

Case Study

Embraer



Highlights

- ✓ JETCAM was the most efficient from the 5 systems benchmarked for both composite cutting and sheet metal fabrication
- ✓ Single CAM system supporting routing and composite cutting
- ✓ Save 6 hours per day programming time on composite parts due to RCP automation
- ✓ 4% reduction in material on composite cutting
- ✓ Can now create both dynamic and static nests
- ✓ Can now perform Mosaic nesting, which was done outside of previous CAM system and saves an hour a day
- ✓ Received several software updates under maintenance, each with major benefits

Embraer, based in Brazil, is one of the world's largest aircraft manufacturers, employing approximately 19,000 staff worldwide. Their original CAM system was purchased in the late 1990's to drive both their CNC routers and a Lectra conveyor knife cutter. The CAM software company ceased trading, so Embraer set about evaluating several systems. After a detailed research of the market, they finally benchmarked five systems. Commented Fernando Araújo, Manufacturing Engineer; "Of the five systems tested, two could not generate better nests than our existing system. JETCAM's nests were by far and away the most efficient. Besides this, when we approached JETCAM we felt that they had an open approach to our further requirements."

The system was installed in May 2004, and the composite programming was the first to be integrated to their ERP system using JETCAM's RCP (remote control processing) module, which immediately reduced their composite programming time by 6 hours across two shifts. "In our old process, we had to select the orders to be nested, wait until they were nested and sometimes

manually redo a part or even the complete nest because the operator saw that it could be better optimized if made manually. After that, the operator had to select another "pack" of orders and do the same process again, spending all the day in front the PC. With JETCAM, the only time we spend is grouping the orders and generating the batch orders. After this, we press a button and come back later to get the results that are sent directly to the machine, without any rework."



While JETCAM was installed to drive both the composite and sheet metal technologies, Embraer concentrated on optimizing and automating the composites first due to the general manufacturing costs normally associated with them. With RCP already in place and delivering savings, they were surprised at the additional benefits that the FFHPN (free form



Software: JETCAM Expert Premium
Free form high performance nesting,
RCP(Remote Control Processing)
and MRP modules

Machines: Trumpf BFZ 3000 Router
Creneau CNC Router
Lectra Vector 2500 conveyer knife cutter

high performance nesting) module provided.
“Through less effort of programming we were



achieving a 4% saving on our nest efficiency, which quickly mounts up to a considerable sum. We could also produce dynamic nests, and have much better flexibility than with static nests due to revision control. We have some very big part numbers that are cut 3 or 4 times a week. These nests usually have more than 100 meters or 300 different plies. To obtain a better optimization, we left the nest running overnight or over the weekend and saved the results for later use. Every time we have to cut the same part, we just generate a new NC file and send it to the machine. With static nesting and revision control, if the revision is old JETCAM will warn us when we try to open the file so we will not use it. With these cases it enabled us to save a lot of material.

On the routers Embraer are also making use of mosaic nesting, which has shaved an hour a day from programming times. Commented Fernando; *“Mosaic is a nest of nests. It is used when we have many orders from different materials with few parts on each order . The advantage is that with*

only one machine setup we can produce many different small orders.”

Ongoing support and development is always a concern for a company embarking on a large software implementation. Embraer drew up a detailed specification for the system. Said Fernando; *“Most of our wish-list was delivered with the system, after which we provided a further list of 20 items. The most important of these were delivered within a few months of installation, and we are constantly receiving new releases related to the additional features requested.”*

Fernando finished by saying; “We don’t yet have full performance data on the routers, but the savings achieved within the composite manufacturing cells alone paid for the entire JETCAM investment in under a year. Coupled with FFHPN and RCP, JETCAM is alone in its field for material optimization and a high level of automation. It is a complete set of tools for a complex task.”

