

CASE STUDY

Ulsan Technopark – Automotive Parts Innovation Center (APIC)

Korea
Automotive
PULSE Platform, LDS Shakers, Arrays, Transducers

Ulsan Technopark's Automotive Parts Innovation Center (APIC) provides test services for its customers who are mainly manufacturers of components, both Tier 1 and Tier 2. Brüel & Kjær's PULSE platform, LDS shakers, arrays and transducers are all used at the facility for automotive NVH vibration testing, environmental testing and material test.

Photos courtesy of Ulsan Technopark



Ulsan Technopark



The Ulsan Technopark (UTP), established in 2002, is jointly owned by the Korean government and the Ulsan City Authority. Its goal is to situate resources such as universities, businesses and research institutes in one place, and become the centre for technological innovation, providing building facilities and equipment for research, testing and production.

The Automotive Parts Innovation Center (APIC)

The Automotive Parts Innovation Center (APIC) located at Maegok-dong, Buk-gu, Ulsan, is Ulsan Technopark's automotive research facility. It fosters technological innovation, quality improvement, and business establishment support of automotive parts companies in the Yeongnam region of Korea. The facility, covering an area of more than 55000 m², has a total floor space of over 19000 m² and cost KRW 124 billion for the infrastructure and KRW 48 billion for the equipment. It has more than 60 employees, all with university degrees.

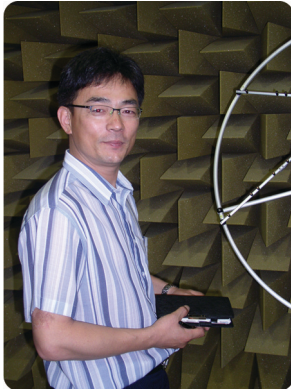


Its main focus is to provide test services for its customers who are mainly manufacturers of components, both Tier 1 and Tier 2. In addition, UTP also works for Korean automotive manufacturers including SsangYong Motor Company, Hyundai Motor Company and Renault Samsung.

Today, UTP places a strong focus on Hybrid Electrical Vehicles (HEV) and Electrical Vehicles (EV), and is aiming at becoming the Korean competence centre in this field.

Quality Matters

Fig. 1
Andrew Kim, Test & Reliability Chief Manager at UTP



Andrew Kim, Test & Reliability Chief Manager at the Ulsan Automotive Parts Innovation Center (APIC), worked for Hyundai Motor Company for 10 years before joining UTP in 2004. With a Masters in Mechanical Engineering from Pusan National University and currently working on a doctoral thesis, Andrew was highly influential in the design and commissioning of UTP's state-of-the-art test facility. The facility includes a semi-anechoic chamber with a cut-off frequency of 125 Hz and a background noise level of less than 20 dBA, four climatic chambers, a state-of-the-art crash test facility, a hydraulic road simulator and a multi-axle hydraulic system for durability testing.

Andrew says, "Before joining Ulsan I worked for Hyundai Motor Company for 10 years and used Brüel & Kjær products and solutions almost exclusively". "At UTP," he says, "we have a high focus on automotive NVH vibration testing for life-cycle and environmental tests". Andrew is very influential in advising customers in choosing test and measurement systems. He says, "In fact, it is not uncommon for our customers to purchase solutions that have been used for their projects".

UTP currently has two PULSE systems, which were bought four years ago – a 17-channel C-frame and a 34-channel D-frame – and they have plans to invest in more. Andrew continues, "I'm especially impressed with the PULSE platform, both hardware and software, and we are now moving forward to use PULSE Reflex Core and Modal for post-processing. We're also very interested in Brüel & Kjær's unique expertise in array technology".

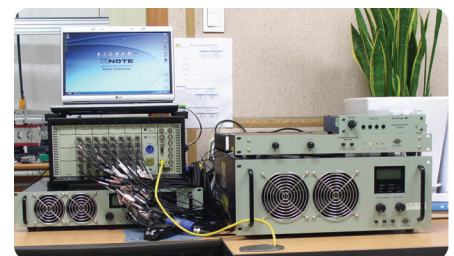
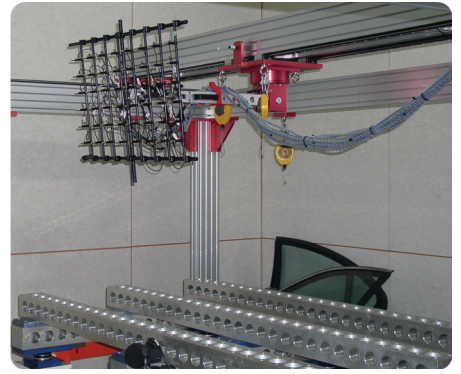


Fig. 2
The NS-STSF system with scanning robot

UTP has both a Non-stationary STSF (Spatial Transformation of Sound Fields) array with scanning robot and a circular array that is used for Noise Source Identification and sound power measurements in UTP's semi-anechoic chamber.

Other Brüel & Kjær products used at UTP include an Impedance Tube for material testing. LDS shakers are extensively used – a V875 for durability/life cycle testing and a V9 with a climatic chamber for vibration testing (both R&D and durability/life cycle). In addition, Brüel & Kjær microphones, accelerometers and power amplifiers are used exclusively.



Product quality is vital to UTP. Andrew explains, “ The purchase price of Brüel & Kjær products and solutions is high but the quality and reliability are excellent, and therefore, together with accurate data far outweigh the initial cost”. “In fact”, he concludes, “UTP also has systems from one of Brüel & Kjær's main competitors, but our test engineers much prefer the ease of use and functionality of PULSE”.