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Trim covers become more than just a back seat driver

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Traditionally, automotive seats and trim covers get no respect. While they are big factors in the customer's long term comfort and satisfaction, the truth is until recently the process for developing these components has lagged significantly when compared to other parts of the car.

In fact, many vehicle manufacturers and their suppliers are still using labour-intensive and outdated methodologies for developing seat trim covers. The seat cover remains one of the few, if not only, automobile components that is based on 2D manual design processes.

The irony is that automotive seats represent the second highest cost vehicle component, and the trim cover is one of the most complex parts of the seat, with over 5,000 pieces of attribute data required to define a typical seat cushion backrest and headrest.

The traditional 2D-based seat trim cover design/manufacturing process requires a substantial amount of translation and verbal communication to transfer data between numerous people, departments, and software applications.

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Since drawings, bill of materials (BOM), cost assessments, and sew instructions are developed manually, the process is slow and error-prone. Worse still, there is no early producibility or cost feedback on the design.

Reducing engineering time

However, new design software for seat trim covers, such as VISTAGY's Seat Design Environment (SDE), is making it possible for vehicle manufacturers and their suppliers to work in a 3D CAD environment which allows for full definition (geometric and non-geometric) of the seat cover in a 3D master model. Many high profile vehicle manufacturers and suppliers have started to embrace this new approach.

Creating a 3D master model provides a seamless way to generate data needed for manufacturing or to share with suppliers and customers. In fact, by using this approach, one major manufacturer found that it was able to decrease the time it took to design and develop the first set of flat patterns for proof of concept seat trim covers by 87%.

A major benefit of 3D master models is a reduction in engineering time. Since all engineering data is in a single location - the CAD model - engineers spend less time searching for data. This solution automates the reuse of information so errors can be avoided and better decisions can be made. It also helps save time by automating manual repetitive tasks and providing engineering feedback earlier in the process, enabling more rapid optimisation and streamlined communication.

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A master model solution also enables OEMs to develop trim cover cost estimates early on, prior to physical samples and trim sourcing, and assures that the design is within allowable cost targets.

Ultimately, the master model-based process enhances consistency because a common trim design process enables standardisation from styling to manufacturing throughout a global engineering organisation. This makes it easier to share information and best practices while eliminating duplication, resulting in a more rapid process, fewer errors, and lower cost to design and manufacture seat trim covers.

There is no question that going forward, the master model concept is going to set the trend for the development of seat trim covers.

The opinions expressed here are those of the author and do not necessarily reflect the positions of Automotive World Ltd.

Ed Bernardon *is Vice President, Business Development at VISTAGY, Inc.*

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