Kranunion is successfully using the 3D direct modeler SpaceClaim in its simulation departments. Ardelt, Kirow and Kocks are three allied crane manufacturers that specialize in lifting and transporting heavy loads for the rail, port, shipbuilding and steel industries. The alliance uses SpaceClaim to prepare SolidWorks data to conduct statics and stability analyses, redesign CAD models and simplify cross-site data exchange.

**ARDEL, KIROW, KOCKS: LIFTING AND MOVING**

Ardelt is synonymous with double jib luffing cranes: this special design, first patented in 1932 and continually refined since then, achieves short load paths, short rope lengths and low swaying, with an advantageous center of gravity. This minimizes maintenance and operating costs while simultaneously maximizing work productivity and crane service life. Kirow is a market leader when it comes to highly mobile railway cranes for switch reconstruction and track and bridge construction. With its patented safety system, Kirow is also a leader in extremely robust slag transporters. Kocks, on the other hand, has earned a global reputation as a premium manufacturer for weight-optimized shipyard and port cranes and is the market leader for Goliath cranes, which offer maximum flexibility and precision in the handling of ship hull sections.

Particularly when it comes to tenders that push the limits of what is technically feasible, customers consistently depend on the know-how of Kranunion. For this reason, the calculation and simulation departments play a key role. Ultimately, the tasks of the analysts are to examine the statics, stability and service life of highly productive crane solutions and to optimize these in an iterative collaboration process with the designers. The fundamental prerequisite for this workflow is a tool that can serve as the “gateway” between the CAD and simulation worlds. And this is where SpaceClaim comes in.

**GATEWAY BETWEEN CAD AND SIMULATION WORLDS**

When a statics department receives CAD data from designers for calculation in ANSYS, they must first simplify the volume geometry and generate mean surfaces to enable networking of shell elements for load case calculations. “We didn’t have a suitable tool for preparing the 3D-CAD data from SolidWorks for analysis. So we found SpaceClaim, and the program is a great help to us in performing these tasks,” says Reimar Herrschuh, Calculation Engineer at Kirow in Leipzig. Lino, a specialist in technology consulting and authorized SpaceClaim sales partner, was at the company’s side throughout.

“It used to take us a good two days to prepare a geometry for simulation from the bottom up with key points, lines and surfaces to the final model. Today, it takes around an hour and a half to import the 3D model and prepare it in SpaceClaim.”

**ABOUT KRANUNION**

Kranunion is the association of three crane manufacturers specialized in hoisting and transportation of heavy loads in the field of railways, ports, yards and steel works.

Kirow is the world market leader in railway cranes and slag pot carriers. Kocks is the world market leader in Goliath cranes. Ardelt is the global leader in double jib level luffing cranes.

The technical concepts developed by experts are the core of all Kranunion products. It is understood that the company continually optimizes these basic concepts in the interest of its customers. Therefore Kranunion products are a blend of tradition and innovation, of proven systems and innovations that stand the test of practice.

Those who decide in favor of Kranunion are choosing unparalleled, state of the art German engineering: in favor of environmentally compatible and safe leading-edge technology, low costs of operation, maximum efficiency and reliability.

www.kranunion.de

**Fig. 1:** Upper carriage frame of a railway crane in SpaceClaim. This model is used further for finite element analysis.
The fact SpaceClaim is equipped with exceptionally powerful CAD import functions and maintains a strategic partnership with ANSYS proved invaluable. The ANSYS Workbench integrated simulation environment can be launched from within SpaceClaim, so that the model can be seamlessly analyzed in the FEM statics application after preparation. Herrschuh is also using the software successfully to translate other company CAD data and data from suppliers and partners, utilizing SpaceClaim floating licenses with a defined data exchange package.

“Our department provides simulation services for the design sites Leipzig and Ulm. Ardelt in Eberswalde and Kocks in Bremen have their own statics engineers, though the colleagues in Eberswalde also work with SpaceClaim,” explains Herrschuh.

The Leipzig Kranunion employees were able to use SpaceClaim productively after just a single one-day basic course with sales partner Lino in Spring 2011. The Lino experts showed Kirow both the direct and simple path from the 2D-DWG/DXF sketch to the 3D model, as well as from the volume model to the surface model including all mean surface functions. This resulted in enormous time savings in preparing simulations.

The Kranunion analysts have been using the software productively ever since, both for the described workflow as well as for others, whenever the engineering side is stuck and flexible tools can unleash particular utility. In one specific case, the task was to export the CAD data of a machine part that only existed in ANSYS, import it into SpaceClaim, repair it and send it to an engineering partner as a STEP file for further development.

**SAVING TIME THROUGH SIMPLE PROCESSING OF COMPLEX GEOMETRIES**

“We’re using SpaceClaim to prepare geometries from multiple 3D CAD systems for simulation and to transfer it between the individual CAD systems, with excellent results. For us, it is important to use an intuitively operable tool to simplify geometry and to also generate complex models without having to learn the complex functionalities of other CAD tools,” asserts the simulation professional. Herrschuh used to have to first translate 3D data into 2D, then import the lines and build the design in 2D. Now he loads the complete 3D model in SpaceClaim for enormous time savings — particularly for large designs. “It used to take us a good two days to prepare a geometry for simulation from the bottom up with key points, lines and surfaces to the final model. Today, it takes around an hour and a half to import the 3D model and prepare it in SpaceClaim.”

When asked if Kirow’s investment in SpaceClaim has already amortized itself, Herrschuh laughs. “I’m not an accountant!” he exclaims. “But to date it has certainly paid for itself. When you get hold of a decent tool, you’re content, in that sense the investment pays off immediately. And financially: if you have an order that vitally depends on exporting and importing geometries, then under certain circumstances that one order is enough to pay for the investment in SpaceClaim.”