Nitator

Reducing robot idle time by 90% with DELMIA PLM Express

Overview

Challenge

Nitator needed to shorten lead times and increase cost effectiveness when delivering design and production services to its automotive customers

Solution

Nitator chose DELMIA PLM Express to increase automation of its welding processes and to benefit from the solution's dedicated offline programming tools for welding

Benefits

Thanks to DELMIA, Nitator improved welding quality, optimized fixture design and reduced robot idle time by 90%

"Once the robot program has proven its efficiency in a virtual environment, we can manufacture the fixtures with confidence since we already know they don't obstruct the moving robot arm."

Magnus Eriksson
Technical Manager
Nitator

Nitator

Leading service provider for the automotive industry

Nitator is Sweden's leading contract manufacturer for the automotive industry. It provides high quality services in product development and construction of automotive parts and assemblies that cover initial design, project management, prototype, and series production. For more than 25 years, Nitator has been designing and manufacturing tools and fixtures for its customers that include Swedish truck and bus manufacturers Scania and Volvo. The company has three plants, two in Sweden and one in Lithuania with a total workforce of 170 engineers and technicians.

Shorten lead time, increase cost effectiveness

Nitator needed to increase automation in its development processes to shorten lead times and be more cost effective. One of Nitator's goals was to design its fixtures right the first time before going to production. Nitator decided to adopt Dassault Systèmes' (DS) DELMIA PLM Express' Robotics capabilities to simulate robot welding parts before executing these tasks on the shop floor. In addition, since Nitator is equipped with robots built by different manufacturers, the company also needed a unique yet open solution like DELMIA that can create programs for each of its robots.

Nitator simulates welding parts with DELMIA to make sure the welding is efficient and the robot path collision-free. As opposed to the "old way" of doing things (which was to design and manufacture a fixture, program the robot to make the weld, and then wait until production to see if there was a problem), programming the robots off line and simulating with DELMIA have helped Nitator design a collision-free and efficient program from the start without monopolizing the robot during the programming phase.

"It normally takes about 40 hours to program a robot on line in the workshop and during that time we cannot use the

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robot - it is idle," said Magnus Eriksson, Technical Manager, Nitator. "But when we program the robot off line in a virtual 3D environment, we can reduce robot idle time by 90%."

Design process optimized

Customers provide Nitator with 3D models of the parts that they ultimately want to produce. Until DELMIA was implemented, this usually involved receiving data in STEP format. Now that DELMIA is used, Nitator can also receive native CATIA data from customers that use the DS solutions for their design work. "We definitely have more flexibility to import more data formats thanks to DELMIA," said Eriksson. "And since some of our biggest customers use CATIA, this is a plus." Nitator imports the customer's part data in their third-party CAD solution and make design adjustments to the part, in agreement with the customer, that are required to facilitate welding. They then incorporate the model into the virtual welding robot cell in DELMIA.

Benefits in quality, lead time and customer satisfaction

Nitator engineers program the robots in the virtual environment and design the welding fixtures in parallel, which has helped the company shorten lead times. They then simulate welding the part with DELMIA, which provides valuable information on how to optimize the robot's path and improve the design of the fixture. "Once the robot program has proven its efficiency in a virtual environment, we can manufacture the fixtures with confidence since we already know they do not obstruct the moving robot arm," said Eriksson. "In addition, switching from manual fixture design and manual robot programming to virtual off line programming has greatly improved welding quality." Jerry Jönsson, Design Engineer and Project Manager Offline Programming, Nitator added, "Simulation reveals errors that we can easily correct early during the design stage and that would be costly if they were detected during the manufacturing phase."

Nitator's customers also benefit from the company's use of DELMIA. Through simulation, Nitator can easily show and convince customers where design changes need to be made to the part so that welding can proceed smoothly. "Sometimes you cannot weld where the customer wants because the part's design makes it difficult for the robot to reach certain areas," said Jönsson. "We can advise our customers and work with them to make the necessary changes. This increases our credibility and the confidence that they have in us."

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Jerry Jönsson
Design Engineer and
Project Manager Offline Programming
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