



GRAZIANO®

Shifting Solutions

Synchronizers



Synchronizers | Shifting Solutions

Markets

- We produce more than one million synchronizers for passenger cars, trucks, tractors, construction machines.
- We are recognized as a worldwide leader in synchronizers for agricultural and construction machines applications.

Materials and Sizes

- All friction materials are available to suit the specific requirements of our customers: bronze, molybdenum, sinterized bronze, carbon, etc.
- Featuring a wide range of synchronizers, from Ø 62 mm to Ø 184 mm, we have also developed single, double, and triple cone solutions; offering our customers the best solution with reduced investments and short lead time.

R&D

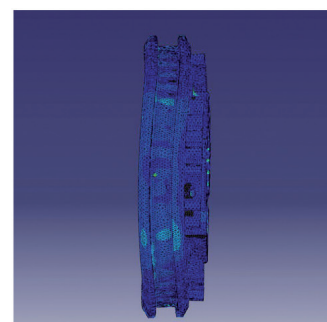
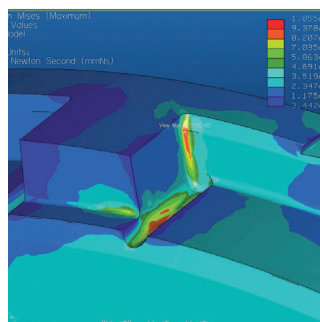
Full design and testing capability to develop the best solution for the specific customer's application and the most strict requirements:

- Design: preliminary layout study, performance analysis, virtual validation (linear and non linear FEM analysis, contact FEM analysis, and AME-SIM dynamic simulation).
- Specific test benches for: friction materials, synchronizer assembly, complete gearbox, vehicle tests, shiftability, low temperature tests, endurance test, and fatigue test.

Continuous Development

New products are continuously developed to attend the more and more challenging demands from the markets:

- New synchronizers families (153, 168, 162/170, 184) specifically developed for heavy duty applications.
- Long-life synchronizer design for new high performance and low emissions transmissions concepts.
- High performance triple cone designs (67/71/76, 90/95/100) for optimized shiftability and improved comfort.
- New CSS-Compact Slotless Synchronizer to allow higher power density.



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