF 0.95
- EF 0.95
- EF 2.45

Performance/Attributes

- minimum standard
- + diagnostics
- + multiple modes
- + diagnostics

+ multiple modes
+ EcoNet™
New Trends:

Air & Water Integrated Systems
H₂AC Commercial

• Full service restaurants, commercial laundry, hotels, etc...
  – Rooftop air conditioning
  – >1,500 gallons/day hot water use

• Operating principle:
  – Redirect waste heat (refrigerant) to preheat H₂O to 125°F

• Economics:
  – Up to 50% savings on annual water heating costs
  – Up to 20% savings on overall energy costs
  – < 2 year payback (depending on regional climate, usage, & utility rates)
System Connectivity

Explore each aspect of our integrated system
Whether you're home or away you can adjust your home comfort systems for efficiently warm winters, cool summers and hot water all year long.
EF to UEF Transition
UEF Performance Testing

- EF & UEF tests underway to aid with characterizing NAECA III units
- Industry & researchers building experience with new procedure

Diagram:
- Electric Storage
  - Low draw bin: 3-4 pts below
  - Medium draw bin: 2-3 pts below
- Gas Storage
  - Medium draw bin: 2-3 pts above
- Instantaneous Gas
  - High draw bin: 2 pts above
Thank you!

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