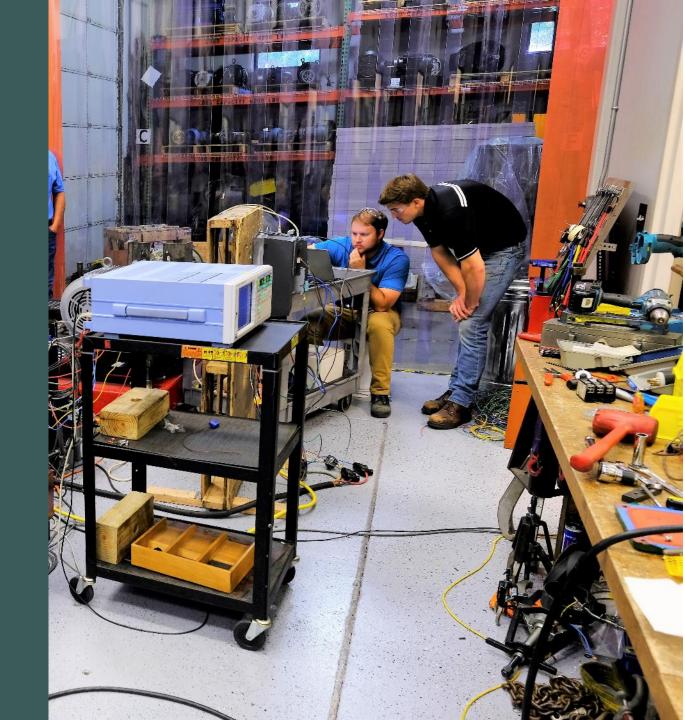




North Carolina Advanced Energy Corporation

Motors & Drives



Agenda topics

- Who owns Advanced Energy and why we participate in the NOPR process
- Our Certifications, Accreditations and Designations
- How Advanced Energy validates AEDMs
- Advanced Energy's impartiality practices
- Our capacity for testing electric motors
- The role of National Labs, as we understand it
- Q&A



Who owns Advanced Energy

- Established in 1980 by the North Carolina Utilities Commission
- North Carolina utility members:
 - Duke Energy Carolinas
 - Duke Energy Progress
 - North Carolina Electric
 Membership Corporation
 - Dominion Energy North Carolina
- 13-member board of directors



















Electric Motor and Drive Testing History

2004

motor

AE adds

reliability

testing for

OEM clients.



2016

First two manufacturers

variable frequency drives listed by the Air Conditioning, Heating, and Refrigeration Institute as certified to AHRI1210/11. AE is the only lab in the world accredited to test to this standard.

AE achieves Certification Body (CB) status (ISO 17065) and can issue motor efficiency

2018

1989

Advanced Energy builds the first dynamometer in its lab.

1992

AE works with the DOE to determine how motors should be tested for compliance with the new Energy Policy and Conservation Act.

1998

EPCA becomes law and gives motor manufacturers two years to become compliant. AE introduces PEV Program, a motor repair quality control program.

2001

About 70 percent of all compliance certifications issued to motor manufacturers by the DOE are delivered with AE's assistance.

AE helps Pentair Water secure funding for new energy efficient product launch and expands motor reliability test capability.

2006

2012

for DOE and stakeholders to establish new minimum efficiency standards for sma electric motors.

2009

Tested motors

ı 2014

AE selected

as Third Party

Auditor for EASA

Accreditation

Program.

AE becomes the first motor efficiency testing laboratory located outside of Mexico to receive Norma Oficial Mexicana designation for single-phase (NOM-14) and three-phase (NOM-16) motors.

and Danfoss) with

certification.

1991

AE develops the Horsepower Bulletin for the U.S. Department of Energy.

1997

AE achieves NVLAP compliance, the first motor lab in the world to be accredited by the National Institute of Standards and Technology for motor efficiency testing.

1999

AE develops corporate motor policy for BASF. First motor manufacturer achieves compliance with EPCA using AE's testing and consulting.

2003

AE is awarded the DOE grant for the 100 Motor Study.

2005

The DOE awards AE a grantto help develop "motor controllers for electric vehicle markets."

2008

AE adds a DC generator for zero to 500v DC, 510Amp continuous power for DC motor testing. Begins work on EISA Motor Regulations.

2010

AE worked with the South Korean government to create the first NVLAP lab in Korea.

2013

AE adds IEEE-114testing under NVLAP certification. Enters Safety Testing for Motors under UL partnership.

2015 join global VFD round American robin testing Electric Power for validating Launches IEC 61800-9-2 **EMotor** standard. Rewind Pilot

2017

2020

DOE recognized AE invited to AE as a national certification program and AE delivered motor efficiency certification to its first

participant.





Certifications and Laboratory Accreditations

Certifications & Accreditations

• ISO/IEC 17025

- Accredited through the National Voluntary Laboratory Accreditation Program (NVLAP) that is governed by the National Institute of Standards and Technology (NIST)
- Test to standards written by IEEE, CSA, NEMA, etc.

• ISO/IEC 17065

- Certification body for Motor Efficiency Compliance in the United States
- Product Certification for motor manufacturers





AEDM Validation and Impartiality

Two options

- Product certification
 - Follow-Up Services agreement
 - Impartiality review (internal and external)
 - Review basic model listing including AEDM outputs
 - Select samples for testing (random)
 - Complete testing (in-house or at another accredited lab)
 - Certificate of Compliance
 - Submit basic model listing to CCMS (if needed)

- Non-product certification
 - Review basic model listing including AEDM outputs
 - Statement of work
 - Select samples for testing (random)
 - Complete testing (in-house or at another accredited lab)
 - Submit basic model listing to CCMS (if needed)



Impartiality process

- Impartiality Committee
 - Conflict of interest
 - Mutual NDA
- Committee members
 - DOE representative
 - Local utility representative
 - Industrial facility or motor user
 - Interested stakeholders

- Staff conflict of interest
- Staff impartiality
- Organization impartiality
- Project impartiality





Capabilities and Staffing

Capabilities and Staffing

- Testing capabilities
 - Four in-house dynamometers fractional up to 250HP
 - Two isolated power supplies test two motors simultaneously
- Staffing
 - One shift under normal workload: 8:30am 5:00pm
 - Two shifts available with current staff: 7:00am 11:00pm
 - 24-hour operation in the past



Other designations

NOM-016-ENER & NOM-014-ENER

- Aligns with ISO/IEC 17025 accreditation
- Mutual Recognition Agreement with ANCE
- Advanced Energy tests motors, completes test reports and sends to ANCE for final certification for the client

Standards Council of Canada (SCC)

- Aligns with ISO/IEC 17065 accreditation
- Product certification for motor manufacturers selling in Canada



National Labs

- NOPR process
- Research
- Promote new motor technologies with testing
- Conflict of interest for same lab to offer AEDM design services for products being certified





Thank You

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