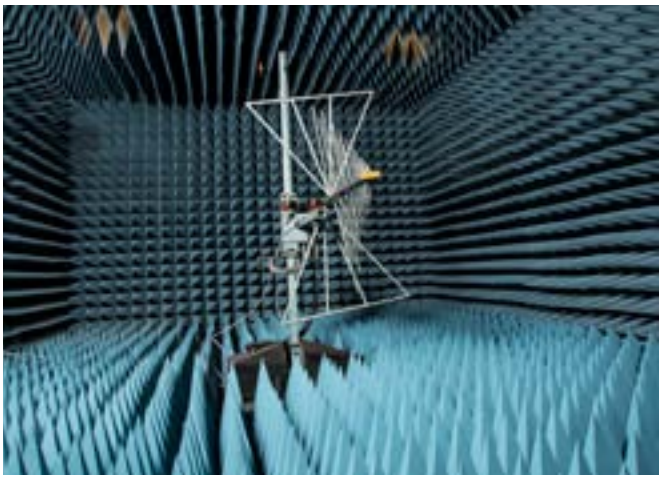
CASE STUDY UTAC CERAM - PARIS, FRANCE



The University of Nevada, Reno (UNR) is a teaching and research university established in 1874 and located in Reno, Nevada, United States. It is the sole land grant institution for the state of Nevada. The University is well-known as a leading engineering institution offering courses on electromagnetic compatibility (EMC) subjects. UNR decided to not only enhance their EMC educational courses, but also offer their existing EMC test chamber for use by local industry. To make sure the chamber would be helpful for both purposes, they turned to the experts at ETS-Lindgren, an industry leader in the design, manufacture and installation of EMC test chambers. ETS-Lindgren provided a complete upgrade to the University's existing RF Shielded Anechoic Chamber.

New, state-of-the-art, RF absorber replaced older absorber on all interior surfaces of the chamber. This resulted in greatly improved chamber performance to expand the R&D capabilities of the UNR College of Engineering. At the same time, the upgrade facilitated the ability of UNR to provide the chamber to a wider range of manufacturers – at additional phases in the product development cycle. Now, customers can perform pre-compliance or compliant EMC testing and product design evaluation without leaving Reno.

"To meet our varied industry and educational objectives, we had numerous conversations with the ETS-Lindgren sales and engineering staff," said Professor Indira Chatterjee, Associate Dean of the College of Engineering at UNR. "We were able to discuss our current EMC lab capabilities and outline our goal to upgrade our existing chamber to a higher performance, modern EMC test chamber. As a result, we worked together to develop the optimal chamber that not only met the needs of our students, but also the manufacturers in the area that requested access to our EMC test lab."

The new EMC Test Laboratory is located on campus and is now open to evaluate the electromagnetic compatibility of products for commercial, aerospace and government applications. UNR staff is available to assist the customer upon request. All revenue generated from the use of the UNR chamber is reinvested to continuously upgrade the services UNR can offer. To schedule a lab visit or to obtain additional information, please contact Indira Chatterjee at phone: 775-784-1350 or e-mail: indira@unr.edu

EMC Test Chamber Technical Specification

The UNR chamber features ETS-Lindgren's Series 81 Shielding, which boasts over 10,000 installations worldwide. Modular panel sections are assembled with a zinc-plated clamping system into a self-supported, corrosion resistant enclosure. Sheets of 28-gauge galvanized steel are laminated to high-density particle and/or plywood board core. Dielectric vapor barrier and underlayment are placed beneath the shielded floor panels to maintain electrical isolation.

UNR Chamber Dimensions

- RF Shielded Enclosure Nominal Inside Dimensions are 9m (30 ft) Long x 4.5m (15 ft) Wide x 3.3m (11 ft) High
- RF Shielded Door Nominal Dimensions are .91m (3 ft) Wide x 2.1m (7 ft) High

- The Turntable Diameter is 119cm (47 in) with an Approximate Load Rating of 136 kg (300 lbs)

Anechoic Absorber

ETS-Lindgren's type EHP (Extra High Performance) 18-PCL FlexSorb™ microwave absorber is designed for use over a wide frequency spectrum and has been used as an effective tool for the reduction of reflections over the range of 500 MHz t0 40 GHz. The absorber was installed on the floors, walls and ceiling. Removable FlexSorb absorber was also provided for the floor to make the chamber fully anechoic. The shielded door interior is lined with FlexSorb absorber due to its durability in a high traffic area.

EHP Absorber Key Features

- Numerically Optimized Design
- 200 V/m Power Handling Capability
- Fire Retardant

Description

Each piece of absorber is fabricated of the highest quality urethane foam which is cut into a precise bun configuration and impregnated with a conductive carbon using a proprietary formulation. After the addition of salts for the combustion limited version of the absorber, the buns are dried and cut into precision shapes, such as pyramidal, wedge, and other geometrical shapes. Each piece of material is treated with a dielectric coating to provide a pleasant appearing, functional unit with superior performance properties.

Continuing Education

ETS-Lindgren also provided the opportunity for two UNR personnel to attend its three-day EMC Fundamentals Course. As part of the ETS-U program (ets-lindgren.com/learning), the course is taught by an iNARTE certified engineer. Highlights of the course include the hands-on lab sessions where students learn how to perform EMC testing per industry standards in a three meter RF shielded semi-anechoic chamber.

Chamber Performance for Compliance or Pre-compliance Testing

Fully compliant per IEC 61000-6-2 with the following Immunity Standards:

- ESD per IEC 61000-4-2
- RF EM Field per IEC 61000-4-3, with Floor Absorber Patch in Place
- EFT per IEC 61000-4-4
- Surge per IEC 61000-4-5
- Conducted HF per IEC 61000-4-6
- Power Frequency Magnetic Fields per IEC 61000-4-8
- Voltage Variations, Dips, Interruptions per IEC 61000-4-11

Pre-compliant per IEC 61000-6-4 Emissions Standards, with the following notes:

- Radiated – the Existing Chamber is too Short in Length to Achieve Full Compliance
- Conducted – the Newly Installed EHP-18 Absorber Operates at >500 MHz Frequencies

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. The company is a wholly owned subsidiary of ESCO Technologies, a leading supplier of engineered products for growing industrial and commercial markets. ESCO is a New York Stock Exchange listed company (symbol ESE) with headquarters in St. Louis, Missouri. Additional information about ETS-Lindgren is available at www.ets-lindgren.com. Additional information about ESCO and its subsidiaries is available at www.escotechnologies.com.