Integral Horsepower Electric Motors

Rob Boteler

Nidec Motor Corporation

Monitor

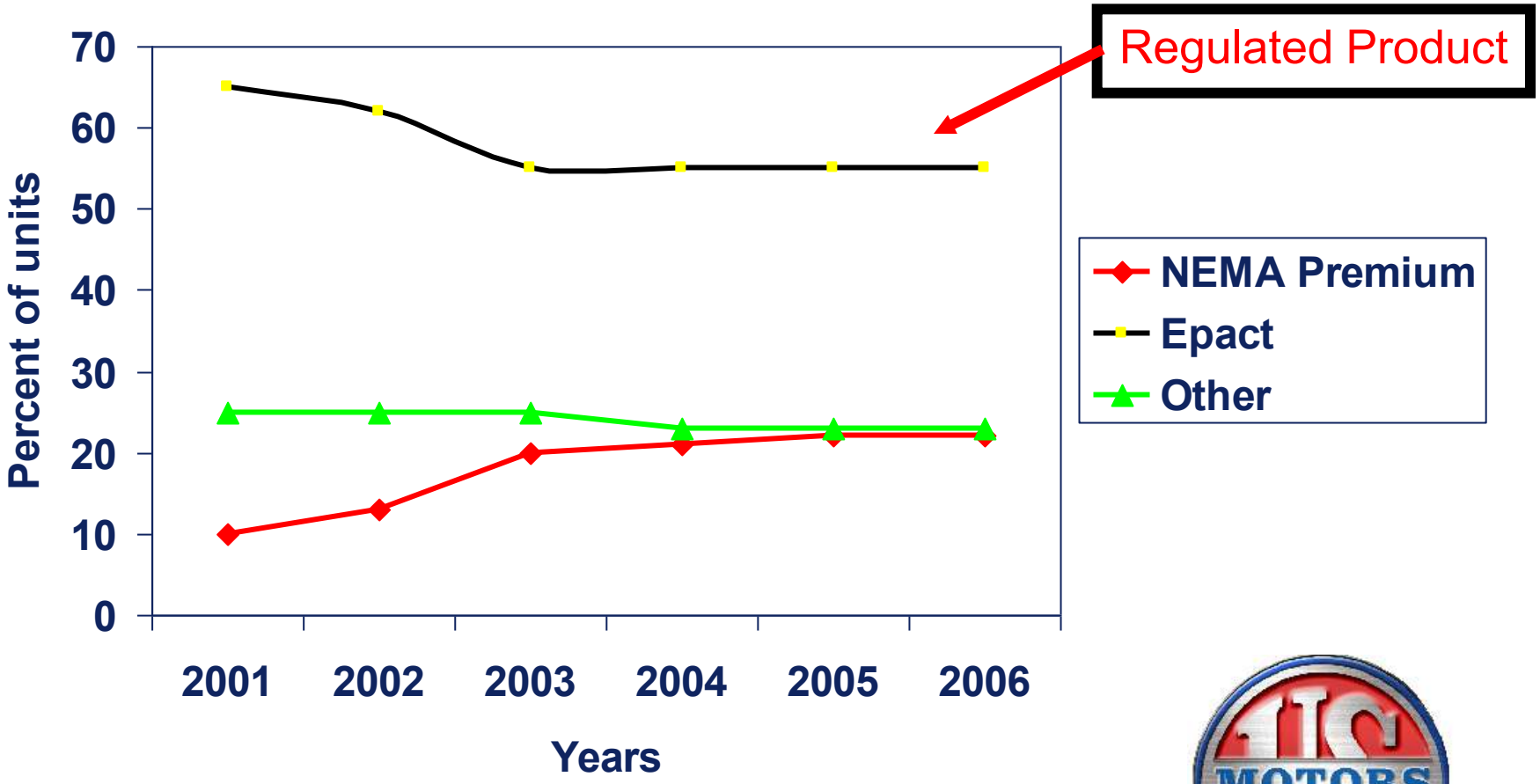
Verify

Enforce

US Regulations are in Place

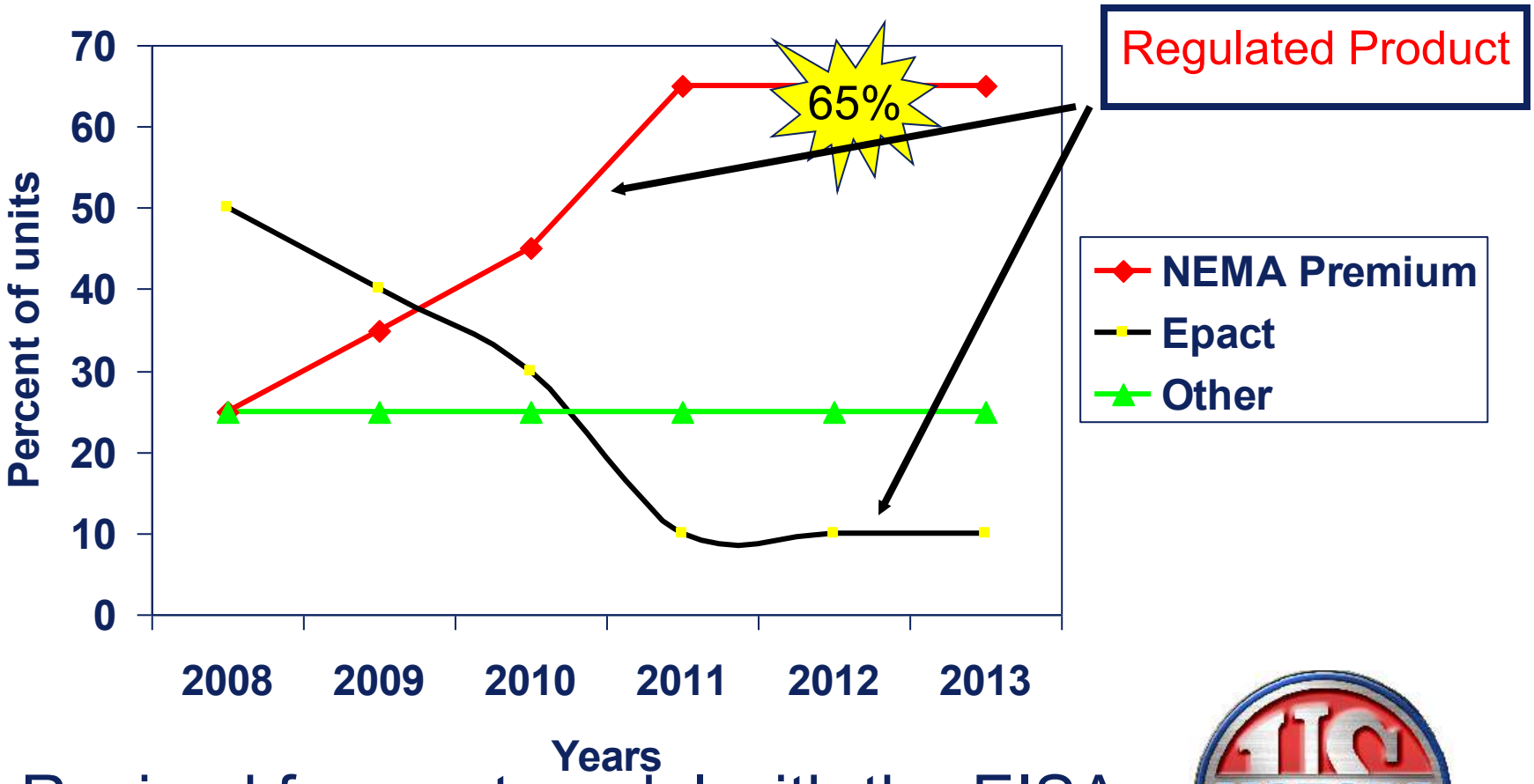
- Standards - test and efficiency
  - Precise
  - Published
- Labeling - product and collateral
  - Nominal Efficiency
  - Compliance number
- Accredited Labs
  - Manufacturer
  - Third Party
- Enforcement procedures
  - Sample size, method , specific performance

Historic Efficiency Trend 2001- 2006



Market penetration after six years

Future Efficiency Expected 2008- 2013



Revised forecast model with the EISA impact of NEMA Premium required 12/19/10

Current Requirements

- Department of Energy
  - Submit efficiency data for 113 ratings [basic models]
  - Five ratings must be test data
    - 107 ratings submit calculated data
  - Test Lab must be NVLAP accredited
- DOE provides compliance number to manufacturer
  - Manufacturer includes compliance number on each name plate of covered products
  - Custom can verify using compliance number and nominal efficiency on name plate or shipping documents

Monitoring

- Current Department of Energy
  - Industry self policing
  - Limited customs review
    - Weak at best
- Industry efforts
  - NEMA Premium
  - Licensed trade mark

NEMA Premium™

US MOTORS®

A Licensed Trademark of NEMA

- Use of the mark beginning in 2011 will require additional validation
  - DOE compliant data
    - Agreement to the use of CFR10 part 431 testing and labeling
  - Annual lab accreditation certificate
  - Annual verification

Why is MVE important

- To Manufacturers
  - Regulatory compliance
  - Provides a level playing field
  - Market differentiation or “brand building”
  - Flexibility to meet changing requirements, e.g., DOE, EPA, CA, NRCan and others
  - Potential to reduce non-value added costs for testing and administrative oversight by ‘outsourcing’ to a third party
- To Regulators
  - Assurance product meets applicable regulatory requirements
  - Facilitates compliance to minimum performance standards
  - Potential to fulfill need for test data submission
- To Consumers
  - Increases consumers’ confidence in industry ratings
  - Add credibility to life cycle cost evaluation
  - Clear product identification
  - Potential regulatory compliance

Key program elements of NEMA Premium Support MVE

- Industry directed; not government mandated
- Certification programs performance based
- Use recognized industry test standards
  - CFR 10 part 431
- Verify manufacturer's performance ratings through 3rd party testing
- Open to members and non-members
- Open to all manufacturers, foreign and domestic

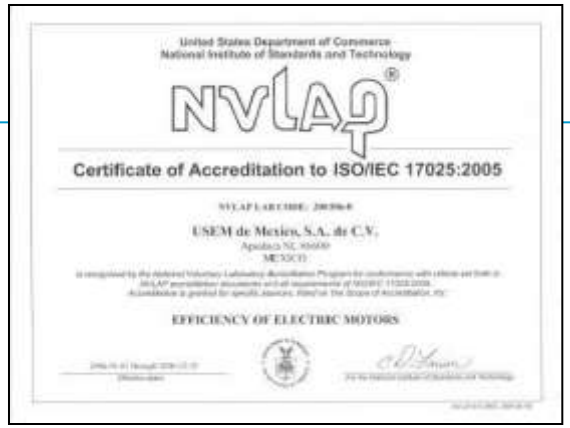
"Basic model " concept

- All programs define a "Basic Model"
  - Similar performance characteristics
    - Horsepower
    - Speed
    - Enclosure
  - Example of a basic model
    - 5 horsepower, four pole, and enclosed

Random product selection process

- Selection from a sample minimum,
  - Select from distributor stock
- Shipment to testing laboratory
  - Units sealed by authorized selector
  - Checked upon receipt at laboratory
- After successful test
  - Returned to manufacturer
  - Sent to a selected distributor
  - Donated to applied technology school
  - Discarded

Independent testing


United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation to ISO/IEC 17025:2005

USEM de Mexico, S.A. de C.V.

EFFICIENCY OF ELECTRIC MOTORS

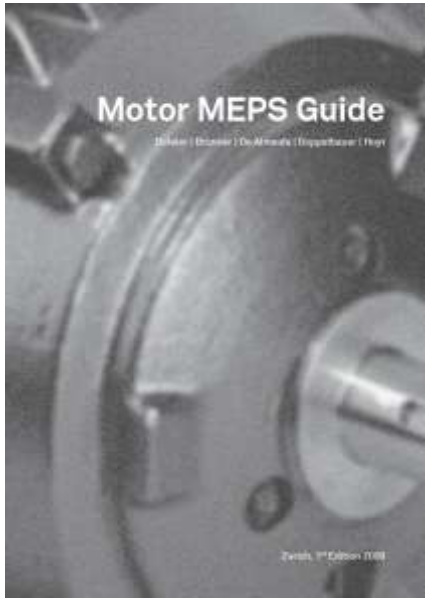
- 3rd party testing laboratory
  - Avoids conflict of interest
  - Minimizes capital requirements
- Authorized laboratory or witness test
  - Accredited manufacturer labs acceptable
  - First preference is laboratory testing
  - Witness testing at manufacturers accredited lab

Test failure provisions

- First test failure
  - Laboratory advises manufacturer and NEMA
  - Manufacturer's options
    - Delist models in the basic model group
    - Retest using another sample
    - Prove a defect caused failure and retest as first sample
- Second test failure
  - Laboratory advises manufacturer and NEMA
  - Manufacturer's options
    - Mandatory rerate of entire basic model group to the test results or
    - Obsolete all models in the basic model group

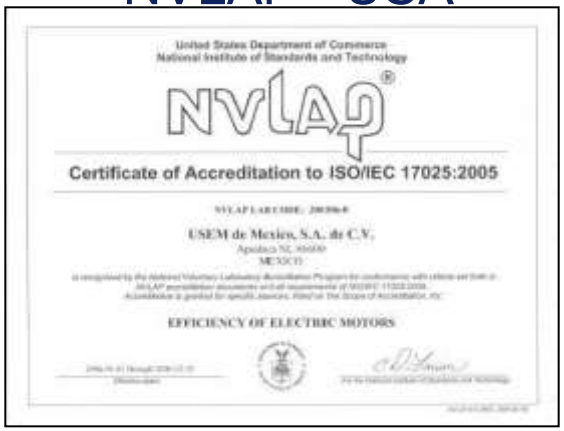
MVE- Certification documents

- Standard- NEMA and IEEE
  - Defines technical requirements
  - Test methods
- Operational manual- NEMA License
  - Defines program requirements
  - Validation schedule
- Participation agreement, OEM
  - Defines terms for product testing
- License agreement, Motor Manufacturer
  - Defines terms, conditions, and legal requirements for the use of the certification mark



Certifications- Labs and Products

NVLAP - USA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USEM de Mexico, S.A. de C.V.

EFFICIENCY OF ELECTRIC MOTORS

EMA - MEXICO


ema

ACREDITA

A

USEM DE MÉXICO, S.A. DE C.V.

LABORATORIO DE PRUEBAS

BLVD. CARLOS S. DE GORTARI KM. 9.25,

66600, APODACA, NVO. LEÓN.

Como Laboratorio de Pruebas de acuerdo a los Requisitos establecidos en la Norma Mexicana NMX-EC-17025-IMNC-2000 para las actividades de evaluación de la conformidad en la rama:

ELÉCTRICA ELECTRÓNICA*

Acreditación No: EE-122-028/02

Vencimiento: 2006-06-05

JUAN IGNACIO USTARAN CERVANTES
Presidente
Comité de Evaluación de Laboratorios de Prueba de ema, a.c.

MARIBEL LÓPEZ
Directora Ejecutiva de ema, a.c.

*El presente documento no tiene validez sin su anexo técnico correspondiente * 001P009

Working for a safer world

ILAC

ISO 9001:2000


CERTIFICATE OF REGISTRATION

Quality Management System

ANAB

BSI

Management Systems

CSA - CANADA


CSA INTERNATIONAL

Certificate of Qualification

MOTOR ENERGY EFFICIENCY VERIFICATION

This is to certify that

USEM De Mexico, S.A.DE C.V

Nuevo Leon, Mexico

Three Phase Induction Motors

CAN/CSA-C390-93, -98 - Energy Efficiency Test Methods for Three-Phase Induction Motors

Certificate No: EEV-2004-013

US MOTORS

Overarching policy

- All-certify rule
- Test methods and procedures use existing federal regulations
- “Basic model ” concept
- Random product selection process
- Independent testing
- Test failure provisions
- NEMA peer review

Would you like a copy of the NEMA Premium license agreement ?

Email

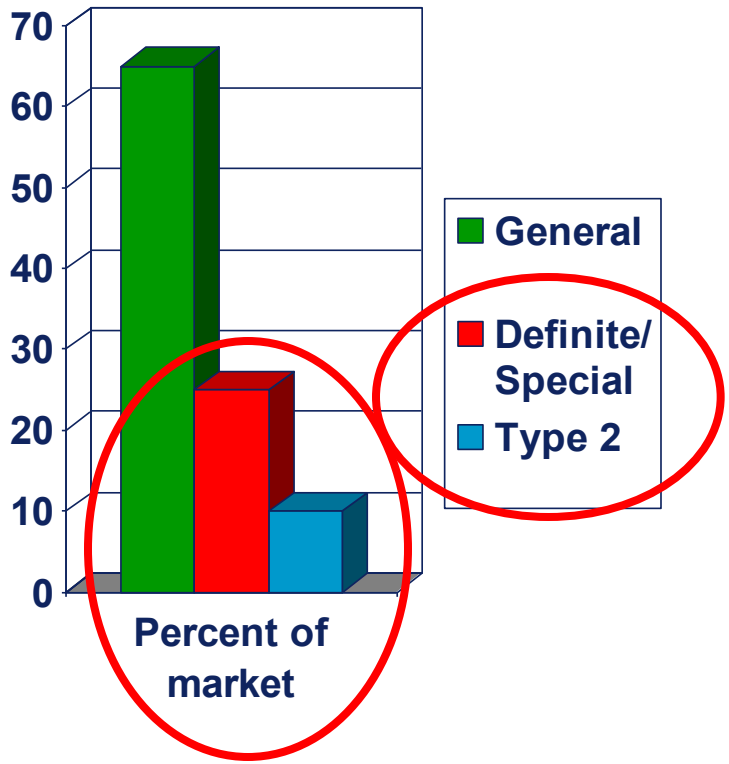
rob.boteler@emerson.com

Monitor

Verify

Enforce

Where is the next motor priority?



Save Energy by expanding the application of NEMA Premium to an additional 35% of units sold each year

Low Risk? NEMA Premium is an electrical design that may be incorporated in most mechanical packages rarely having negative affects to the application