

FORCE Technology

Simulating inspection devices in context with DELMIA Cycle Time Performance



Overview

■ Challenge

Because plant downtime is expensive, FORCE Technology needed to design testing devices that performed right the first time.

■ Solution

FORCE Technology adopted CATIA PLM Express and DELMIA Cycle Time Performance to design and simulate complex testing conditions before finalizing its designs.

■ Benefits

Simulating the device in operation and being able to predict its nominal behavior eliminated costly design changes and earned the confidence of potential customers.



“In the past, we could not see problems before the machine was built. But with DELMIA, we foresee problems early and can correct the design, confident that when it will be built, it will not generate errors. Ramp-up time is faster.”

Christian Brandt Lauritzen
Project Manager
FORCE Technology



Inspection experts for the heavy industry

Specialists in non-destructive testing of structures, products and materials, FORCE Technology has more than 60 years of experience inspecting power plants, pressure tanks, bridges, pipeline systems, storage tanks and ships around the world. In addition to performing inspections, FORCE Technology designs and builds the equipment used to carry out these inspections. Based in Brøndby, Denmark, FORCE Technology operates subsidiaries in Sweden, Norway, USA and Russia and has more than 1,000 highly skilled employees worldwide.

Periodic testing for wear and potential damage is a requirement that all plants must abide by. Non-destructive testing makes it possible to examine the condition or the quality of an object without damaging it. Used preventively and to improve safety, non-destructive testing helps avoid interruptions and breakdowns in production, can be performed, in some cases, without production interruptions, and is used in many different businesses and industries such

as energy, offshore, construction, chemical and petrochemical. While some checks can be done during plant operation (like inspecting a pipe's exterior) others may require shutting down the plant, which can be extremely costly.

Since downtime in any plant is expensive, FORCE Technology needs to verify beforehand that its devices work right the first time. There is no time to modify a device once in operation. “We need to go in and get the job done quickly so that the plant can start up as soon as possible,” said Christian Brandt Lauritzen, Project Manager, FORCE Technology. “It simply has to work right the first time.”

Virtual simulation for a custom-made device

FORCE Technology relies on CATIA PLM Express and DELMIA Cycle Time Performance to design and test special design equipment before it is manufactured. “We do a feasibility study to see how big the device or manipulator can be, how we get it in and how we get it out,” said Brandt Lauritzen. “We



receive the geometry of the pipe or object to inspect from the customer and import this data in CATIA PLM Express. We then design the manipulator and use DELMIA to virtually simulate it in operation." Each manipulator is unique and tailored to a customer situation, which is why physical prototypes are not created. "It's a one-of-a-kind production," said Brandt Lauritzen.

Optimal performance of a device

With the help of DELMIA, FORCE Technology equipment can be designed to obtain the best possible results during an inspection. In effect, simulation with DELMIA helps FORCE Technology optimize the nominal cycle time of a manipulator as well as its performance, eliminate collisions during the simulation phase, and implement design changes early and quickly. "In the past, we could not see problems before the machine was built," said Brandt Lauritzen. "But with DELMIA, we foresee the problems early and can correct the design, confident that when it will be built, it will not generate errors. Ramp-up time is faster thanks to DELMIA," he said.

Sales success rate has gone up

3D DELMIA animations of the proposed solution help FORCE Technology's sales force communicate more effectively, replacing documents and words with a visual experience. "It helps build customer confidence," said Brandt Lauritzen. "Manipulators are expensive equipment and customers need to know that FORCE Technology can handle the job."

And the 3DXML Player, currently used by the sales force to communicate with one another, will soon be extended to production to show how a manipulator should be assembled. "This will promote better collaboration between the design and production departments," said Brandt Lauritzen.

From one-of-a-kind to standard reusable components

CATIA PLM Express with its integrated ENOVIA SmarTeam capabilities is important to FORCE Technology since production has increased over the years and a more standard data structure is necessary. "Before we opted for one-of-a-kind components for each project but over the years we have been using more and more standard components, which we can equip with different tooling depending on what needs to be inspected," said Brandt Lauritzen. "We are creating a database that contains all our standard components and their associated specifications so that everyone will know which components to use. Thanks to ENOVIA SmarTeam, the data will be readily available to them."

Collaborating on the same model is another short-term goal for FORCE Technology. "We already had cases where one developer was working on a model and another was working on the same model, which resulted in conflicting data problems," said Brandt Lauritzen. "We definitely want to have more people collaborating on the same model simultaneously; this will be possible with ENOVIA SmarTeam."

"We receive the geometry of the pipe or object to inspect from the customer and import this data in CATIA PLM Express. We then design the manipulator and use DELMIA to virtually simulate it in operation."

Christian Brandt Lauritzen
Project Manager
FORCE Technology



Dassault Systèmes
10, rue Marcel Dassault
78140 Vélizy Villacoublay – France
+33 (0)1 61 62 61 62



SolidWorks®, CATIA®, DELMIA®, ENOVIA®, SIMULIA® and 3DVIA® are registered trademarks of Dassault Systèmes or its subsidiaries in the US and/or other countries.

Images courtesy of FORCE Technology

© Copyright Dassault Systèmes 2010
All Rights Reserved

For more information or to contact a sales representative, please visit www.3ds.com/contact