Region
E-Mobility
DCT systems

SCHAEFFLER

“Konsequent Global”

IN THE REGION FOR THE REGION

EFFICIENT FUTURE MOBILITY

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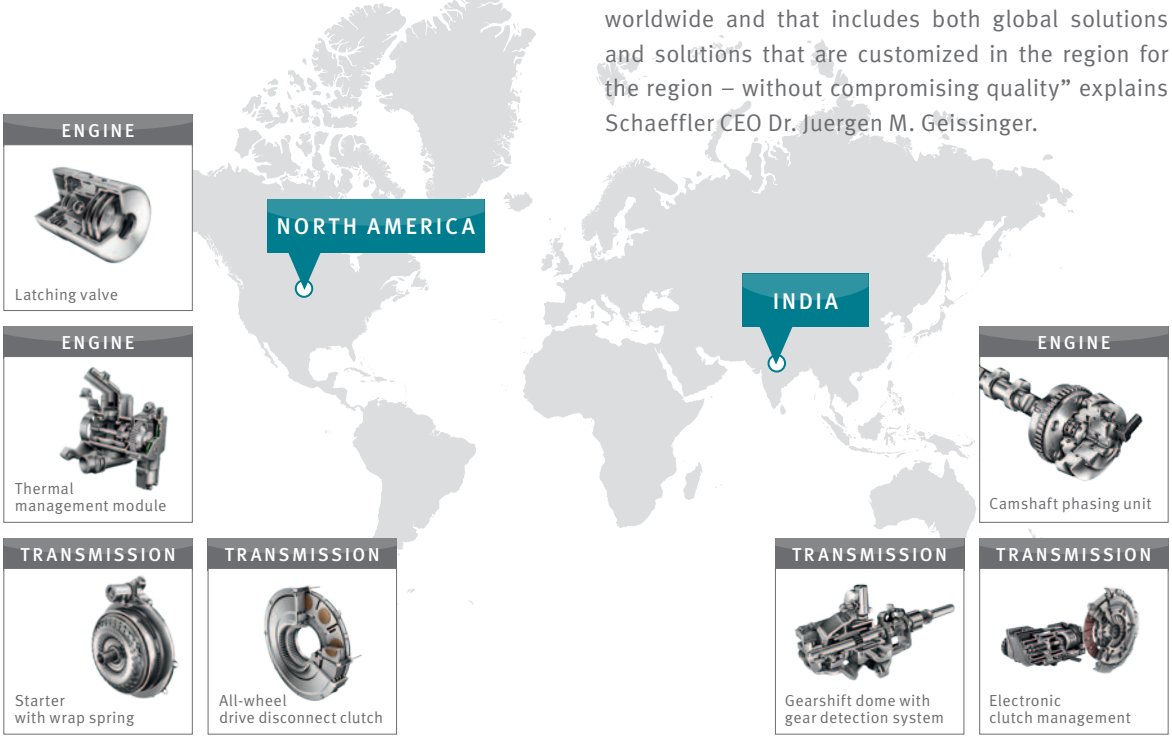
The Right Solution for Every Region

Schaeffler is documenting its customer proximity and experience in the various regions of the world with its Efficient Future Mobility North America and Efficient Future Mobility India concept vehicles, which are customized to suit the requirements of the North American and Indian vehicle markets.

Requirements with regard to CO_2 emissions and fuel consumption are increasing all the time, and Schaeffler's innovations support the global automotive industry in fulfilling them. "With its integrated global network of 40 development locations and 80 production sites, Schaeffler is an innovative and reliable partner for the automotive industry worldwide and that includes both global solutions and solutions that are customized in the region for the region – without compromising quality" explains Schaeffler CEO Dr. Juergen M. Geissinger.



Efficient Future Mobility North America

We are using a mid-size SUV to demonstrate a range of solutions for the optimization of the conventional drive train with an internal combustion engine – customized for the North American market. All of these solutions are cost-effective and close to volume production status. All of the technologies integrated into the all-wheel drive vehicle make a valuable contribution to reducing fuel consumption.

The overall potential for savings is significant at up to 15%, and means that even automobiles in the vehicle classes that are popular in North America can come a decisive step closer to fulfilling the increasingly stringent CAFE standards*.

ENGINE

Latching valve

ENGINE

Thermal management module

TRANSMISSION

Starter with wrap spring

TRANSMISSION

All-wheel drive disconnect clutch

*) Corporate Average Fuel Economy; this describes the increasingly restrictive legal regulations for "fleet consumption" with regard to the targets set for 2020 and 2025 in the US

Progressive Solutions in Detail

Forward-thinking and economical

The American Schaeffler study demonstrates solutions that take the market-specific requirements and customer demands in North America into account. The main technologies from Schaeffler that are integrated into the vehicle are:

The automatic start-stop system
This has been adjusted to match the automatic transmission. A specially-developed latching valve supplies the automatic vehicle with energy for rapid start-up after the engine has been switched off.

The thermal management module
This allows the engine to reach its operating temperature quickly and the temperature balance to be precisely controlled.

The all-wheel drive disconnect clutch
This minimizes the frictional losses in the all-wheel drive vehicle's drive train and – depending on the driving situation – allows one of the drive axles to be decoupled. On the highway, the savings potential this offers can be as high as six percent.

All of these measures combined mean that the efficiency of the vehicle is increased by up to 15 %.

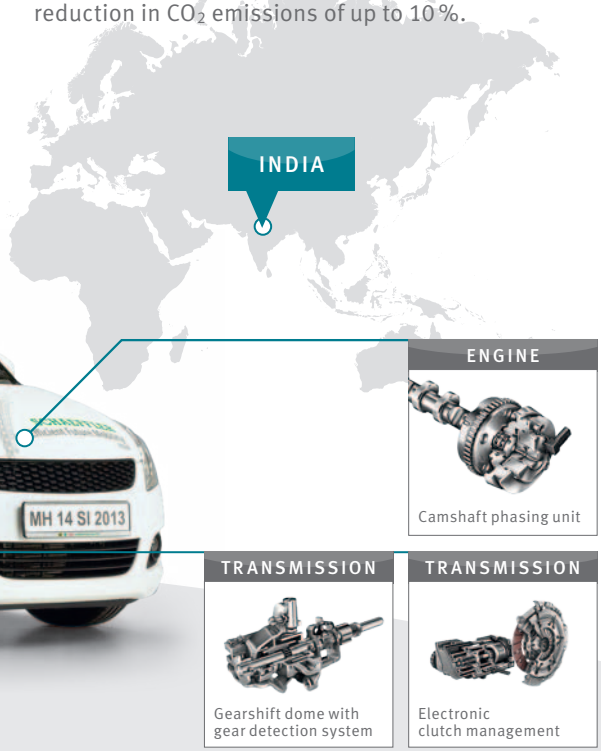
Fuel savings in % Technologies	City	Highway
Friction optimization in the belt drive	1.0	1.0
Friction optimization in the valvetrain	0.5	0.5
Balancer shaft with rolling bearing supports	0.6	1.0
Thermal management module	1.0	1.0
Adaptive radiator shutter	0.2	0.8
Start-stop (PES, latching valve)	6.0	2.0
All-wheel drive disconnect clutch	2.0	6.0
Wheel bearing optimization	0.5	1.0
Torque converter with centrifugal pendulum-type absorber	3.0	1.0
Total (rounded)	**15**	**14**

Efficient Future Mobility India

“More efficiency and lower fuel consumption using modern yet affordable technology” – that was the brief for this concept vehicle developed in India. The result is a vehicle that is specifically tailored to suit the heavy traffic found in India’s cities and the requirements of the people who live there.

The developers from this region were able to draw upon the wealth of experience available in Schaeffler’s global network.

With components like the infinitely variable camshaft phasing unit, electronic clutch management, and start-stop system, the small car study achieves a reduction in CO_2 emissions of up to 10 %.



Savings in Heavy City Traffic

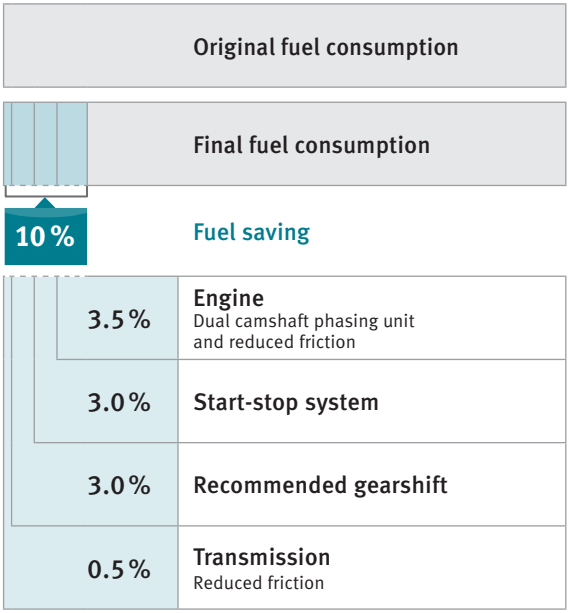
Targeted design means targeted savings

The concept vehicle for the Indian market demonstrates customized drive train solutions. Targeted efforts were made to reduce friction at various points in the drive train: Contributing factors in the reduction of the frictional torque include modern bearing solutions in the transmission, an overrunning alternator pulley, and coated valve lash adjustment elements.

Electronic clutch management (ECM)
The conventional clutch pedal is replaced by an electromechanical actuator that is connected to a sensor-based gear detection system. The ECM allows automated clutch operation and a comfortable start-stop function when combined with a manual transmission.

Variable valve control system
This allows infinitely adjustable control of the intake and outlet valves using hydraulic adjustment of the relevant camshafts, which increases efficiency and improves fuel economy.

Altogether, these measures make it possible to achieve fuel savings of up to 10 %. Bundling these technologies together additionally leads to a significant increase in driving comfort.



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