Groupe PSA

On the way to a noise-free car interior

To design a silent mechanical system despite friction, Groupe PSA has developed a test protocol which applies to any new material and a database outlining the noise performance of various pairs of materials.

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OUR CUSTOMER

Corporate name
Groupe PSA

Turnover
74 billion euros

Workface
211,000

Business activity
Groupe PSA is comprised of five car brands - Peugeot, Citroën, DS, Opel and Vauxhall and offers a broad range of connected and mobility services sponsored by the Free2Move brand.

In the automotive sector, noise performance is among the essential data that must be considered from the design stage of new models with the aim being to minimise squeaking and grinding in order to make the car interior as noise-free as possible. With this in mind, the tribology experts of the Groupe PSA entered into partnership agreements with Cetim's experts to work together on reducing the noise inside cars.

"This new study conducted with Cetim was intended to get better knowledge of the materials that we use as regards noise performance and obtain a method to assess this performance from the design stage of the vehicles", confirmed Pierre Charles, tribology specialist at PSA.

A hundred tests

The study was first initiated on parts entering into contact in the control systems and then went on to cover 25 pairs of polymer / polymer and polymer / steel materials. Approximately one hundred tests were performed.

"Two years of studies were required to understand the noise excitation mechanisms, develop software applications capable of predicting them, propose formulations to reduce the noise performance potential and above all develop a testing procedure which can be applied to all new materials that we are likely to use in our vehicles", added Dominique Pierrat, plastic processing specialist at PSA.

Contribution of digital technology

As part of this work, a digital approach served to demonstrate that it was possible to reproduce the complex phenomena noted during the tests: stick-slip, sprag-slip, etc.

"Nevertheless, tribology is an especially complex field were many variables can come into play. As a result, at present, we are continuing to further optimise the developed method", continued Dominique Pierrat.

Cetim's asset

Cetim's experts are able to design methods and tools (e.g. high speed tribometers) to faithfully reproduce the tribological stresses of parts and components in order to optimise their behaviour.

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1904-021