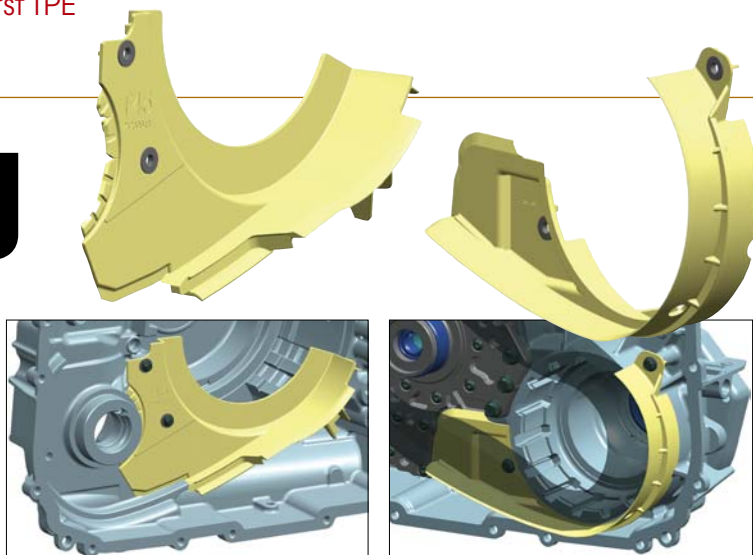


An automotive gearbox assembly part currently manufactured in South Korea and China is making use of thermoplastic elastomer (TPE) technology to overcome a significant design challenge, while Kraiburg is set to open its first TPE compounding plant in Asia in August

## Overcoming design challenges



A unique approach to integrating a sealing and baffle function in General Motors' new 6T40 and 6T45 transversely mounted 6-speed automatic transmissions helps condense packaging space and enable better clutch and transmission durability. The two new automatic transmissions deliver power to a wide range of vehicles available globally from GM in 2008, including the Chevrolet Malibu, Daewoo Tosca and Buick LaCrosse for the Chinese market.

The integrated baffle and seal lip assembly, made of Hytrel thermoplastic polyester elastomer from DuPont ([www.dupont.com](http://www.dupont.com)), is located in the torque transfer case and is designed to reduce oil aeration, provide a seal that limits fluid from flooding the chain while enabling transmission fluid fill for life.

The one-piece, flexible component significantly reduces overall cost because it

avoids the use of expensive multi-step production and assembly processes, which were typically metal stampings or plastic carriers with a rubber bead.

"We started a couple years ago and worked very closely with GM to optimise the material and process for this design so that they could cost effectively realise the full benefits of the innovation," says Dino Tres, DuPont Automotive development programmes manager.

Even though the Hytrel material is not typically considered for transmission applications, it proved to offer the right balance of flexibility and stiffness despite temperature extremes to fit the complex geometries of the transfer case while resisting swell when exposed to oils, aliphatics and aromatic solvents, according to Tres. Two years of development saw tooling iterations and material

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upgrades to optimise performance for service temperatures that cycle between -40°C to -140°C.

Now in production, the part is manufactured by Chunil Engineering in Korea and CWB Group in China.

"The success of this design on the 6T40 program was followed quickly by application of this design on the 6T45 programme, which recently went into production," says Jatin Desai, General Motors Powertrain transmission structural component global team leader. "This generation offers improved performance, yet still packages the 6-speed into the space of a 4-speed."

### TPE compounding launch

Kraiburg TPE ([www.kraiburg-tpe.com](http://www.kraiburg-tpe.com)) is to open a new production plant in Selangor, Malaysia, in early August, which shall supply the Asian market with a range of standard TPE formulations for a wide scope of applications and customer-specific solutions.

With around 50 employees and designed for an annual 2,000 tpa capacity, the new plant reflects Kraiburg's growing commitment to growth in the Asia Pacific region. Production is carried out in Malaysia under identical conditions as in the company's other production sites in Germany and USA to ensure compliance with global quality standards.

"We have focused on organic growth, and not acquisitions, right from the beginning. This puts us in a position to set up identical processes and supply our customers with products at the same high level of quality all over the world," explains Kraiburg TPE CEO Franz Hinterecker.

The production sites in Germany and the US already meet the DIN EN ISO 9001:2000 international quality management standard. The necessary measures for corresponding certification have been initiated at the new Malaysian facility.

Over the last three years, Kraiburg TPE has increased sales by 25% to around €100 million (US\$156 million). The company has already set production quality standards for TPE production process in Asia for consumer applications such as toothbrushes, toys and food packaging.

Kraiburg only uses medical instead of technical white oil in its production — although this is not required in Asia, in contrast to Europe and America — because medical white oils meet the highest demands in terms of purity and compatibility, are colourless, odourless, tasteless and safe for all foods. "The decision for medical white oil is a logical consequence of our philosophy," says Franz Hinterecker. "Namely applying the same qualitative yardstick on all continents — with a cost-optimised portfolio, individual solutions and a constant array of new product innovations."

