

# VALUE ANALYSIS LEADS TO COST SAVINGS FOR AEROSPACE INDUSTRIES



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Forecasts are predicting strong growth in the commercial and defense aerospace industries during the coming year, driven by increased demand for passenger travel and increased defense spending globally. In the commercial sector, there was a record high backlog of aircraft unit production at the end of 2017. However, the aerospace industry demands extremely stringent quality measures regardless of growth rate.

There are many suppliers capable of meeting these quality level demands, so how can one producer stand out? A successful supplier of aerospace parts must look for every opportunity to increase value and reduce lead time while maintaining the required high level of quality.

Value Analysis/Value Engineering (VA/VE) is one of the most important tools for hitting those seemingly contradictory goals of high quality, but also high value and low lead times. VA/VE is the process of conducting a systematic analysis to identify the best value possibilities for design, materials, and processes. VA/VE attempts to substitute materials and methods with less expensive alternatives, without sacrificing quality or functionality. VA/VE focuses entirely on the functional aspects of components and materials, and not their physical characteristics.

Let's consider a case where VA/VE was employed successfully to overhaul the production process of an aerospace part:

## CASE STUDY

**Application:** Aerospace

**Part Description:**  
Rotor Clip for Carbon Brake, Airbus - A320



The original manufacturing process involved many incremental steps and processes. Some of these steps were relatively minor operations that nonetheless added significant amounts of time, while some processes were necessary to correct distortions or imperfections introduced by previous steps.

## ORIGINAL Process

- 1 Stamp Flat Blank
- 2 Form
- 3 Form Radius
- 4 Machine 6 holes
- 5 Machine ends of part
- 6 Remove burrs inside form
- 7 Re-Size inside form
- 8 Apply surface coating

After a rigorous VA/VE process, several manufacturing steps were combined, and others eliminated. The initial stamping process was modified to account for the geometric distortions that are introduced in later steps. Additionally, the stamping process was done at a higher quality standard in order to reduce the finishing work required for the part.



### How was it done?

- The 6 holes stamped in net size blank are not round. The shape is calculated to compensate for the forming process that will come later.
- Completed forming operation with radius stretches the 6 holes to shape; holes are round after forming.

### Process after VA/VE

- 1 Stamp Flat Blank (Net Size)**
- 2 Form complete with radius**
- 3 Apply surface coating**

### VA/VE Improvement:

The end result of conducting VA/VE and refining the manufacturing process:

- Reduced lead time from 18 weeks to 8 weeks (10-week improvement)
- Reduced unit price (34% price reduction)
- Process was applied to similar parts for further savings

The huge reduction in production lead time is of special benefit in the aerospace realm, where reacting quickly is key. The post VA/VE part production also created significant cost savings. Given the large numbers of parts and assemblies in any particular aircraft, the cumulative savings in both time and money can be highly impressive.

### Conclusion

Offering this kind of production expertise will ensure that a part supplier stands out from the crowd. The collaborative nature of the VA/VE process can also help a business move from a simple supplier role into being considered a trusted partner in the production process.

Quality cannot simply be inspected into a manufacturing process. While there is no substitute for rugged machines, precision tooling, and expert processing, the most important strategy for producing exceptional quality is identifying risks and proactive planning all aspects of the process. Fueled by the rapid expansion of technology, the need for partnering with both customers and suppliers has never been greater. By partnering, a supplier can become a valuable extension of their customer's business, offering innovative and cost-effective solutions to their manufacturing needs. The net result is enhanced product quality with reduced costs. This strategy of partnering with customers should be a valued priority and an integral part of the business culture.



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