The case study

The part detailed in the drawing below was previously manufactured in-house by a customer who had no other requirements for this type of material. The part was manufactured from a sheet size of 1.6 mm x 1,250 x 3,200 mm (126 x 49 x 0,6 in), which meant that material utilization was 55.8%.

The work is now undertaken by thyssenkrupp Aerospace who are able to utilize a higher percentage of the sheet by cutting another customer's parts from the same material. The nesting achieved and increased material utilization of 74.6%. In addition to that a significant reduction in the set-up/change-over time was achieved.

Key benefits

- Removal of raw material store servicing the in-house profiling operation which created 200 m^2 (2,100 ft^2) of space and reduced inventory by approx. €350,000
- With the introduction of Direct Line Feed the customer was able to reduce the profiled parts WIP by 5 weeks' production
- Removing the in-house profiling facility saved a further 800 m^2 (8,600 ft^2) and enabled the customer to focus on its core competence of advanced manufacturing and assembly
- With thyssenkrupp Aerospace's improved material and equipment utilization, the customer benefited from an overall reduction in purchase costs
- The customer has benefited from a consistent 99% ontime delivery performance which has increased confidence in thyssenkrupp Aerospace's abilities to deliver urgent and AOG type requirements
- New investment in profiling capability made by thyssenkrupp Aerospace enabled the customer to focus resources and expenditure on new projects and more advanced technology

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Sheet products

thyssenkrupp

The challenge

Optimize material consumption

Aluminum, steel and titanium sheet for aircraft part manufacture is used in a wide range of specifications and sizes with the result that individual specification and thickness combinations may amount to relatively small volumes.

Where this demand is spread across a dispersed supply chain, high costs for carrying excess inventory and poor utilization of material usage can result. The challenge is to determine the best way to optimize material consumption.

One part of the solution in optimizing the sheet material usage is through the aggregating of demand across a number of customers using common material types. This allows economical mill quantities to be procured and thus stock turn is maximized. The next part of the solution is to improve sheet utilization through the profiling of piece parts, i.e. the nesting of items in common specifications and thicknesses across all customer requirements, thereby achieving a level of optimization not always possible when working for a single customer.

The process...

- Parts are engineered using CAD/CAM facilities.
- Optimized material use is achieved by nesting.
- All stocked sheets are held in bar-coded locations.
- Parts are routed using CNC single or multiple sheet routers.
- Items are deburred by machine and complex items are finished by hand.

...to a customized solution

- Tolerances are checked using a laser inspection machine.
- Checked by hand to verify reports.
- Parts are married to the customer's own job card prior to dispatch.
- Finished parts are packed and stored ready for use.
- Dedicated transport ensures delivery to point of use on a just-in-time basis.

Aluminum
Steel
Titanium
Aluminum-Bronze
Nickel
Copper