Not afraid of small-series production

Tesat-Spacecom, an SME from Backnang near Stuttgart, is seen as a European market leader in communication payloads for satellites. In order to shore up its position among the competition, Tesat put its own production processes and cost structures to the test – to its advantage.

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German Summary

Der Mittelständler Tesat-Spacecom aus Backnang bei Stuttgart gilt als europäischer Marktführer im Bereich der nachrichtentechnischen Nutzlasten von Satelliten. Um diese Wettbewerbsposition abzusichern, hob Tesat seine Produktionsprozesse und Kostenstrukturen selbstkritisch auf den Prüfstand – mit Gewinn. Der gesamte deutschsprachige Beitrag ist nachzulesen auf www.aerotec-online.com

Tesat-Spacecom's product spectrum ranges from complete payloads through equipment, modules and hi-rel components for space applications. Building on its leading position in the commercial satellite market and the ultra-high standards of quality required here, the company's products are finding increasing application in diverse space-based systems for the security and defense sector in Germany, Europe and the US.

Early this year, two of Tesat-Spacecom's laser terminals were successfully space-tested as part of a German-American cooperation program. The data transmission rate achieved in the test, 5.5 Gbit per second, set a new world record. The company's order book remains very healthy, although there was one troublesome aspect: since orders are billed in US dollars, the firm had to raise productivity to compensate for the euro exchange rate difference.

The last process check took place at Tesat around 5 years ago. "In order to optimize a system of high-quality and cost-oriented manufacturing and process planning, it's important to employ modern methods. That's why we resolved to review our current processes and to optimize them if need be," says Matthias Spinnler, Chief Operating Officer at Tesat. The objective was to establish lean processes, to reduce complexity and to eliminate activities that do not add value.

At the end of 2007, Tesat-Spacecom decided to carry out a fundamental analysis of existing business processes. Management consultants Kreutz & Partner from Ludwigsburg were brought in to conduct the analysis. K&P were selected mainly on the grounds of proven successes with their consulting services and implementation performance in past projects, as well as their detailed knowledge of the specific requirements of the space industry.

Under the leadership of Dr. Uli Doberer from Kreutz & Partner, a complete process analysis was carried out. Value stream mapping and an interview technique developed by K&P to identify shortcomings and opportunities for improvement proved to be two of the key tools for identifying improvement potential. The overall project was divided into five phases: preparation, analysis of actual situation, concept design, definition of actions and implementation. All business processes, from the request for a quote and the production stage through delivery and invoicing, were recorded and mapped in approximately 600 individual steps. This was taken as the basis for developing a software model of the status quo, which, in turn, was used to simulate lead times and process costs.

A cost saving of 15 % and a reduction in lead time from 14 to 12 month is expected

"Our software model enabled us to develop process alternatives and assess them in quantitative terms by measuring costs and lead times. The findings were used to select the processes for optimization, which will now be implemented step by step," says Doberer.

From January to April 2008, between three and five K&P staff and consultants worked on the Tesat project,

coming up with about 20 improvement projects. These range from quick wins, which can be implemented within a few weeks, through design modifications to the equipment itself (to improve manufacturability), and the redesign of complete manufacturing processes, which can take more than a year.

With the product line under review here, one of the main things that very quickly became clear was that Tesat had already crossed the line from batch production to small-series production. This means that a partial improvement in individual process steps can bring only marginal efficiency gains. Doberer states: "A paradigm shift is what's needed now, from batch production to small-series production. That is still a long way from series production."

Processes were made significantly more effective with the introduction of line-production principles. "This is the quantum leap they've been looking for," says Doberer with conviction. It means more than just adapting production processes at their basic level (from work-cell production to line production); it also demands that the development and design teams play their part in this paradigm shift and design the equipment for manufacturing in line with the new production processes. The primary goal is to "Increase the number of common parts and standardize wherever possible."

The complete project, until the start of the implementation phase, lasted eight weeks. Once all actions are completed, a cost saving of 15 percent and a reduction in lead time from 14 to 12 months is expected to be achieved.

Dr. Uli Doberer from Kreutz & Partner: „ A paradigm shift is what´s needed now.“