



Top in-service performance gears for electrified vehicles




TOPGEAR aims the development of new production routes leading to gears with top performance, capable of supporting the highly demanding in-service conditions of future hybrid electric vehicles (HEV) and electric vehicles (EV).

Speed kills ...

The stringent CO₂ emissions targets are boosting the sales of hybrid / electric vehicles (HEV/ EV). In a near future, the **gears rotating speed in HEV/EV is expected to triple the combustion cars one**. However, gears produced through the conventional process are not able to withstand the demanding in-service conditions of these future cars.

The RFCS funded EU-project TOPGEAR focuses to combine new steels and surface hardening techniques, which enable to produce a new generation of gears for future HEV/EV that must work at 15,000 rpm and keeping actual torque values avoiding fatigue and scuffing failures.

Stepping stones for greening mobility

-  Develop new carburizing and quenching process to boost the gears in-service performance.
-  Enhance machinability of nitriding/nitrocarburizing steels by the addition of Bi to a Quench & Tempering steel as well as the replacement of Q&T steels by a F-P microalloyed steel.
-  Conduct an integral Life Cycle Assessment (LCA) to evaluate the conventional and new manufacturing routes of future gears for HEV/EV.

Lean it to outsmart costs

Highest part performance despite huge production costs saving by e.g. newly developed single-layer-surface hardening treatment and development of smart F-P microalloyed steels for nitriding/nitrocarburizing to avoid costly Q&T processes.

CONSORTIUM



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FACTS AND FIGURES

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Acronym: TOPGEAR

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