

SIEMENS

Ingenuity for life

Industrial machinery and heavy equipment

Festo

Identifying and specifying target costs with Teamcenter product cost management

Product

Teamcenter

Business challenges

Use of different cost calculation tools in the company

Significant efforts spent in discussions about calculation results and calculation basis

Identification of deviation from cost calculation to the later serial calculation in the ERP system

Keys to success

Establish a worldwide uniform standard for product costing in the new product development process

Achieve high accuracy in preliminary costing and use of SAP calculation logic

Combine tool and product costing

Apply current calculation guidelines and master data

Conduct periodic delta analysis and initiate early controlling measures

Reduce and objectify cost discussions

Prepare transparent cost calculation results

Festo uses Siemens PLM Software solution for all calculations in the target costing process

Maximum productivity and competitiveness in factory and process automation

In the daily life of the factory, automation technology performs typical tasks such as gripping, moving and positioning of individual parts, assemblies and complete products. As one of the leading innovators in automation, Festo has set new standards in factory and process automation

for many years and offers a broad product and service portfolio – from individual components to complex customer-specific solutions and systems. The company's standard products include pneumatic, servopneumatic and electric drives; valves and valve terminals; and sensors, intelligent compact cameras and controllers for efficient communication in the control chain. Festo has long considered the question of what future production can learn from nature. From smart grippers to innovative drive concepts or new interactions between man and machine, Festo sets new standards in bionics. Each year the company invests a high single-digit percentage of



Results

Improved cost-effectiveness of product and process development

Doubled the number of projects processed in target costing

Reduced processing times through standardized interfaces

Realized efficient use of employees and resources

Reached cost reductions for serial products

Cost-optimized development of new products compared to the previous products

sales in research and development for innovative solutions. The result: 100 patentable new products annually, around 2,600 active patents worldwide and the award of the German Future Prize in 2010.

Cost management as a key component throughout product development

Festo focuses on target costing to strengthen market and customer orientation, and the approach is firmly integrated into the development process. Target costing delivers important information in determining product costs derived from market prices and helps to cost-effectively design new products or revise current products. "The approach of target costing supports us in introducing new products or re-engineering existing products by integrating market and customer requirements into cost management," says Jörn Kleinschmidt, head of global new product introduction at Festo. With this approach, a decisive course for cost optimization can be set at an early stage.

Festo formerly used self-made solutions for product and tool cost calculation using spreadsheets. The results were inflexible and difficult to compare. Due to regularly occurring changes in product development or customer specifications, the process had to be run repeatedly. In 2013, an initiative was undertaken to increase

standardization in the calculation process and improve the reliability of the process.

When developing new products or comparing variants, there is seldom any meaningful geometric data available at an early stage, which made a purely parametrically based solution irrelevant for Festo. "For us, it is important to be able to make reliable statements about costs at an early stage, when it has to go quickly based on drawings," says Mario Massa, who works in Cost Engineering at Festo.

With an enterprise resource planning (ERP) system, it is possible to calculate product costs after the start of production based on actual production data and supplier prices. Cost simulations for future products are not possible using the ERP system. "Since we need a robust depth of detail and accurate cost transparency at a very early stage, only bottom-up cost calculation solutions were taken into consideration," continues Massa.

The new solution needed to support standardization, provide a high level of functionality and a high degree of flexibility in integrating with the ERP and computer-aided design (CAD) systems, and support a global process landscape. These criteria led Festo to select and implement Teamcenter® product cost management software from Siemens PLM Software.

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Reliable, detailed cost calculations

With the new solution, Festo can create reliable cost comparisons at a detailed level that enable justification of discussions and decision-making. “We want to discuss the product and its production steps, not the correctness of the tools and data,” says Massa. The advantage of the database-supported solution is that reliable product calculations and target cost derivations can be generated on assemblies and components even at very early stages of product development.

Internal and external benchmarks support this process. Teamcenter product cost management combines all of the company’s cost information into one central database, which makes certain that all employees use the same basis. In addition to information from ERP, product lifecycle management (PLM), product data management (PDM), CAD systems and Excel® spreadsheets, the cost information also includes external benchmark data, which is optimally integrated into the software and available to users at all times. Both the internal cost data and the external benchmark data are regularly updated. The use of Teamcenter product cost management in preliminary costing was implemented in all affected areas of Festo, including cost engineering, purchasing and plants, in order to achieve a uniform standard for transparency, availability and currency of the data.

Goal-oriented product development – 360-degree target costing

In the first step of target price development, the price at which the product can be positioned in the market is analyzed by taking into account the competitive situation. Based on this analysis, product management derives the maximum product costs. It is crucially important for the profitability of a new product that the price and an estimation of the quantities and manufacturing costs are balanced.

In this context, the cost engineering department at Festo regularly analyzes core products from key competitors, comparing the cost-benefit ratio of its own solutions with other automation products available in the market. Competing products are disassembled and their manufacturing costs are calculated using Teamcenter product cost management, enabling detailed comparisons with Festo products. The results are documented and made available to development, purchasing and plants.

The next step is to use a best-practice method to derive a product cost calculation based on optimal, market-oriented framework conditions using Teamcenter. The result is the simulated price of a supply source that can produce the product under optimal conditions with the most suitable manufacturing technologies and processes. The best-practice method is used for all important projects and is

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made available by cost engineering. The best practices relate in particular to production processes, quantities and locations. "Thanks to the valid benchmark data of Teamcenter, reliable best-practice calculations can be made," says Massa.

On the basis of the defined manufacturing assumptions (location, material, production process, quantities, lot sizes, and others), the plant uses a bottom-up approach to calculate the expected manufacturing and assembly costs using Teamcenter. At the same time, purchasing also contributes with offers from suppliers for purchased parts. The results of the best-practice methods are assessed in parallel, with consideration of the production costs, the selected suppliers and the planned production locations, and compared to the plant calculations.

Teamcenter supports cost negotiations by providing a thorough view of the cost components, including purchase prices, manufacturing costs, overhead costs and tooling. "With the purchase price analysis capabilities of Teamcenter, we often achieve the envisioned savings with our suppliers," says Kleinschmidt. The data from purchasing flows directly into each plant's internal cost calculation. Each plant

uses Teamcenter capabilities to create its own knowledge domains, re-using cost calculations from the data pool and accessing ERP data. The plants can then represent the competencies at respective production sites in the best possible light. "The output of the teams can be significantly increased," says Kleinschmidt.

The insights into the target costs are discussed at Festo in commitment workshops. All relevant departments are involved in these workshops, including product management, development, cost engineering, purchasing, and those responsible for the supply chain within the plants. Cost changes that occur after the target costs have been defined and during the product development phase are documented on an ongoing basis. The documentation provides a detailed overview of the reasons and causes of relevant material price changes. All cost-relevant changes to the reference products after the commitment workshop and the agreement of the binding target costs are transparently documented using Teamcenter product cost management. The documented changes relate to the planned and actual production costs, while the target costs remain unchanged. All cost-related changes are tracked and displayed in a comprehensible manner.

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An important aspect of the calculation process is the comparison of the serial production cost calculation with the target costing. Teamcenter product cost management enables import of relevant data and accurate comparison through an interface to SAP® software, which enables highly flexible adjustments of the calculation methodology of Teamcenter. For this purpose, a bill of material (up to 1,000 items) is imported into Teamcenter product cost management. During the import process, the bill of material is matched with the material master, and existing parts are automatically supplemented with master data. In the background, material and plant master data are available for linking manufacturing costs and surcharges during import.

When a project runs the risk of not meeting the agreed target production costs, cost engineering initiates a potential workshop. An interdisciplinary team develops alternative solutions, and the costs of each alternative can be readily calculated during the workshop using Teamcenter. The team then agrees to implement measures to achieve the target production costs.

Prior to the use of Teamcenter, this level of detail and standardization was not possible. Ongoing quarterly monitoring of costs creates permanent transparency. Within the operations reviews, target achievements are tracked until the third year after production start. To achieve the target production costs for all projects, Festo conducts regular reporting and reviews after new products are released. “In a direct comparison to the preliminary product, we now achieve a cost reduction in target costing in the middle double-digit percentage range and significantly increase the transparency of the cost trend and the adopted measures,” says Kleinschmidt.

Tool cost calculation

According to the overall cost principle, optimizing costs requires a consideration of component and tool costs, for which Festo generates reliable assessments and transparent breakdowns. The company also relies on the effective cost calculations of Teamcenter product cost management that are based on empirical values and parametric algorithms, resulting in fast and comprehensible results for tool cost calculation. Teamcenter covers a wide range of predictable tool types using parametric models. Direct linking of the

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Solution/Services

Teamcenter product cost management
www.siemens.com/teamcenter

Customer's primary business

Festo offers products, systems and services related to pneumatic and electrical control and drive technology for factory and process automation.
www.festo.com

Customer location

Esslingen
Germany

tools to the corresponding production steps at Festo results in a validation of the calculation assumptions (for example, the number of parts per cycle). Common calculation-relevant data, including 3D models, eliminates redundant data retention and prevents inconsistencies in the calculations.

A further advantage of the Siemens PLM Software solution is that it is well established in the automotive industry and has a broad customer base. Many of Festo's suppliers and customers are using Teamcenter product cost management themselves. With the detailed cost breakdowns that can be achieved using Teamcenter, the company is now able to meet the requirements for cost transparency. "Cost pressure is increasing internationally," says Massa. "Internal and external customers are getting more and

more price-sensitive. Because of this we use the standardized export and reporting capabilities of Teamcenter. These help safeguard the offers that go outside."

Kleinschmidt notes, "Before using Teamcenter, we supported 30 percent of the projects in the target costing process. Today, we are processing significantly more projects per employee. We were able to more than double the proportion of projects we accommodate."

The benefits of an integrated cost calculation solution combined with cross-functional cost management are clearly visible at Festo. Teamcenter product cost management will continue to support cost reductions in Festo development projects, keeping product costs competitive and helping bring innovations to the market successfully.

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