

Mini-Symposium on:

PHM-driven Smart Durability Testing for Annoying Noise in Automotive Industry

In the automotive industry, durability testing is a key process carried out during vehicle development to ensure that quality and reliability standards are met, and to identify any potential issues. The demand for durability testing has been increasing recently due to stricter requirements and the emergence of new evaluation items. Annoying noise, such as clicks, squeaks, and rattles, is one of these areas that becomes apparent with the repeated operation of vehicle components, such as doors or windows, and often results in customer complaints and reduced reliability. However, a large portion of the testing and evaluation for this issue relies on manual efforts, such as auditory and visual inspections at intermittent intervals, making the process subjective and inefficient.

This symposium presents a novel method that utilizes vibration sensors and the prognostics and health management (PHM) technique to assess annoyance levels and predict their occurrence during durability testing. By doing so, it aims to make noise detection more reliable and objective, while also reducing test time through early termination by leveraging the prognosis capability. The power door system (PDS) and power window system (PWS) are used to demonstrate the procedure.

❖ Mini-Symposium Developers:

- Prof. Joo-Ho Choi, Korea Aerospace University (Korea)
- Prof. Hae-Sung Yoon, Korea Aerospace University (Korea)
- Senior researcher, Seok Hyun Hong, Hyundai-Kia Motors R&D Center
- Senior researcher, Yun Jong Lee, Hyundai-Kia Motors R&D Center



Prof. Joo-Ho Choi
Korea Aerospace University,
Goyang, Korea
Email:
jhchoi@kau.ac.kr



Prof. Hae-Sung Yoon
Korea Aerospace University,
Goyang, Korea
Email:
hsyoon7@kau.ac.kr



Mr. Seok Hyun Hong
Hyundai-Kia Motors R&D
Center, Hwasung, Korea
Email:
ftrain77@genesis.com



Mr. Yun Jong Lee
Hyundai-Kia Motors R&D
Center, Hwasung, Korea
Email:
yj.lee@genesis.com

❖ Mini-Symposium Chair:

- Prof. Joo-Ho Choi

❖ Paper List (Tentative):

- To be updated