

COBRA TOP USE CASES

Altair Partner Alliance

Design Assemblies Compliant with Fastener Catalogue

Challenge

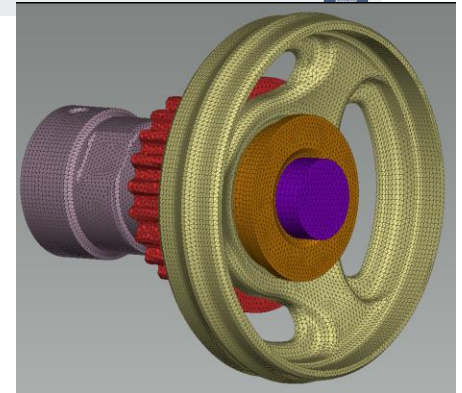
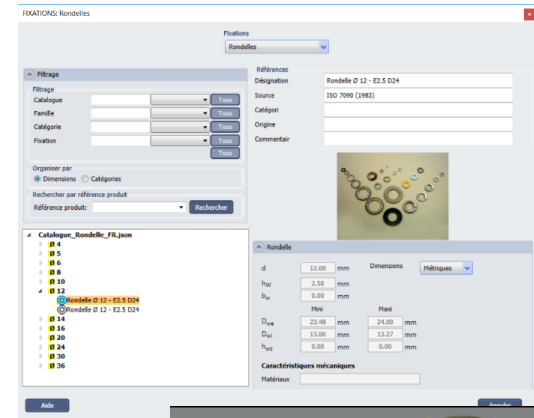
- Design assemblies compliant with automotive practices

Solution

- Development of a version tailored to the customer's specific requirements
 - Resistance level of the bolted joint higher on the safety connections
 - More significant shear stresses on the bolt
- Incorporation of the manufacturer's specific fastener catalogue into Cobra

Result

- Now, PSA is able to use a standardized solution right from the beginning of studies



Minimize Weight of Assemblies - Ensuring Safety Constraints

Challenge

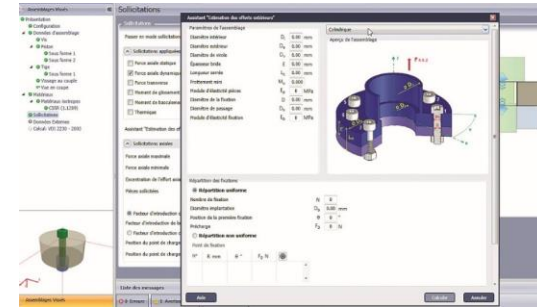
- Minimize weight of the assemblies and the bolt number on launch vehicles for The Centre national d'études spatiales (Cnes, the French center for space studies)

Solution

- Development of a customized version to answer specific standards and geometric requirements
 - Processing of specific geometries such as chapel flanges
 - Integration of pressure type stresses on flanges
 - Simulation of the presence of an insert in tapped holes and execution of calculations on composite material flanges
- Comparison of several candidate solutions and validation

Result

- An optimized design while ensuring safety constraints



Reduction in Cost Production

Challenge

- Simplify the logistical and practical set up while respecting stringent constraints and specific standards of the railway industry

Solution

- Cobra calculation of extremal set up is used to dimension prestressed bolted joints with controlled tightening.
- From the design phase, Alstom uses the software to determine the size and the type of joints based on the stresses sustained by the fasteners of the driver seat, a component underlying the body structure, the system connecting the bogies to the body, etc.

Result

- Software adapted for the multiple assemblies dimensioning taking into consideration the tolerances of the tools which are used on the production lines but also the dispersions stemming from painted or unpainted parts and the nature of the material
- Reduction of time and cost production thanks to the standardization of joints and tightening settings

