

# COMPOSITE MANUFACTURING WITH LASER PROJECTION

AVIATION



COTESA USES LAP CAD-PRO LASER PROJECTORS  
TO ACCELERATE LAY-UP PROCESSES DURING COMPOSITE  
PRODUCTION OF GFRP FUSELAGE COMPONENTS



"LAP's laser projection systems help us produce even more efficiently in order to achieve our production goals in less time whilst ensuring optimum product quality."

PEER STELLING,  
Manufacturing Engineering, COTESA GmbH



## THE PROJECT

COTESA, a leading manufacturer of high-quality composite fiber components for the aviation industry, manufactures GFRP fuselage components for Airbus at its Mochau factory in Germany. The facility was expanded to around 40,000 square feet in order to accommodate a contract that saw the increase of the vertical range of manufacture at COTESA to include painting and assembling components. The factory delivers 25,000 fiber-glass reinforced plastic (GFRP) fuselage parts for the A320 family to Airbus, in Hamburg, every year. More than 30 different fuselage components will eventually now be produced in series. This also includes considerably larger, more complex components. To ensure even more effective production practices in future, COTESA has implemented LAP's laser projection system, including CAD-PRO laser projectors and the PRO-SOFT control software, at all laminating workstations.

## THE APPLICATION

Manual measuring, physical templates and layer schemes are now a thing of the past thanks to the laser positioning system. The lay-up process is completely based on laser projection, and every step is managed by LAP's PRO-SOFT control software. Laser projectors precisely display every shape, layer by layer, while text projections lend additional visual assistance to the operators, for example by indicating intermediate steps or the orientation of elements to be placed. The easy-to-use system makes work much easier because it is so intuitive. New projection steps can be started comfortably by means of remote control so that the operators hardly need to look at the monitor.

Moreover, the PRO-SOFT software documents projection steps and saves order-related data by generating log files. One main advantage is that COTESA saves a considerable amount of time by completely doing away with tools like physical templates. In addition to these time benefits, employees no longer need to pick up the ply books or handle the heavy, cumbersome templates. They can fully concentrate on their work and simply place the cut-outs on the mold along the projected laser lines. And for workstation rotation or shift changeover (there are three shifts), the next operator can pick up where the previous operator left off. The laser projection system also allows COTESA to react flexibly to changes in plans.

## THE SYSTEM

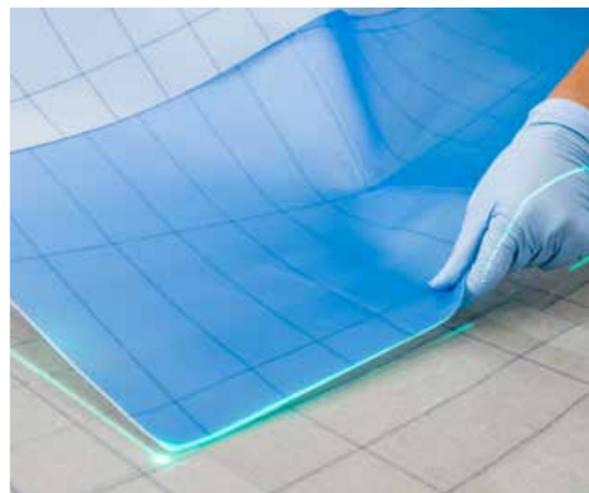
In total, seven workstations are set up for laser projection. COTESA decided in favor of the diode-based LAP CAD-PRO laser projectors with green laser sources. These lasers feature a service life of more than 30,000 hours, are focusable and provide clearly visible laser lines. All of these benefits help ensure highly reliable processes. The laser projection system also features the flexibility needed to handle different component sizes, ranging from 10 to 20 square feet. To process larger tools, some stations are equipped with up to four projectors. With the laser projection system in place at each station, COTESA is well prepared to produce even faster and more efficiently in the future.



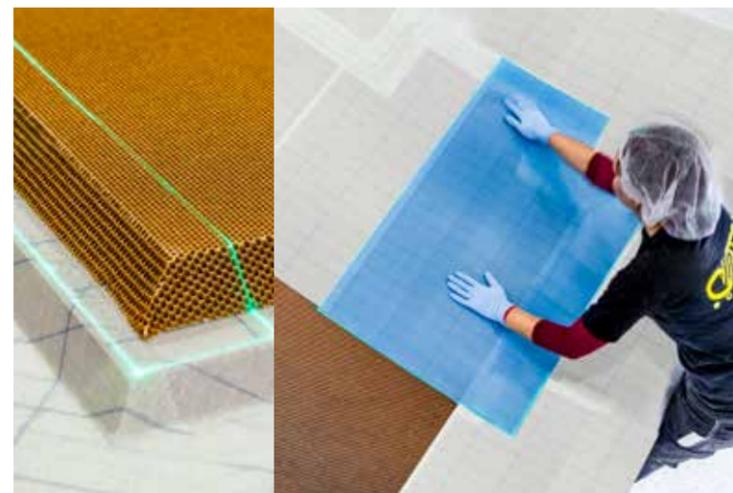
At its approximately 40,000-square-foot factory in Mochau, Germany, COTESA manufactures fuselage components made of high-quality fiber composite components for the A320 family.



LAP CAD-PRO laser projectors are installed under the ceiling above the workstations. The system's configuration is highly flexible, enabling it to handle tools of different sizes, which are positioned in the projection area on mobile tables.



Project, position, done: thanks to laser technology, the cut-outs are placed quickly, safely and precisely.



Layer by layer, the high-tech components are made in a pre-preg process. Lay-up of the sandwich components itself is carried out in the clean room and involves careful manual work.



LAP's PRO-SOFT software controls all work steps, from the projection to the generation of order-related log files.

### THE BENEFITS

#### INCREASE IN EFFICIENCY

Acceleration of lay-up processes by omission of mechanical templates and layer schemes

#### PROCESS RELIABILITY

Thanks to software-based workflows and digital laser technology

#### CONSISTENT COMPONENT QUALITY

Compliance with the high requirements of the aerospace industry

## ABOUT COTESA

COTESA is a leading manufacturer of high-quality composite fiber components for aviation and automotive engineering. With three locations and more than 700 employees, we develop and manufacture customized solutions for components and assemblies. Our focus is on complex CFRP components such as frames, profiles and stiffeners, multi-dimensional GFRP sandwich structures and hybrid components such as drive shafts.

[www.cotesa.de](http://www.cotesa.de)

## ABOUT LAP

LAP is a worldwide leader in the field of laser-based systems for projection and non contact measurement. For more than 30 years, LAP has developed, manufactured and distributed laser measuring systems, line lasers and laser projectors for industry and medicine. Numerous international industrial corporations rely on the precision technology Made in Germany for improvement of the quality of their products and the effectiveness of their production processes.

[www.lap-laser.com](http://www.lap-laser.com)



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