CASE STUDY THE EMC TEST CENTER FOR EXCELLENCE AT INGENIUM– ROCKFORD, ILLINOS

Ingenium Testing in Rockford, Illinois recently opened "The EMC Test Center for Excellence," a multi-chamber facility for EMC, lightning strike, and high intensity radiated fields (HIRF) testing. This test center provides Ingenium Testing with the capabilities to conduct compliance testing on a wide range of products. Cliff Smith, Managing Partner of Ingenium Testing, summarized the vision of the center, "As the information age continues, our society will become more electronically-oriented and increasingly more dependent upon wireless and internet connections. As a result, EMC testing will become an important means to ensure that products are interdependent and interconnected without creating interference."

Ingenium's EMC Test Center for Excellence began to take shape in July of 2006, when Ingenium Testing awarded a contract to ETS-Lindgren, experts in the test and measurement industry, to build five EMC chambers. The chambers included a turnkey FACT™ 10-meter test chamber and four MIL-STD-461E chambers. Since that time, Ingenium Testing has added three MIL-STD-461E chambers, a SpaceSaver™ 26H chamber, a SMART™ 80 reverberation chamber and several shielded enclosures to the collection of ETS-Lindgren chambers at the facility. Today, the modern 85,000 sq. ft. (7,896 sq. m) test facility, of which ETS-Lindgren test chambers occupy some 30,000 sq. ft. (2,787 sq. m), stays busy with a steady stream of customers, many having special requirements. "With individualized solutions for our customers using state-of-the-art test chambers, EMC testing has never been easier or more effective," said Mr. Smith.

Commercial Chambers Technical Specifications

The EMC Test Center for Excellence includes two commercial test chambers: a FACT™ 10-3 test chamber and a SpaceSaver™ 26H chamber designed and installed by ETS-Lindgren.

Notable FACT™ 10 chamber features include:

- Ten-meter chamber with inside shield dimensions of 63.5 ft. x 37.8 ft. x 26.98 ft. high (19.3 m x 11.5 m x 8.2 m)
- Control room with inside shield dimensions of 15 ft. x 12 ft. x 10 ft. high (4.6 m x 3.6 m x 3 m); connected to the chamber using a shielded tunnel
- Heavy-duty 3 m turntable with an 8,000 lb. distributed load capacity
- 3 m x 3 m fully automatic sliding door
- Closed circuit monitoring system
- Listed with FCC and Industry Canada
- Designed for commercial as well as military testing
- Normalized site attenuation performance test for one 3 m and two 10 m test range, per ANSI C63.4, from 30 MHz to 1 GHz
- Field uniformity calibration per IEC 61000-4-3, from 80 MHz to 2 GHz

Notable SpaceSaver™ 26H chamber features include:

- Inside shield dimensions of 24 ft. x 10 ft. x 10 ft. (7.3 m x 3 m x 3 m)
- Excellent site attenuation correlation for radiated emissions prescans over the operating frequency 30 MHz to 18 GHz
- High field uniformity for radiated immunity measurements over the operating frequency 26 Hz to 18 GHz
- Tested to meet radiated immunity applications per IEC 61000-4-3, EN 61000-4-3 RI, and ANSI C63.4-1992 (pre-scan)

Military-Standard Chamber Technical Specifications

ETS-Lindgren designed and installed several MIL-STD test chambers configured to accommodate an extensive variety of equipment sizes and requirements. The MIL-STD test chambers each include a reliable double-knife edge (DKE) RF shielded door.

Notable features of the chamber complex includes:

- Four 25 ft. x 36 ft. x 18 ft. (7.6 m x 11 m x 5.5 m) chambers, constructed of Series 81 – 100 dB modular shielded panels, connected to a centralized 26 ft. x 12 ft. x 10 ft. (7.9 m x 3.6 m x 3 m) shielded control room via an access tunnel for complex interconnected setups. Of these chambers, two are equipped with 500 hp motor drives and two are equipped with 150 hp motor drives
- Two 20 ft. x 20 ft. x 12 ft. (6 m x 6 m x 3.6 m) chambers
- One 20 ft. x 28 ft. 12 ft. (6 m x 8.5 m x 3.6 m) chamber
- Central shielded control room with CCTV monitoring and emergency shutdown
- Provisions for hydraulic and/or air cooling to gear box, constant speed drive and other devices
- Jet engine start simulation
- Tested in accordance with MIL-STD-460E from 80 MHz to 18 GHz

A SMART™ 80 (Statistical Mode Averaging Reverberation Test-Site) chamber completes the suite of Military Standard test chambers.

Notable features include:

- 44 ft. x 20 ft. x 16 ft. (13.4 m x 6 m x 4.8 m) reverberation chamber, constructed of Series 81– 100 dB modular shielded panels
- Tested in accordance with MIL-STD-460E from 80 MHz to 18 GHz
- For full and pre-compliance testing per MIL-STD-461E, SAE J1113/27, GM-W3097GS, EUROCAE/RTCA DO160D/E, IEC 6000-4-21, DEF STAN 5941, RTCA DO160D, HERO Testing, and SE Testing
- Fitted with single or dual stirrers
- Continuous or stepped rotation

About ETS-Lindgren

ETS-Lindgren is an international manufacturer of components and systems that measure, shield, and control electromagnetic and acoustic energy. The company's products are used for electromagnetic compatibility (EMC), microwave and wireless testing, electromagnetic field (EMF) measurement, radio frequency (RF) personal safety monitoring, magnetic resonance imaging (MRI), and control of acoustic environments.

Headquartered in Cedar Park, Texas, ETS-Lindgren has manufacturing facilities in North America, Europe, and Asia. Additional information about ETS-Lindgren is available at www.ets-lindgren.com. Additional information about ETS-Lindgren's parent company ESCO and its subsidiaries is available at www.escotechnologies.com.

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