



Aeroconseil 3D scanning for aircraft transformation

Aeroconseil now has a 3D digital model to transform an ATR72 into a cargo aircraft. The 3D scanning of the entire fuselage and the inside of the cabin was carried out with a high degree of accuracy.



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OUR CUSTOMER

Corporate name
Aeroconseil

Workforce
Approximately 1,000 employees

Business activity
Aeroconseil is an aeronautical services company that was created in 1984. Since 2011, the company based in Blagnac, France has been a subsidiary of the Akka Technologies group. It has two divisions: an Aeronautical engineering and systems division and an Air transport services division. Its engineering department holds a Design Organisation Approval (DOA) that was issued by the European Aviation Safety Agency (EASA) to carry out aircraft transformation and redesign projects.

Aeroconseil has long-standing expertise in the process of transforming an ATR72 into a cargo aircraft. This is a laborious and complex engineering project to implement for Maintenance, Repair and Overhaul (MRO) companies. It requires the installation of fire detection and extinguishing systems, cargo securing nets, reinforcement panels, etc. *“To enhance our expertise, we wanted to have more accurate data in order to offer our customers a wider range of transformation options and technical modifications”*, explained Sébastien Ayral, aircraft modification engineer at Aeroconseil. The company, based in Toulouse, France, therefore commissioned Cetim Sud-Ouest to scan and

then model the internal and external components of the twenty-metre long fuselage, with accuracy to within +/- 0.2 mm.

A tight schedule

The acquisition strategy was implemented in order to comply with these requirements based on a tight schedule. Three technicians carried out their work simultaneously in the confined

space of the cabin. Six days were needed to acquire millions of points using several contactless 3D measurement systems. Large 3D laser scanners were used to scan the external skin of the aircraft. This enormous amount of data was then processed using the appropriate computer software and resources: retiming of the scans in the same repository and aircraft identification, cleaning of the scatter plots in STL format then rebuilding of the surfaces. The retro-design and surface transformation process required close cooperation and many discussions with the Toulouse-based company in order to create a 3D model that met its requirements. A few weeks later, Aeroconseil had volume and surface files in Catia V5 format representing the internal and external structure of the ATR72 in great detail: rivets, stringers, frames, cable harnesses, aircraft skin, etc.

Cetim's asset

The experts at Cetim Sud-Ouest have several 3D scanning systems allowing them to adapt to the accuracy, dimensional requirements for all types of components or equipment. They possess the expertise and software resources to create a 3D model that matches the expected level of detail.

