Innovative Steels for Automotive Components

A new approach for the oncoming challenges
**R&D Strategy**

- Synergy between Special Steel plants
- Optimize resources in the development of new products
- Match the product portfolio and the R&D strategy with Technical Service and Marketing, seeking greater assertiveness and focus on the market
- Share the knowledge acquired through innovation with the plants
- Strong relationship with universities
- Develop innovative and alternative products
Main Knowledge Areas

- Improvement of Fatigue Lifetime of Special Steels
- Development of Higher Performance Steels
- Cost Optimization at the Value Chain
- Characterization of Second Phase Particles
- FEM Simulation

Sidenor | Innovative Steels for Automotive Components
How can SIDENOR create Value to our stakeholders?

- **Customers’ Partnership**
- Promoting **alliances** to integrate steel-process-product know-how and to increase the value in the whole supply chain
- Developing ad-hoc **tailored** steels for specific applications

- **Adapting** steels and manufacturing **routes** to optimize properties and profits
- Forming “innovative **teams**” to provide solutions to automotive end-users (OEM’s and TIER1)
**MECAMAX® MB**

**MECAMAX® MB** was developed by SIDENOR to reduce machining costs (20-50%) by Bismuth addition, a non toxic element.

Recommended for high performance automotive applications: no influence in mechanical properties and process.

**Benefits of Bi alloyed steels:**

- Self-lubricating
- Promote chip fragmentation
- Reduce cutting forces and temperatures
- Reduce adhesive tool wear
**M1100:**
Forged Common Rail Parts & Crankshafts

M1100 offers High tensile strength (>1000MPa) with excellent fatigue performance and homogeneous ferrite-pearlite microstructure and good machinability for Automotive applications.
**MCG3: Forged Pistons**

MCG3 steel, with high oxidation resistance at high temperature, allows substituting Aluminum in forged diesel engine pistons and makes possible to increase temperature and pressure, improving efficiency and reducing fuel consumption and greenhouse-effect emissions.
NANOCEM: Energy Savings. High Temperature Carburizing

NANOCEM steels apply nanoprecipitation technology to control austenitic grain size at high temperature. Carburizing can be shortened 3-4 times increasing holding temperature up to 1050ºC keeping grain size as fine as conventional treatments at 950ºC.
ISOCEM®: Innovative Technologies. Vacuum Carburizing

ISOCEM® steels are suitable for low pressure carburizing and gas quenching processes. Hardenability is tailored to ensure the final mechanical properties at both the case and the core and an upper service performance.
Commitment with Innovation