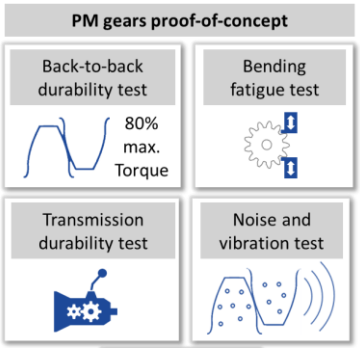
CENTRO DE COMPETÊNCIA EM MANUFATURA



FIAT CHRYSLER AUTOMOBILES

Stackpole International

Development of the Powder Metallurgy chain for High Performance Automotive Gears

Motivation

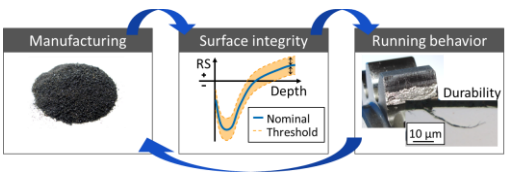
Focused on the powertrain system, gears and crankshafts stand out. About them, a high effort has been invested in alternative solutions to conventional manufacturing processes. The explanation lies in the strong influence that manufacturing induced surface characteristics have on functional requirements. However, the lack of structure in Brazil for the execution of validation tests of components, whether due to changes in design or manufacturing process, is a notorious problem to be faced by the automotive industry.

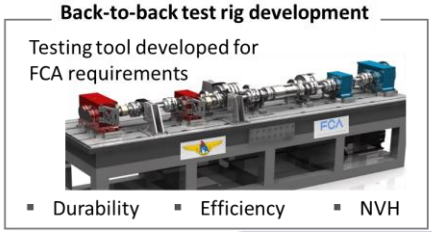
Objective

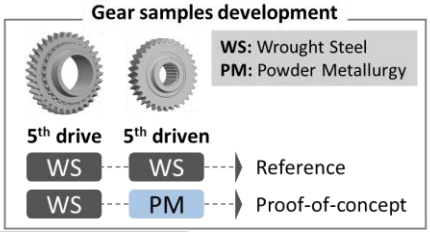
The application of the "integrated product development" method to the design of the powertrain components manufacturing chain; The execution of the potential behavior map of the Gears of Powder Metallurgy (PM).

Approach

The project is structured by a "knowledge-based" approach represented by the evaluation of surface properties. Properties such as the state of residual stresses, topography and microstructure allowed the phenomenological correlation between the investigated processes and the dynamic behaviors to be tested. The evaluation of the properties was performed both experimentally and predictively, by numerical simulation of the manufacturing process.







Contact: +55 (12) 3947-6948
Praça Marechal-do-Ar Eduardo Gomes - Vila das Acacias
São José dos Campos - SP, 12228-900

Project Responsible: Prof. Dr. Anderson Vicente Borille