The case study

One of our customers was purchasing cut billets of 200 mm (8 inches) thick titanium to produce a part. The billets were sawed from a larger piece of titanium plate, before being sent to thyssenkrupp Aerospace for waterjet cutting.

Through the development of an alternative solution with the customer, it was agreed that thyssenkrupp Aerospace would receive the full plate of material, omit the sawing process and waterjet cut the profiled shapes of the customer's part after nesting the parts together on the full-size plate. The result was that we were able to produce an extra 2 parts per full-size plate, saving the customer on material cost and achieve additional cost savings.

Key benefits

The customer was able to benefit in a number of ways:

- Closer nesting of parts within master material to achieve better yield
- 20% reduction in material cost per part
- Removal of a manufacturing stage within the production of the parts by eliminating the plate-sawing operation.
- Reduced machine set-up time within thyssenkrupp Aerospace, thus creating more capacity for customer

Materials Services
Aerospace

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For a fast response please phone your nearest waterjet cutting location:

The Americas

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USA, Seattle, WA	+1	253 239 5700

Europe

Finland, Jämsänkoski	+358	20 127 4400
France, Bourges	+33	1 30 69 68 91
UK, Darton	+44	122 639 4040

Our other sales locations:

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tka 05/2016

Materials Services
Aerospace

Waterjet cutting

thyssenkrupp

The challenge

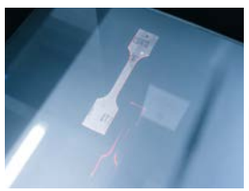
Professional procurement teams use competitive tendering exercises and negotiation to reduce material purchase prices, but are still under pressure to find more cost savings.

Since the material cost of a finished component is not only a function of the price paid for the material but also the amount (weight) of the material used, it is clear that costs can be reduced by reducing material consumption – but how?

The problem is greater for customers who require parts made from harder, thicker or more specialist, and therefore expensive, materials. Traditional techniques of machining multiple parts from a single piece of rectangular material go part of the way to achieving some savings, but closer nesting and better material utilization can still be achieved, not only for sheet products, but also for plate products.
Waterjet technology goes a step further, by allowing much closer nesting and cutting of near net shapes from any material type, which can be as much as 200 mm (8 inches) thick, without compromising shape tolerances or edge quality. The best candidate shapes are those where 20% or more material is removed from the engineering envelope (the minimum rectangular shape required to make the part).

The process...

- Customer shapes are engineered and nested to optimize material usage.
- Material is issued from inventory for processing.
- Precision shapes are then cut using abrasive waterjet technology.
- All shapes are laser inspected to ensure they meet the customer's requirements, including tolerances and edge quality.
- Completed shapes are packaged and prepared for shipment.
- Shapes are delivered to the customer by thyssenkrupp Aerospace.



...to a customized solution

We offer versatility – there are virtually no limits to what waterjets are capable of cutting.

Using the latest in waterjet pump technology, we are able to create up to 6,000 bar (87,000 psi) of pressure to move water and abrasive through material at speeds up to three times the speed of sound. It is not uncommon for 200 mm (8 inches) thick aluminum and titanium to be cut on waterjets to near-net-shapes.

Why use waterjet technology?

- No heat-generated structural changes – it is a cold cutting process.
- Virtually burr-free cut edges – reduces finishing operations.
- No material discoloration.
- No toxic or fume discharge.
- High yield of material – significant cost savings.
- Multi-head operation allowing competitive cutting of flat materials.
- 12 m x 3 m (472 x 118 in) capacity, from shim up to 200 mm (8 inches) thickness.
- We can process a wide array of materials to a ± 0.30 mm (0.118 in) tolerance.

Our scale and variation of machines make us the supplier of choice to leading aerospace manufacturing companies. We are able to cope with large volumes and quick turnaround.