Engineering Center

Customer Success Story

Autodesk® Inventor®

Constructing Excellence

With Autodesk, Engineering Center develops innovative, high-quality machines faster than the competition.

With the 3D modeling capabilities in Inventor, we can pack in equipment and devices into our machines more tightly. As a result, we're able to vastly improve the quality of our designs.

—Alexey Sarapulov,
Chief Designer Deputy
Engineering Center

Project Summary

Founded in 2004 by a group of road construction machinery specialists, Engineering Center designs new and improves existing machines for road construction and cargo-handling. From the beginning, the Chelyabinsk-based Russian company knew that to build a solid reputation and attract customers, it needed to deliver high-quality products faster than its more established competition.

Using the Autodesk® Inventor® Professional software, Engineering Center is achieving excellence at every stage in the design cycle, from preparing specifications and designing machine details to creating models for analysis and more, Engineering Center relies on Autodesk Inventor to:

- Create product documentation in 3 months instead of 2 years
- Reuse existing 3D models in new machine designs, slashing design time
- Reduce design errors that cost time and money
- Ensure that designs are compliant with Russian GOST standards

The Challenge

While Engineering Center was founded by experienced specialists in machinery design, gaining the trust of customers required more than impressive resumes. Viktor Kaspirov, director general at Engineering Center, explains: "We had no illusions. We knew that to attract new customers to our young company, we needed to create high-quality designs and supporting technical documentation quicker than anyone else."

The company's first customer set a tight deadline, driving home the need for automated CAD tools. Delivering on time required Engineering Center to streamline every aspect of the design process, and reduce mistakes that would require rework. For example, the company couldn't afford the time and money wasted by incorrectly calculating the length of pressure hoses used in hydraulic systems. Nor could it spend years creating operational manuals.

Autodesk®

Autodesk is helping Engineering Center develop and deliver innovative designs and documentation quickly and cost-effectively.

The Solution

For the first year it was in business, Engineering Center used AutoCAD®. "We asked many experts, and AutoCAD rose to the top of the list," says Vladimir Shakhov, chief designer at Engineering Center. As the company expanded its range of work, it became clear that Autodesk Inventor would help cut design time even more. Now, all 10 Engineering Center designers use the latest version of Autodesk Inventor software to complete their tasks faster.

Designers use Autodesk Inventor for assembly and unit design, creation of models for strength and kinematic analysis, control unit assembly, and product documentation. Most drawings are created in conjunction using AutoCAD. The designer develops a 3D model of a detail or unit, with all the necessary projects and cross-sections, and then prepares drawings in AutoCAD in compliance with Russian GOST standards.

Easier Hydraulics Integration

Autodesk Inventor has been particularly helpful in developing hydraulic systems for Engineering Center's machines. While the company uses ready-made hydraulic units, it must ensure perfect integration of the systems into its machines. Autodesk Inventor streamlines this task and helps eliminate possibilities for error.

Larissa Ezhova, Engineering Center's chief hydraulic technician, explains: "Before we used Inventor, we had to rely wholly on the experience of the designer to determine, for example, the length of pressure hoses. Any mistake in determining this calculation resulted in lots of wasted time and money. With Inventor, we can simply set all the conditions and restrictions of the hose, which allow us to accurately assess length the first time."

Fewer Errors

Checking interferences—and creating more efficient machinery—is also easier with Inventor. Rather than finding out that there are problems upon assembly, Engineering Center's designers can ensure earlier in the design process that moving parts do not come into contact with one another.

"With the 3D modeling capabilities in Inventor, we can pack in equipment and devices into our machines more tightly," says Alexey Sarapulov, chief designer deputy at Engineering Center. "As a result, we're able to vastly improve the quality of our designs."

Clearer Drawings

Engineering Center has been able to save even more time by reducing questions they receive from customers about constructing complicated parts. Typically, the drawings of non-rotational parts are very complicated, with multiple transition surfaces and holes. The drawings include various section views and symbols, making them hard to understand in some cases. To save time, Engineering Center's designers create a model in Inventor to obtain all the necessary views, sections, and cross-sections. They then place isometric projections of the details onto the drawings to make them easier to interpret.

Faster Documentation

Without Autodesk Inventor software, a whole team of specialists would be required to create operational manuals and catalogs of spare parts for Engineering Center's customers. By using Inventor, Engineering Center is able to prepare all documentation in a fraction of the time.

"If we didn't use Inventor, it would take a whole year just to complete work on the catalog," says Shakhov. "Since the designers have all the 3D models of the units and parts, they can prepare drawings for the catalog as they work on design drawings,"

he continues. "We can then compile these into documentation. We receive the catalog before the trial sample model is even assembled."

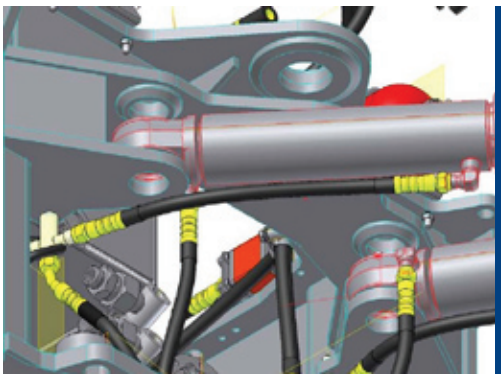
The Result

Thanks to Autodesk Inventor Professional software, Engineering Center is able to create innovative designs quickly and cost-effectively. It reuses existing 3D models as a starting point for new designs, cutting design time. And with Autodesk Inventor's interference checking and tube and pipe design tools, the company is reducing errors that would otherwise involve time-consuming rework. Most significantly, Inventor is helping the company produce operational manuals and spare parts catalogs as it completes design work. This allows Engineering Center to get products to customers 1-2 years faster.

Kaspirov explains the impact of Engineer Center's Autodesk solution this way, "Engineering Center creates new machines—the truly innovative designs our customers demand. Autodesk Inventor is invaluable in helping us deliver on our promise to customers."

For More Information

To find out how Autodesk solutions can help you get innovative products to market faster, visit **www.autodesk.com/industrial-machinery**.



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>
> —Viktor Kaspirov
> Director General
> Engineering Center

Images courtesy of Engineering Center.

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