AnsaldoBreda and Autodesk® Mechanical Products



Motor bogie - Denmark

Both at the design stage and at the calculation and simulation stage, the future of our business can be nothing but three-dimensional...

Sauro Parrini, Technical IT Manager

There have always been pleasant surprises in the world of CAD applications. Few people realize that the means of public transport they know so well—trains, subways, buses, and trams—are the result of an intensive and intelligent use of computer-aided design and engineering technologies. These design tools provide reliability and comfort in many forms of public transportation.

The railway construction industry has long been an important sector in Italy. To streamline industrial operations, two of the sector's most respected companies, Ansaldo and Breda, recently merged to form a new organisation—AnsaldoBreda (www.ansaldobreda.it).

The AnsaldoBreda (formerly Breda) plant in Pistoia, Italy, has an outstanding design department that uses a complete family of Autodesk® mechanical products. The products are used on nearly 100 workstations on-site and by many more suppliers and subcontractors for Ansaldo-Breda.

At the Forefront of Technology with Autodesk Software

"CAD tools have long been used by our company," explains Sauro Parrini, technical IT manager. "Many years ago, before I joined the company, products were already being designed using a computer-assisted design tool that ran on Unix workstations but was later discontinued. The company continued searching for a new design tool with strong features, from a solid company."

Parrini confirms that the company selected Autodesk's AutoCAD® software because it provides value for money and is the market leader in CAD solutions for PCs. (The distribution of Autodesk products in Italy exceeds 500,000 units, which makes them the most widely used design products in the country.)

Results from standardizing on Autodesk software were astonishing. "We realized that we could communicate with all our suppliers and customers using documents produced in AutoCAD," says Parrini. "Using Autodesk solutions we avoided the annoying and costly problem of data conversion, which will slow performance."

The Transition to 3D with Autodesk Inventor™

At first there was little need for the 3D function, because subcontractors worked in 2D. But about four years ago, AnsaldoBreda decided to explore the potential of 3D design. It had an in-house system but wanted to assess the many 3D systems available on the market in the high- and mid-priced range.

AnsaldoBreda selected Autodesk Inventor™ because it offered some distinct advantages. Designers could be trained in a very short period of time and all the information produced with the previous system could be recovered and reprocessed directly into Inventor without wasting time and resources.

AnsaldoBreda put the 3D features of Autodesk Inventor to the test in designing the bogie, one of the most delicate areas of the vehicles the company produces because of the strict design rules that apply to it, and because passenger comfort depends largely on this section.

The Autodesk Inventor solid modeler and sheet metal module were put to a rigorous test. Models were created that consisted of thousands of elements. "In particular the part defined as the undercarriage (under the floor) is considerably

complex, because it houses the technological systems: tanks, pipes, connections, inspection points," says Parrini.

Using 3D tools has allowed the company to size, position, and connect the various components of the design to one another in digital format. Testing in the 3D model ensures that the design is functional and that it can be assembled and easily maintained during operation. Interacting with the digital model, the designer can check any interferences and review shapes and dimensions to simplify the entire process of making public transport vehicles operational.

The ease-of-use and power of the controls allow the creation of different configurations to satisfy various functional requirements. The result is more personalized vehicles to satisfy client demands.

The use of 3D is also fundamental for the production plant. Some of the machinery installed there, such as the grinding and welding robots, requires considerable investment by the company. So the assembly department gets the two-dimensional tables as well as a 3D view of the assembly in an "exploded" format, which saves time and significantly reduces the requests for explanations.

3D Straight to Subcontractors

"Given the success of 3D in the company, we decided to extend availability of the tools to all our subcontractors, making it easier for them to adopt it," adds Parrini. "Some of them were small companies who worked with Autodesk to supply software and training courses." Now AnsaldoBreda can exchange design data directly with a network of suppliers, contributing to quicker response times and more efficient design and production requirements.

AnsaldoBreda deploys a full set of Autodesk products including Autodesk Inventor, Autodesk Mechanical Desktop® and AutoCAD LT®. All of the software licences can be used on the network under a floating license, to allow for maximum use of the software packages.

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