

PLM in communications technology with Tesat-Spacecom



“We knew that HP Services had experience in mySAP PLM projects and understood the specific needs of our business. With good in-house preparation, HP’s know-how and a modular offer with fixed prices, we were able to get our mySAP PLM system up and running within nine months.”

Dr. Bernhard Schwaderer, Director,
Microwave and Optical Hybrids,
Tesat-Spacecom GmbH & Co. KG



Tesat-Spacecom has been supplying communications equipment for the space industry since 1968. Its products are used in more than 350 space programs and in approximately half of all satellites now in orbit around our planet. They are primarily used in satellites designed for TV and data communication, earth and weather observation.

Based in Backnang, Germany, the company was originally owned by AEG, and later became part of the Bosch group. However, since 2001, Tesat-Spacecom has been an independent company, employing around 700 people and focusing on commercial space programs. The firm receives approximately 20 percent of its orders from domestic clients like DLR (the German Aerospace Center) or ESA (the European Space Agency). Overall, its customer base is split evenly between Europe and the USA.

Tesat-Spacecom has built its reputation around the TWTA (Travelling Wave Tube Amplifier), a device that strengthens high-frequency waves to ensure that data transmitted from a satellite reaches the earth. Thanks to the success of the TWTA, the company has earned itself a 40 percent share of this market segment.



Optical terminals for communication between satellites in orbit are amongst Tesat-Spacecom's more recent innovations, and the company is now recognized as the global market leader in this area. That leadership is born of the kind of inventive and adventurous spirit that is typical of the region in which the company is based. However, it also has its foundation in specific telecoms expertise and typical German thoroughness in research and development.

mySAP PLM roll-out with know-how from HP

After separating from Bosch, Tesat-Spacecom had to operate under completely new cost conditions. At the same time, the product data management environment needed to be adapted to the changed needs of what was now a medium-sized technology firm. Existing solutions had no file/object linkage and no control over configuration management. As a result, the need for a new Product Lifecycle Management (PLM) system became more urgent.

Since some cost-effective SAP R/3 modules were already in use within the company, building the new PLM landscape based on SAP solutions was the obvious choice. However, as in-house IT resources were already being employed on other projects, Tesat-Spacecom looked for a competent, qualified partner to help it plan and implement the new mySAP PLM environment.

Due to its extensive experience in this area, HP Consulting and Integration Services was chosen to roll out mySAP PLM for Tesat-Spacecom. Dr. Bernhard Schwaderer, Director of Microwave and Optical Hybrids at Tesat-Spacecom, explains: "We knew that HP Services had experience in mySAP PLM projects and understood the specific needs of our business." It was also clear that it was not cost-effective to develop the necessary PLM rollout knowledge in-house. Gerhard Ruoff, Special Advisor, Microwave and Optical Hybrids at Tesat-Spacecom adds: "We knew that the IT workload would drop substantially once the implementation of the mySAP PLM system was complete and normal operations were resumed. That's why we made a conscious decision to use completely external expertise for the implementation phase".

Taking care of product documentation

It's not surprising that products used for space travel are subject to unusually high quality standards. After all, it is almost impossible to replace or repair components once a mission is underway. Apart from the technical characteristics, such as performance or power consumption, components must also be able to cope with the special demands of space travel. For example, a small size and low weight are essential requirements.

As a result, Tesat-Spacecom develops and produces many of the parts itself. That gives the company freedom from dependence upon suppliers on the one hand, and guaranteed technical competence on the other. It also means that internally manufactured parts can be included later in the production process. However, standard parts like screws that are sourced externally to be used in Tesat-Spacecom products are repeatedly subjected to strict quality tests.

The production of small orders constitutes a completely different challenge. It is often the case that an order contains just one specific and highly complex piece of equipment. The starting point is always a detailed planning document, defining the customer's requirements as accurately as possible. The Tesat-Spacecom engineers then use this plan as the basis for the development of new Communication Modules. However, the documentation of the manufacturing procedures, materials and the components used is just as important as the engineering of the modules.

Product cycle: 15 years

The customer must be sure that the satellite can fulfill its function over at least 15 years, so Tesat-Spacecom must test every component, even if it seems unimportant. It must also make the results of every quality inspection available to the customer, so that they can have complete confidence in the product. "Every component must be documented from start to finish," explains Gerhard Ruoff. "Scientifically measured variables, and results from destruction tests and inspections are all recorded. With a TWTA, that means data covering approximately 500-600 separate components."



Due to the complexity and volume of this data, the requirements for a product data management system far exceed those for the usual management of data and design from standard CAD systems. In fact, the documents relating to the quality inspection of each TWTA, including the quality monitoring of each individual screw, can easily fill several folders.

Tesat-Spacecom was already using computer-assisted technologies such as CAD and a bill-of-material (BOM) management program. Documents were being created and maintained with office software and there was a specially designed mainframe solution that mapped the structure of every Tesat-Spacecom product.

There had also been plenty of IT resources for the design and administration of necessary computer systems whilst Tesat-Spacecom was part of Bosch. However, that meant that these solutions and the IT infrastructure itself were tailored to the needs of a multinational company.

Customized pricing

In order to choose between a number of potential providers, Dr. Schwaderer's team compared costs as well as relevant project experience. HP Services stood out from the competition by offering a good price/performance ratio via a modular implementation based on fixed prices and expert staff. Most importantly of

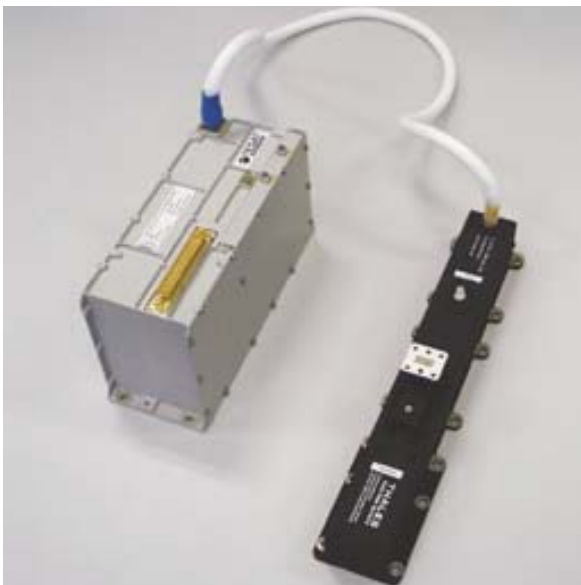
all, the costs were in line with Tesat-Spacecom's budget. "Through this kind of modular offer, we could select the level of support we received from them, which was important," explains Dr. Schwaderer. "With fixed-price service levels and modules, we were always able to keep the total expenditure for the mySAP PLM implementation under control."

HP Consulting and Integration Services had already implemented telecoms-related PLM projects at Bosch, and so already had a good understanding of Tesat-Spacecom's requirements. That experience meant that there was already a basis of confidence and trust on which to build a close partnership. "We knew the way the people at HP worked, and they knew our business," says Dr. Schwaderer. "That's how the preparation time for the mySAP PLM implementation was kept to a minimum."

Tesat-Spacecom defined the project goals at the beginning of 2002. Workshops were held with HP Consulting and Integration Services to coordinate the ideas from both sides of the partnership. "The result was a very close match between our goals and HP's offer," explains Ruoff.

Up and running smoothly after nine months

In April 2002, HP began the implementation of the changeover to mySAP PLM. Further meetings were



Tesat-Spacecom

Tesat-Spacecom GmbH & Co. KG, headquartered in Backnang, Germany, has been developing and manufacturing payload equipment for communications satellites for 30 years. In 2002, the company had 700 employees and a turnover of € 115 million. Tesat-Spacecom products are used in more than 350 space travel programs worldwide. The most significant products in its portfolio include microwave amplifiers, multiplexers and switches. In addition, Tesat-Spacecom was one of the first companies in the world to introduce laser terminals for inter-satellite communications with data transmission rates of up to 10 Gbs. More information can be found on the Internet at www.tesat.de

held during the implementation that proved to be just as effective as those in the preparation phase. As a result of each discussion, participants from both Tesat-Spacecom and HP were able to contribute to the progress of the project.

In the course of the project, HP Services analyzed a huge number of documents. The status details and attributes of over 100 different document types in 33 separate categories were entered into the new mySAP PLM system. Tesat-Spacecom then entered 30,000 original documents, while a further 30,000 records were converted using scanned-in copies instead of originals.

"We were very thankful that the new SAP PLM functionality was tested using genuine data. The errors uncovered as a result were worked on immediately by HP specialists. We wouldn't have been able to do that by ourselves," explains Dr. Schwaderer. The input that HP staff were able to contribute without even being asked was particularly valuable. Even if the original requirements couldn't be accommodated within the standard modules, the HP Services team used the experience they had gained from other projects to create a solution.

As the changeover took place in a particularly busy period, a Sword of Damocles between production and delivery failure was always hanging over Tesat-Spacecom during the implementation. However, workshops held to explain the functionality of the mySAP PLM solution, and to provide an opportunity for customization options to be discussed, proved very helpful.

As a result, HP was able to customize the solution within SAP standards and extend it with configuration management functions that are extremely helpful when dealing with complex product documentation. Using the configuration management solution, Tesat-Spacecom can now show its customers face-to-face how the product was planned and how it was actually built.

Dr. Schwaderer: "The size of the company played a big part in the decision to use an external advisor rather than tackling the project in-house. We knew the risks

from reports of other projects and knew that the time spent in the preparatory phase was crucial. Because of the support from HP Services, we didn't have any problems with our SAP project."

Employee training

Today, Tesat-Spacecom is in a position to produce all of its product description and product data documents quickly and efficiently. With frequent audits it is also possible for clients to gather all the necessary documents at the touch of a button. The mandatory inspection points for Tesat-Spacecom customers, once regarded as special features, are now standard for each individual order.

HP Services has also helped Tesat-Spacecom to promote the new PLM solution throughout the company via a series of training courses. Gerhard Ruoff explains: "In such a long-term project, there are always two key factors. The IT solutions are interchangeable, but a new PLM solution must also be well understood by people using the system for it to work properly. HP Services helped us achieve this by helping us prepare our in-house training."

From start to finish, Tesat-Spacecom's PLM project was implemented in just nine months. Today, every time a product goes to one of Tesat-Spacecom's customers, it is accompanied by an average of 500 documents. Those documents are automatically gathered via a comprehensive mySAP PLM system that, with help from HP Services, smoothly and seamlessly supports Tesat-Spacecom's business processes.

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