

CASE STUDY UTAC CERAM - PARIS, FRANCE



Since 1945, the UTAC CERAM (Centre for Tests and Research Automotive) Group located near Paris, France has enjoyed an illustrious history with its novel European race track and test center supporting automotive research and development. When the UTAC CERAM Group wanted to upgrade an existing EMC full vehicle test chamber, they turned to ETS-Lindgren. The goal was to utilize the existing large chamber and supporting test chambers, but increase performance by replacing the older absorber with state-of-the-art new absorber. ETS-Lindgren's hybrid absorber, a combination of ferrite tile and polystyrene absorber, dramatically improved performance.

The shielded doors, lighting system, and flooring were also refurbished to enhance the appearance and functionality of the chamber. Now, the UTAC CERAM Group has expanded its test capabilities to meet the future stringent testing required by the automotive and military EMC regulatory groups.

ETS-Lindgren has a long history in the design and installation of automotive EMC test chambers for leading automotive and vehicle equipment manufacturers, including General Motors, Chrysler, Honda, Valeo, Faurecia, Delphi, and Visteon, to name a few.

Chamber Technical Specifications

- The 10-meter chamber interior dimensions are 21m (69 ft) long x 12 m (40 ft) wide x 8m (26 ft) high with a 5m (16 ft) diameter quiet zone at 10m (33 ft) according to CISPR 16-1-4 (an independent laboratory verified this specification).

It is designed for automotive EMC testing in accordance with commercial standards CISPR 12, CISPR 25, ISO 11451, ISO 11452 and IEC 61000-4-3, as well as military standard MIL-STD-461E.

- ETS-Lindgren performed a complete preventive and curative maintenance of the existing chamber doors, including a large semi-automatic double leaf door with ramp for bringing vehicles into the chamber, as well as two single leaf doors for personnel access.
- The existing 9m (23 ft) diameter heavy duty turntable rated for approximately 9 tons distributed load was retrofitted with new brush-type gasket. This improved the grounding of the turntable by enhancing connection to the surrounding ground plane.

- Chamber lighting was upgraded using a metal-halide based solution. Before the upgrade, ETS-Lindgren performed an electrical safety test (isolation resistance measurement) in order to verify the status of the electrical cabling and repair if needed. ETS-Lindgren also provided a lighting simulation study with various projector locations to determine optimal lighting. The new lights do not generate electromagnetic interference and utilize the existing electrical power supply.
- The ground floor plane was completely upgraded in compliance with CISPR 16.

Anechoic Absorber Treatment

ETS-Lindgren provided DuraSorb™ hybrid technology absorber. This includes a combination of high-performance ferrite tile with DSH-600 polystyrene EMC absorber.

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Absorber coverage was provided on all wall and ceiling surfaces.

Key absorber features include:

- DuraSorb is manufactured by injecting uniformly loaded lossy materials in predetermined geometric shapes to produce the desired performance.
- All material was 100% tested and provided with a serial number for complete traceability. Test results were documented in a formal test report.
- DuraSorb is intrinsically non-hygroscopic due to its closed cell design; it inherently resists water and moisture.
- Outstanding fire retardancy is provided in accordance with industry standards DIN 4102, UL 94 HBF, and others.
- CISPR 16-1-4: NSA at 10m (33 ft) for 4m (13 ft) and 5m (16 ft) quiet zone less than +/4 dB from 30 to 1000 MHz.
- CISPR 16-1-4: Site VSWR (SVSWR) testing from 1 to 18 GHz at 3m (10 ft) range, with a test volume of 2m (7 ft) diameter.
- CISPR 25 Ed 3: Better than 6 dB between 70 MHz and 2500 MHz.
- CISPR 25 Ed 4 (Draft): 150 kHz to 1 GHz, Long Wire compliant.
- IEC 61000-4-3: Field uniformity less than 6 dB from 80 MHz to 6 GHz.
- Absorber reflectivity better than 6 dB from 80 MHz to 250 MHz and better than 10 dB above 250 MHz per MIL-STD-461E.

Chamber Performance Specifications

Following the upgrades noted above and the installation of the new absorber, the chamber achieved the following performance:

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.

