AGCO is a leading manufacturer of agricultural equipment designed to work reliably under normal, challenging operating conditions — and even when operator error or exceptional use occurs. Employing ANSYS software as a standard part of our design process gives us the confidence to quickly and cost effectively develop highly robust equipment that works in the wide range of conditions demanded by the market.

Eberhard Würtele
Stress Engineer
AGCO GmbH
Tractors, harvesters and other agricultural equipment are used in rough terrain and under tough conditions. Immense forces are created when the heavy equipment is in operation. Beyond withstanding these forces, the machinery must endure loads from operator errors and use outside of normal operating conditions. Although agricultural equipment is very robust, the market is highly competitive, so manufacturers need to reduce development times and decrease their costs. AGCO relies on simulation with ANSYS software to maintain quality and its global leadership.

**Business Challenges**

Engineers at AGCO must evaluate loading conditions from day-to-day equipment operation and from use outside of normal operations. The process becomes more complex as models grow more detailed and the number of simulations increases. Assemblies include hundreds of pretension bolts, nonlinear contact and large meshes. Engineers need to reduce solver and model preparation times to decrease development times. Also, more efficient results evaluation and design study processes allow engineers to focus more on engineering their products.

**Technology Used**

ANSYS® Professional NLS™, ANSYS Workbench™

**Engineering Solution**

- Use bidirectional CAD interfaces in ANSYS Workbench to transfer data from CAD systems.
- Employ automatic contact and mesh generation to prepare simulation models.
- Define bolt pretensions loads within ANSYS Professional.

**Benefits**

- Evaluate nonlinear contact behavior in critical contact regions of flanges.
- Compare simulation results with test data.

**Company Description**

As a leading global manufacturer of agricultural equipment, AGCO offers a full line of tractors, combines, hay tools, sprayers, forage and tillage equipment, which are distributed through 2,600 independent dealers and distributors in more than 140 countries worldwide. AGCO products are sold through four core brands: Challenger®, Fendt®, Massey Ferguson® and Valtra®. The diverse product line, global reach and technological solutions help AGCO customers not only survive today’s changing landscape, but to also prosper.

Simulation at AGCO is supported by CADFEM GmbH.