

Aerospace and defense

Indaer

Colombian aerospace leader relies on Solid Edge to venture into new design and manufacturing territory

Product

Solid Edge

Business challenges

Re-use all previous design data and engineering changes

Reduce cost of manufacturing custom-made parts and tools

Position new equipment on existing aircraft instrument panel

Keys to success

Use Solid Edge to quickly interpret the complex data migrated from other design software

Be able to share an exact overview on the problem and provide complete engineering data

Verify mechanical interferences digitally

Results

Reduced development time and the drafting process, improving overall productivity by 40 percent

Drafted new instrument panels for inserting into the aviation equipment

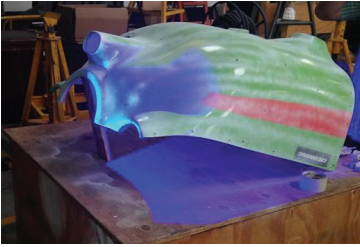
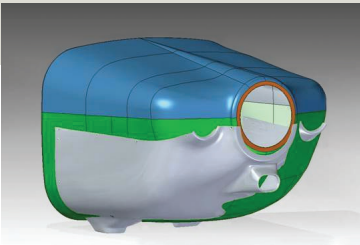


Indaer invests in major new project using Solid Edge, and improves overall productivity by 40 percent

Indaer easily migrates complex data from previous software

In business since 2002, Indaer Industrial Aeronáutica (Indaer) has grown to have a staff of 100 engineers, technicians and analysts who provide planning and construction solutions for the aerospace industry. The company holds a strong market niche in three operating segments: technical support, repairs and research, and development for the ATR 42, ATR 72 and Beechcraft Super King Air 350 aircraft. Venturing into new territory, the company is implementing the design and mass production of the first Colombian-built airplane, the Mylius MY-103-200 Mistral.

The design project was first started in Germany using another application. However, Indaer is now developing the product entirely with Solid Edge® software from product lifecycle management (PLM) specialist Siemens PLM Software. Indaer is using Solid Edge with synchronous technology to take advantage of all previous data and engineering changes. "Solid Edge makes it possible to quickly interpret the complex data migrated from other design software and makes it possible to perform the complete development of the design project," says Daniel Esteban Restrepo, director of Technology and Development of New Business. "We worked 4,000 engineering hours in 2013 and compared the results from previous years, and we had produced over 40 percent more by using Solid Edge."



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Daniel Esteban Restrepo
 Director, Technology and Development of New Business
 Indaer Industrial Aeronáutica

Results (continued)

Saved \$60,000 by manufacturing custom-made parts and tools locally

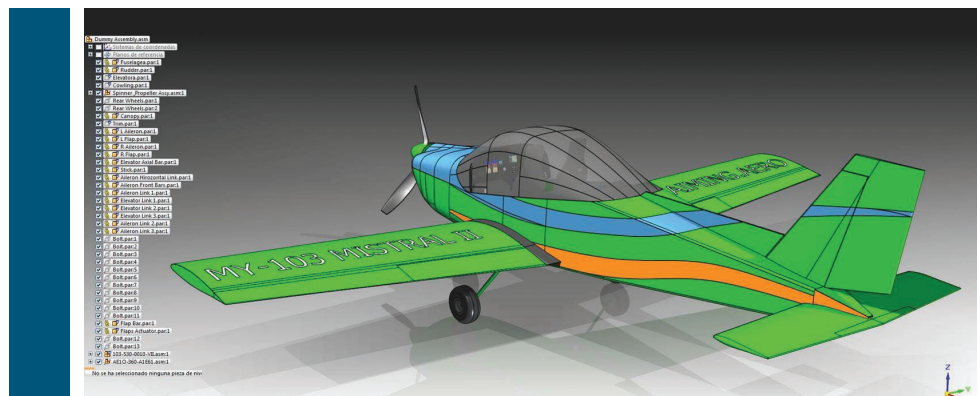
Avoided the need to create physical prototypes for verifying mechanical interferences

A lot can happen in six years

Indaer has been in the market for 12 years, but has used Solid Edge for only 6 years for its design and development activities. After observing the growth of new technological innovations in the market, the company decided to enhance its engineering processes and discovered Solid Edge with synchronous technology as the means to achieve its new goals. After analyzing its new design project and studying the manufacturer’s standards, Indaer now uses Solid Edge to make all decisions based on design data they receive.

As part of the overall project, the company had to paint the entire airplane, redesign the electrical system and perform

inspections on the structure, engine and the control system. “One of the big engineering challenges was to organize and position the new equipment on the existing instrument panel in the airplane,” explains engineer Jose Luiz Ramirez. “This job was complex due to the fact that the instrument panel cannot be modified structurally because that would affect its integrity. Using Solid Edge was essential in determining the feasibility to carry out this task and avoid wasted time and money.” By using Solid Edge, Indaer avoided the need to create physical prototypes for verifying any mechanical interference. In addition, applying design standards and ergonomic criteria for the pilot was much easier. “Using Solid Edge made it possible to draft the new



instrument panels for inserting into the new aviation equipment. It was possible to do all the electric cabling steps using 3D modeling for the entire airplane.”

Indaer also uses Solid Edge to perform structural damage repairs on the aircraft. The process begins by consulting with the manufacturer before making any modifications. This includes using Solid Edge to view and understand the necessary repairs. “Every time we make any repair on an airplane, it is necessary to consult with the manufacturer,” explains Ramirez. “In order to consult with them, we have to send information on the repair so they can be aware of what is happening. Then, we take a photograph of the damage, perform 3D scanning, insert it in the Solid Edge data, and send the data on the damage using the software program. This makes it possible for us to share an exact overview on the problem, and supply complete engineering data to the manufacturer.”

To accomplish some of its tasks, Indaer supplies manufactured, custom-made parts and tools to its customers (airline and leasing companies). Indaer can now manufacture tools at prices competitive with those from the international market.

“For example, if we need to remove a propeller and replace it with a custom-made part, we would need to purchase tools from an overseas supplier for an extremely high price of \$60,000,” says Ramirez. “But thanks to Solid Edge, we can now manufacture the



part locally. We get the airplane measurements, develop the tools using Solid Edge, and use local manufacturers to produce the job.”

The perfect fit for the engineering staff

The research and development (R&D) department uses Solid Edge to perform 90 percent of its work. When collecting the data for developing the design project, the staff documents all the process steps with Solid Edge. When the virtual prototype is ready, simulations and engineering calculations required to complete the project are performed, all of which are done using Solid Edge Simulation.

The head engineer, Juan Guillermo Arboleda emphasizes that Solid Edge with synchronous technology provides better

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Technology and Development of New Business
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José Luis Ramirez
Engineer
Indaer Industrial Aeronáutica



adaptation to different professional profiles: "We mix and match our resources based on the complexity of the task, according to the required speed, and also the staff member who will carry out the task. If the professionals are very young and recently graduated from a university, they will be able to readily work with synchronous technology because they learned it in college." He notes that highly seasoned professionals also utilize Solid Edge with synchronous technology, but sometimes prefer to combine both of the modeling approaches – synchronous and history-based.

Restrepo adds, "Solid Edge with synchronous technology has been extremely important to us, due to its capabilities that make it easy to make design changes. However, we have not stopped using the traditional approach. We can mix and match them as best fits our needs."

First the Colombian market, next the rest of the world

The plan is to first launch the Mylius MY-103-200 Mistral airplane in the Colombian market, followed by other countries in the Americas and Europe. Indaer had already put in about 5,000 engineering hours in developing the design. "Solid Edge helped us reduce development time and the entire drafting process," says Ramirez.

The project is extremely relevant to the Colombian aviation company, as 100 percent of the aircraft will be manufactured in the Colombian territory. Another very important project, which Indaer has already performed, was the development of a flight simulator for an Airbus 320, which will be used in an aviation school to simulate auxiliary flight training.

After analyzing its new design project and studying the manufacturer's standards, Indaer can now make all their decisions based on data received using Solid Edge.

Solutions/Services

Solid Edge
www.siemens.com/solidedge

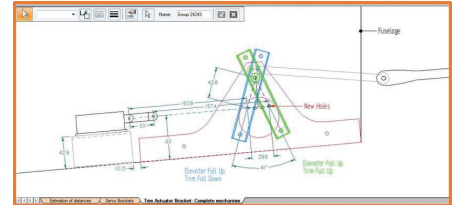
Customer's primary business

Indaer Industrial Aeronáutica is an engineering company that manages aircraft projects, provides technical support for airline and rental companies, as well as governmental entities. The company performs maintenance, structural repairs, reengineering modifications and services, aircraft inspections, revision records, and audits on aircraft such as Boeing and Airbus. In addition, the company recently bought all the development rights and the manufacturing project from the German company Mylius MY, established by Albert Mylius to implement the design and mass production of the first Colombian-built airplane, the Mylius MY-103-200 Mistral.
www.indaer.aero

Customer location

Ed. La Compañía
Colombia

Indaer plans to continue its focus on operational excellence and competitive pricing through best-in-class information technology. Therefore, the company is considering the purchase of additional Solid Edge licenses, as well as Siemens PLM Software's Femap™ software, a tool for advanced finite element analysis. With the development of platforms for centralizing data and counting on the technological support from Siemens PLM Software, the company seeks to perform even larger-scale aircraft services, such as Airbus A320, Boeing 737 and Embraer E-Jets, as well as receive EASA and FAA certification.



With Solid Edge, Indaer avoids the need to create physical prototypes to verify mechanical interferences.

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