webindustries
Ingenuity with a personal touch

CASE STUDY
AEROSPACE

Aircraft Engine Manufacturer Saves Nearly $4 Million

Outsourcing Helps Customer Refocus Valuable Resources

A major aircraft engine manufacturer looking to streamline its composite prepreg formatting operation recently decided to outsource the entire process after calculating prospective savings related to supply chain, material management and kitting activities and the benefits of freed-up floor space. After careful consideration, they assigned the job to us.

The idea to outsource had been brewing for some time in the mind of the engine company's manufacturing leader. The tipping point came during a Web Industries presentation that featured a slide outlining how the technical and operational benefits of outsourcing the supply chain and preproduction formatting operations could lead to strategic benefits in winning new business. A key detail: outsourcing the non-value-added activities would let the plant focus its resources and assets on its core competency of producing engine fan cases and related composite parts.

After further discussions, the manufacturer agreed to outsource preproduction processes to Web Industries and also have the formatter integrate its supply chain/demand planning. To accelerate the objective of expanding production volume, Web purchased the engine plant's cutting tables and transferred the preproduction processes to Web Industries sites. This freed up the floor space, the freezer space, and the people needed for increased production. Eventually, Web took over the preproduction processes associated with 11 of the manufacturer's part numbers, with 15 more identified for future consideration.

PRIMARY BENEFITS

- Inventory management costs were cut by nearly $4 million annually
- Valuable floor space was freed up for other purposes
- Important engineering resources were redirected to their core business

> "This is exactly what we need to do."
>
> - Manufacturing leader at customer

Improving Materials Management

The plant's composite prepreg formatting was traditionally its least efficient operation. It entailed use of a large freezer and racking system to store the composite materials, and seven cutting tables, each measuring about 40 feet in length. The tables were used to format composite plies for fan case production tooling.

The plant had incurred significant costs associated with storing composite materials in-house. Through outsourcing, it was able to reduce its inventory and material management costs by nearly $4 million annually. This was made possible by better material tracking and reductions in the amount of unusable, obsoleted and scrap materials.

"Managing your own inventory can be costly," says Ashley Graeber, Web's director of sales & business development for the Aerospace market. "You have to track the composite materials in stock and pay close attention to expiration dates. In a large freezer it's easy to overlook some materials and have them expire before they're used. Employees can sometimes remove prepreg materials from the freezer to access other materials, then neglect to return the materials to the freezer, allowing them to thaw and become unusable. Issues like these resulted in high scrap rates. There's also the labor involved in accessing prepreg materials and moving them from the freezer to the cutting tables."

In addition, outsourcing reduced the cycle time between order receipt and shipment of goods by over 50%. The program cut the number of supply chain transactions for the engine plant and minimized potential bottlenecks with incoming material receiving and inspection. This resulted in productivity gains and lower costs.

Outsourcing also freed up approximately 3,000 square feet of floor space previously occupied by the cutting tables. The value of freed-up floor space is hard to estimate and varies by industry and application. In an International Journal of Industrial Engineering article, however, manufacturing floor space was valued at $50 per square foot. At that rate, the engine manufacturer could be expected to realize a gain of roughly $150,000 from the freed-up space.

The facility's manufacturing leader envisioned using some of the newly acquired space for a robotic system to clean the plant's composite tooling. This would potentially reduce cleaning time from five days to one, improving the plant's productivity. In-house formatting left no room for the cleaning system or other planned improvements.

Added Benefits

Outsourcing the supply chain and formatting operation to Web Industries also enables the engine plant to stabilize and standardize its material-related costs. "The plant only has to concern itself with the cost of the formatted kits supplied by Web," says Graeber. "It no longer has to factor in the variable costs of the cutting tables, operators, material scrap and freezer. This makes the actual costs that go into building the engine parts more transparent."

Web Industries' expertise and formatting-related resources allow it to produce formatted ply kits faster and with higher quality and implement engineering changes/product revisions more efficiently than the engine plant was able to do previously. The plant has since redeployed supply chain, production and engineering resources to its core business activities. The employees are experiencing higher job satisfaction by working on the true value add direct production of engine parts. The plant also benefits from the additional floor space opened up by the outsourcing program, allowing it to move forward with plans to automate its tool-cleaning operation.

"The net value impact is a game changer for the engine builder," says Graeber. "This case demonstrates the broad-based value that Web delivers. We can help our customers identify opportunities, concentrate on core activities, and find more capacity in their existing operations."