

Put Our Services to the Test

Advanced Energy's Motor and Drives Test Lab

Advanced Energy's independent motor test lab is continuously expanding testing services and capabilities to help clients meet new demands and challenges. From product development testing and motor design services to performance and endurance testing, we are your trusted partner for customized testing of motors and drives.

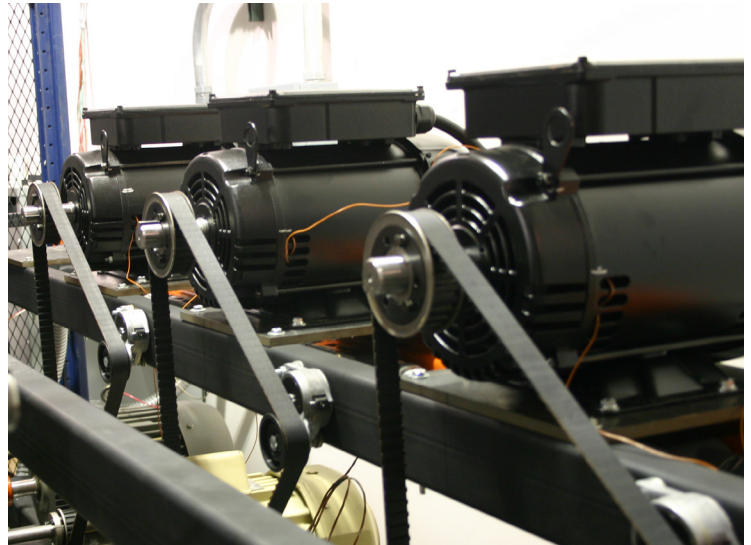
Our motor systems engineers work with you to design test plans targeted at identifying desired characteristics at a high level of accuracy. Combined, we offer more than 100 years of engineering experience and have performed detailed tests on more than 3,000 motors and drives in our lab – the only independent motor lab in North America to receive accreditation by the National Voluntary Laboratory Accreditation Program.

NEW SOFTWARE AND EQUIPMENT

- Flux 2D Motor Design Software: finite element software used to assist customers with custom motor designs and improvements.
- Yokogawa DL850 Scopercorder: provides the ability to capture 10 channels of high-speed, high resolution waveforms and to see events in real-time.
- (2) Yokogawa WT3000s: allows for testing and measuring DC and high AC frequency ranges, as well as measuring input and output simultaneously; shows voltage and current waveforms, harmonics and validation of total harmonic distortion.

MOTOR-STAND TESTING

- Shortens the time-to-market cycle by evaluating and/or comparing alternative motors
- Reliability rig test
- Conduct side-by-side tests featuring incumbent and challenger motors, including temperature, load and frequency
- Helps facilitate the decision process regarding motor reliability
- Provides flexible testing conditions



POWER SYSTEMS

Two alternating current [AC] power systems with independent phase voltage control

- Single- or three-phase closed loop voltage control
- 0-600V; 320A max continuous, 2000A max short intervals
- Clean power [in-line isolation transformer]
- Point-on-wave control of power interruptions — both location on waveform and duration controlled
- AC variable frequency PWM drives: 1-500Hp, 230/460V

DIRECT CURRENT (DC) POWER SYSTEM WITH VOLTAGE CONTROL

- 0-500V; 510A max continuous, 770A max short intervals [max 200kW]
- Configurable to provide 100 kW continuous at 240-500V
- DC Drives: Four-quadrant 125Hp, armature 265-530V at 205A, field 216-432V at 10A

HIGH-SPEED DATA ACQUISITION AND CONTROL

Simultaneous acquisition of voltage, current, power, torque, speed, temperature and other device outputs

- 32 single-ended [16 differential] analog input channels with 16 bit resolution [$\pm 0.0015\%$ of full scale] at a max of 1MHz scan rate
- Four analog output channels with 16 bit resolution at 1.25MHz

Capture of waveforms distorted by power semiconductor devices and other short duration transients

- Additional simultaneous acquisition on 10 channels of voltage [max 1kV]. Current acquisition [max 150A, 0-10MHz]. All channels with true 12 bit resolution at up to 100MS/s.

CENTRAL DATA ACQUISITION AND CONTROL

- All measurements coordinated by centralized data acquisition and control system permitting real-time simultaneous readings from all metering sources
- Acquisition for high-speed recording initiated by either an external trigger or a threshold based on any measured parameter
- Available I/O channels permit control of any device under test and/or test apparatus for coordinated initiation and acquisition of transient phenomenon
- Real-time data processing facilitates adjustments to the test plan during the test
- Custom LabView programming

RELIABILITY TESTING

¼-7.5Hp with auxiliary air cooling for higher cycling rate and quicker results. Methods include:

- Start-stop cycling
- DC injection braking for single-phase system endurance
- Plug reverse testing for three-phase motors
- Bearing load durability testing
- Elevated ambient for thermal aging
- Motor and drive thermal mapping
- Comparison testing for vendor evaluations

DYNAMOMETER CAPACITY

- Constant torque, high load inertia: 1200Nm [800lb-ft], 0-3600RPM, 300Hp max
- Variable torque, low load inertia: 1200Nm [880lb-ft], 0-8000RPM, 250Hp max
- Small motor capability down to sub-fractional Hp

SHAFT POWER MEASUREMENT

- 0.5-1200Nm [0.4-880lb-ft] torque for 0-8000RPM at $\pm 0.2\%$ of full scale
- Speed measurement 0-15000RPM at ± 0.1 RPM

PRECISION ELECTRICAL MEASUREMENTS

- True RMS AC or DC voltage [0-1000V] and AC current [0-1000A] on individual phases, 0.1Hz-1 MHz
- True RMS one- or three-phase power for three or four wire delta or wye configurations with basic power accuracy 0.02% of reading
- DC current measurement [0-500A] at $\pm 0.3\%$ of full scale 1200A short duration

VIBRATION TESTING

- NEMA frames 42 thru 449 per NEMA MG1-2006 [Part 7]

SOUND TESTING

- ¼-300Hp per IEEE85 [Test procedure for airborne sound measurements on rotating electrical machinery]

FOR MORE INFORMATION:

visit www.advancedenergy.org/mad

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