The NEMA Premium Labeling Scheme

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The original NEMA [1] Premium labeling scheme was designed to simplify the identification and application of NEMA Premium efficient motors by end-users and original equipment manufacturers (OEMs). Since its inception, the NEMA Premium mark has gained wide acceptance with motor buyers, utilities, and other specifying organizations. The recognition of NEMA Premium has expanded from the United States to many countries around the globe. NEMA standards include efficiency levels for 60-Hz as well as 50-Hz operation.

The National Electrical Manufacturers Association has made significant changes to motor efficiency compliance verification requirements for NEMA Premium licensees.

Motor manufacturers that license NEMA Premium agree that the license is granted on the express condition that the licensee will comply with the NEMA Premium Efficiency Electric Motor Program guidelines which include how to use the NEMA Premium mark along with guidelines of the efficiency verification program. The licensee must agree to follow the guidelines or be subject to termination of the license and the loss of use of the NEMA Premium mark.

NEMA Premium Efficiency Specifications are the energy efficiency levels at which electric motors can qualify for the NEMA Premium designation and are consistent with NEMA MG1 table 12-12. These levels are subject to future review and NEMA expressly reserves the right to maintain or change these levels at any time, consistent with NEMA's Standardization Policies and Procedures, to maintain the viability and credibility of the NEMA Premium Efficiency Electric Motor Program and its goals. If the efficiency levels are changed at any time by NEMA, the licensee will have 180 days to revise his product to conform to the revised specifications of the NEMA Premium Efficiency Electric Motor Program.

Product scope of NEMA Premium:

1. Qualifying Products: For the purposes of this program, qualifying products are electric motors meeting the following criteria:
    - Single-speed; polyphase; 1-500 horsepower; 2, 4, and 6 pole; squirrel cage induction motors; NEMA Design A or B; continuous rated.
2. Premium Efficiency Specifications for Qualifying Products: Qualifying products for which the rated nominal efficiency meets or exceeds the nominal NEMA Premium Efficiency level presented in the tables below may qualify as NEMA Premium Efficient Electric Motors.

Table A. Nominal Efficiencies for NEMA Premium Electric Motors - 60 Hz Induction Motors Rated 600 Volts or Less (Random Wound):

	Open Drip-Proof			Totally Enclosed Fan-Coo		
HP	6-Pole	4-Pole	2-Pole	6-Pole	4-Pole	
1	82.5	85.5	77.0	82.5	85.5	
1.5	86.5	86.5	84.0	87.5	86.5	
2	87.5	86.5	85.5	88.5	86.5	
3	88.5	89.5	85.5	89.5	89.5	
5	89.5	89.5	86.5	89.5	89.5	
7.5	90.2	91.0	88.5	91.0	91.7	
10	91.7	91.7	89.5	91.0	91.7	
15	91.7	93.0	90.2	91.7	92.4	
20	92.4	93.0	91.0	91.7	93.0	
25	93.0	93.6	91.7	93.0	93.6	
30	93.6	94.1	91.7	93.0	93.6	
40	94.1	94.1	92.4	94.1	94.1	
50	94.1	94.5	93.0	94.1	94.5	
60	94.5	95.0	93.6	94.5	95.0	
75	94.5	95.0	93.6	94.5	95.4	
100	95.0	95.4	93.6	95.0	95.4	
125	95.0	95.4	94.1	95.0	95.4	
150	95.4	95.8	94.1	95.8	95.8	
200	95.4	95.8	95.0	95.8	96.2	
250	95.4	95.8	95.0	95.8	96.2	
300	95.4	95.8	95.4	95.8	96.2	
350	95.4	95.8	95.4	95.8	96.2	
400	95.8	95.8	95.8	95.8	96.2	

450	96.2	96.2	95.8	95.8	96.2
500	96.2	96.2	95.8	95.8	96.2

Table B. Nominal Efficiencies for NEMA Premium Efficient Electric Motors - 60 HZ Induction Motors Rated Medium Volts (5kv or Less) (Form Wound):

	Open Drip-Proof			Totally Enclosed Fan-C	
HP	6-Pole	4-Pole	2-Pole	6-Pole	4-Pole
250	95.0	95.0	94.5	95.0	95.0
300	95.0	95.0	94.5	95.0	95.0
350	95.0	95.0	94.5	95.0	95.0
400	95.0	95.0	94.5	95.0	95.0
450	95.0	95.0	94.5	95.0	95.0
500	95.0	95.0	94.5	95.0	95.0

Essential Tenets of the Original NEMA Premium License Agreement

Licensees must provide NEMA with copies of all the federally required compliance documentation.

Licensees use an accredited Laboratory which has the same meaning as that term given in the regulations of the U.S. Department of Energy published at 10 C.F.R. §431.12. The licensee must provide a complete listing of basic ratings and the associated NEMA nominal efficiency levels. The list includes a minimum of five samples of five ratings that have been laboratory tested. The test data is required to confirm the accuracy of the licensee’s AEDM (alternative efficiency determination method). The use of an AEDM provides the licensee with the necessary tool to accurately predict the efficiency of motors. The use of an AEDM is within the scope of federal regulations and has been accepted and used since the beginning of motor regulations in 1992.

NEMA Premium License Revisions

The latest revision to the NEMA Premium license requires each licensee to submit to

an annual NEMA verification test. This annual test is in addition to the current Department of Energy requirements for motor compliance. NEMA has introduced this added verification to help assure the validity of licensee data to motor users.

According to Memorandum of Understanding and License between the National Electrical Manufacturers Association and the licensee:

The Licensee agrees to utilize the methodology set forth in 10 C.F.R. Part 431 (Test Procedures, Labeling and Certification Requirements for Electric Motors), to determine which of its Qualifying Products comply with the NEMA Premium® Efficiency levels. Those motors which meet these requirements can be certified by the Licensee as "NEMA Premium® Efficiency Electric Motors" under this Memorandum of Understanding and License. The Licensee acknowledges and agrees that NEMA reserves the right to have tests conducted on electric motors bearing the NEMA Premium Mark received from the Licensee or owned by purchasers of electric motors. Should NEMA choose to conduct tests, such tests will be conducted by a qualified, independent Third-party test organization acceptable to both NEMA and the Licensee. If the motor(s) tested fails to meet or exceed the NEMA Premium® Efficiency level for the tested motor, the Licensee agrees to pay to NEMA the cost of the testing, including any cost of procuring and shipping the motor(s) to the Third-party test organization.

The Licensee agrees to submit annually to NEMA, no later than March 31st of each calendar year, a certificate from an Accredited Laboratory accredited under the National Voluntary Laboratory Accreditation Program (NVLAP) of the United States National Institute of Standards and Testing (NIST - http://ts.nist.gov/standards/accreditation/index.cfm [2]*) in the form set forth in Appendix G of this Memorandum of Understanding and License, that the testing required by 10 C.F.R. Part 431 (Test Procedures, Labeling and Certification Requirements for Electric Motors) was performed by the Accredited Laboratory.*

The Licensee agrees to participate in and bear the expense of the annual Verification Program described in Appendix H, and further agrees to respond promptly to all requests of NEMA in the event of a challenge initiated under Appendix I and to bear the expense of testing under the Challenge Program as provided for in Appendix I.

The Licensee agrees to apply the NEMA Premium Mark only to Qualifying Products that meet the NEMA Premium Efficiency Electric Motor Program guidelines of the License and are subject to the Verification Program.

NEMA continues to work closely with various federal, state, and local governments as well as power utilities, trade associations, and environmental groups to constantly improve NEMA member products and communications with markets. A complete list of NEMA Premium license holders may be found at www.nema.org [1]. Each member's data includes contact information and a full list of the products produced to the NEMA Premium standards including the annual verification by a third party lab.

Source URL (retrieved on *07/28/2014 - 8:04am*):
http://www.chem.info/articles/2012/11/nema-premium-labeling-scheme

Links:
[1] http://www.nema.org/
[2] http://ts.nist.gov/standards/accreditation/index.cfm