advanced energy

ADVANCED ENERGY'S NORMA OFICIAL MEXICANA (NOM) TESTING SERVICES

North Carolina Advanced Energy Corporation (Advanced Energy) is a nonprofit energy engineering and consulting firm headquartered in Raleigh, North Carolina. Since the late 1980s, our motors and drives team has been working to make motor-driven systems as efficient and reliable as possible. Our engineers, combined with our internationally accredited test lab, provide a unique set of independent and unbiased services to governments, original equipment manufacturers, motor and drive manufacturers, utilities, distributors, motor repair facilities and others.

In January of 2013, our lab received Norma Oficial Mexicana (NOM) designation working with the Asociación de Normalización y Certificación, A.C. (ANCE). Under a mutual recognition agreement, our NOM motor efficiency test reports may be used for motor efficiency certification in connection with ANCE's independent decision to issue NOM certification.

Our mutual recognition agreement with ANCE is approved by the National Commission for Efficient Energy Use (CONUEE) of the Ministry of Energy in Mexico. This partnership and mutual recognition allows Advanced Energy to test to two standards: NOM-014-ENER (for single-phase motors) and NOM-016-ENER (for three-phase motors). We are the only independent motor efficiency testing lab outside Mexico with NOM designation for electric motor testing, and we have completed several projects with ANCE for motor manufacturers and original equipment manufacturers seeking compliance and access to the Mexican market.

OUR CAPABILITIES

In partnership with ANCE, we can:

- Assist with understanding the motor efficiency requirements in Mexico
- Help design your motor test plan to meet requirements
- Test your motors to NOM-014-ENER or NOM-016-ENER standards
- Determine whether your motors meet requirements
- Submit the appropriate documentation to ANCE for certification
- Maintain your certification each year through required surveillance testing

Once all equipment has arrived, the entire process (motor preparation, testing and reporting) takes approximately two weeks. Along the way, we'll coordinate with ANCE on any questions that arise. After the appropriate motors have been tested and reports have been submitted, you and ANCE will be responsible for final certification.

In the first year of certification, we'll work with you to randomly choose motors to test. In later years, ANCE selects and tags motors to be tested.

NOM-016-ENER REQUIREMENTS (THREE-PHASE MOTORS)

The table below outlines the testing requirements for NOM-016-ENER for different types of motors. We can test horizontal motors of any family and size. For vertical motors, certain modifications for dynamometer mounting may be necessary.

Mounting Orientation	Family	Enclosure Type	kW (Hp)	Number of Poles	Number of Test Samples Required
Horizontal or Vertical	1	Open	0.746 (1.0) to 14.920 (20)	2, 4, 6, 8	2 motors Prioritizing the selection of a different model from the previous certification.
Horizontal or Vertical	2	Open	14.921 (20.1) to 74.60 (100.0)	2, 4, 6, 8	2 motors Prioritizing the selection of a different model from the previous certification.
Horizontal or Vertical	3	Open	74.61 (100.1) to 373 (500)	2, 4, 6, 8	1 motor Prioritizing the selection of a different model from the previous certification.
Horizontal or Vertical	4	Enclosed	0.746 (1.0) to 14.920 (20)	2, 4, 6, 8	2 motors Prioritizing the selection of a different model from the previous certification.
Horizontal or Vertical	5	Enclosed	14.921 (20.1) to 74.60 (100.0)	2, 4, 6, 8	2 motors Prioritizing the selection of a different model from the previous certification.
Horizontal or Vertical	6	Enclosed	74.61 (100.1) to 373 (500)	2, 4, 6, 8	1 motor Prioritizing the selection of a different model from the previous certification.

NOTES:

1) For those families that require motor certification with both mounting orientations (horizontal and vertical), samples corresponding to each type of motor must be laboratory tested.

2) For those families that only require motor certification with a single mounting orientation (horizontal or vertical), only the sample corresponding to the type of motor that needs to be certified must be laboratory tested.

3) For families that already have motor certification in a certain mounting orientation, and need to "extend the certificate" for motors from another orientation, the corresponding test report must be submitted, as required for the family.

4) Families 3 and 6 require only one sample motor each. It can be horizontal or vertical.

Source: NOM-016-ENER-2016, Table 3 – Family Grouping

Your motor nameplate must meet the minimum requirements shown in the following table.

Nominal Power (kW)	Nominal Power (Hp)	Enclosed Motors				Open Motors			
		2 Pole	4 Pole	6 Pole	8 Pole	2 Pole	4 Pole	6 Pole	8 Pole
0.746	1	77.0	85.5	82.5	75.5	77.0	85.5	82.5	75.5
1.119	1.5	84.0	86.5	87.5	78.5	84.0	86.5	86.5	77.0
1.492	2	85.5	86.5	88.5	84.0	85.5	86.5	87.5	86.5
2.238	3	86.5	89.5	89.5	85.5	85.5	89.5	88.5	87.5
3.730	5	88.5	89.5	89.5	86.5	86.5	89.5	89.5	88.5
5.595	7.5	89.5	91.7	91.0	86.5	88.5	91.0	90.2	89.5
7.460	10	90.2	91.7	91.0	89.5	89.5	91.7	91.7	90.2
11.19	15	91.0	92.4	91.7	89.5	90.2	93.0	91.7	90.2
14.92	20	91.0	93.0	91.7	90.2	91.0	93.0	92.4	91.0
18.65	25	91.7	93.6	93.0	90.2	91.7	93.6	93.0	91.0
22.38	30	91.7	93.6	93.0	91.7	91.7	94.1	93.6	91.7
29.84	40	92.4	94.1	94.1	91.7	92.4	94.1	94.1	91.7
37.30	50	93.0	94.5	94.1	92.4	93.0	94.5	94.1	92.4
44.76	60	93.6	95.0	94.5	92.4	93.6	95.0	94.5	93.0
55.95	75	93.6	95.4	94.5	93.6	93.6	95.0	94.5	94.1
74.60	100	94.1	95.4	95.0	93.6	93.6	95.4	95.0	94.1
93.25	125	95.0	95.4	95.0	94.1	94.1	95.4	95.0	94.1
111.9	150	95.0	95.8	95.8	94.1	94.1	95.8	95.4	94.1
149.2	200	95.4	96.2	95.8	94.5	95.0	95.8	95.4	94.1
186.5	250	95.8	96.2	95.8	95.0	95.0	95.8	95.8	95.0
223.8	300	95.8	96.2	95.8		95.4	95.8	95.8	
261.1	350	95.8	96.2	95.8		95.4	95.8	95.8	
298.4	400	95.8	96.2			95.8	95.8		
335.7	450	95.8	96.2			96.2	96.2		
373	500	95.8	96.2			96.2	96.2		

Source: NOM-016-ENER-2016, Table 1 – Nominal efficiency values at full load for vertical and horizontal motors (%)

NOM-014-ENER REQUIREMENTS (SINGLE-PHASE MOTORS)

The testing requirements for NOM-014-ENER are shown below.

Family Number	Test samples required by number of poles			Total number of test samples required	Single Voltage Motors		Dual Voltage Motors	Nominal Power (kW)
	2 pole	4 pole	6 pole		0-115 V OR 115.1-127 V	200 - 240 V	0-115V OR 115.1-127V AND 200 - 240 V	
I	5	5	5	15	Family 1			0.187 - 0.560
II	1	1	1	3		Family II		
III	1	1	1	3			Family III	
IV	5	5	5	15	Family IV			0.561 - 1.492
V	1	1	1	3		Family V		
VI	1	1	1	3			Family VI	

Source: Asociación de Normalización y Certificación, A.C.

Your motor nameplate must meet the minimum requirements shown in the following table.

Power Ranges		Rated voltage								
kW		115 V			127 V			200 – 240 V		
Greater than or equal to	Less than	Number of poles								
		2	4	6	2	4	6	2	4	6
		Rated efficiency in %								
0.180	0.249	55.0	52.5	50.5	52.5	50.5	48.0	52.5	50.5	48.0
0.249	0.373	57.5	55.0	52.5	55.0	52.5	50.5	55.0	52.5	50.5
0.373	0.560	62.0	59.5	57.5	59.5	57.5	55.0	59.5	57.5	55.0
0.560	0.746	64.0	62.0	62.0	62.0	59.5	57.5	62.0	59.5	57.5
0.746	1.119	66.0	64.0	64.0	64.0	62.0	59.5	64.0	62.0	59.5
1.119	1.492	70.0	68.0	68.0	68.0	66.0	66.0	68.0	66.0	66.0
1.492	1.501	74.0	72.0	72.0	72.0	70.0	70.0	72.0	70.0	70.0

Source: NOM-014-ENER-2004, Table 2 – Rated efficiency for single-phase, induction, squirrel cage electric motors

ADDITIONAL INFORMATION

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