



**ThyssenKrupp**

**COMPANY:** ThyssenKrupp Elevator Americas

**VERTICAL:** Manufacturing

**LOCATION:** Middleton, TN

**EMPLOYEES:** 600 at this location

## ThyssenKrupp Elevator Americas Reduces Product Costs with aPriori

**Detailed cost visibility across the product development lifecycle drives cost efficiencies, accelerates time to market**

### BACKGROUND

ThyssenKrupp Elevator is one of the world's leading elevator companies with sales of almost 5.2 billion euros (\$7.1 billion) in fiscal year 2009/2010. Their range of products includes passenger and freight elevators, escalators, moving walks, passenger boarding bridges, stair and platform lifts, as well as quality service for all products. The company is part of the ThyssenKrupp Group, based in Essen, Germany, a global materials and technology company which consists of eight business areas. In fiscal 2009/2010, the company had annual sales of 42.6 billion euros (\$58.3 billion) and employed more than 177,000 people. Globally, ThyssenKrupp Group's activities in passenger transportation systems employ 44,000 persons in 900 locations.

Today, ThyssenKrupp Elevator Americas is the largest producer of elevators in the Americas, with more than 13,500 employees, more than 200 branch and service locations, and sales of more than \$2.7 billion. ThyssenKrupp Elevator Americas oversees all business for the operations in the United States, Canada, Central and South America. In the United States, ThyssenKrupp companies and their subsidiaries accounted for approximately 17,500 employees and annual sales of \$6.7 billion in fiscal year 2009/2010. The company does a lot of its own manufacturing in Tennessee.

### THE CHALLENGE

ThyssenKrupp Elevator has always focused on improving its products and delivering better value to its customers by refining ongoing processes and inputs. And, like most companies in a tight economic environment, ThyssenKrupp Elevator has taken an increased interest

*“ThyssenKrupp Elevator selected aPriori based on the system’s ease of use and flexibility to be deployed against a wide variety of cost management use cases. It’s a highly automated system, so our users do not need to be cost experts to leverage it. All they have to do is open a 3D CAD model, enter a few basic inputs, and they can generate an accurate cost estimate in seconds. We have integrated aPriori cost reviews into our standard product development process—to conduct Make versus Buy analyses, to streamline process routings in our manufacturing facilities and to determine if we can standardize common changes across product platforms. By taking this broad-based approach, we’re attacking cost at the point of origin, and maximizing the potential cost savings for the company.”*

**PATRICK BASS**  
**SR VICE PRESIDENT OF ENGINEERING**  
**THYSSENKRUPP ELEVATOR**

in eliminating waste in its manufacturing processes to reduce product costs and improve product quality.

In late 2010, Patrick Bass, Senior Vice President of Engineering, identified a gap in the company’s understanding of cost management, especially at the design stage of the business. ThyssenKrupp Elevator was spending its fair share of time on cost management, but it was a very manual process that required significant time from multiple resources. It was also inconsistent and subject to the many variables introduced by different design and manufacturing engineers.

Product cost was not a core part of the design discipline at ThyssenKrupp Elevator. Design engineers were focused on designing the best product or part. Cost was secondary and they did not have tools to accurately estimate the cost of their designs in a timely manner. They were reluctant to burden the manufacturing team with too many requests for price estimates for their design ideas. As a result, they tended to wait until they had one or two designs they really liked before securing cost estimates. Even then, the estimates that were completed took from several days to a week to get back and they were usually just ballpark pricing.

Bass recognized that the company needed to do a better job in this area—and do it earlier in the process—without slowing down product development. He quickly formed a cross-functional team to evaluate different cost-management solutions that could assist ThyssenKrupp Elevator in addressing these issues. During that time, Bass was introduced to aPriori, a product cost-management software supplier. The company provides design, engineering, manufacturing and sourcing personnel with a software platform that delivers real-time product-cost information at a detailed level to identify quantifiable savings when evaluating alternative designs, manufacturing processes and supply chain sources. In Bass’s view, the aPriori solution would enable his engineers to attack cost at the design stage where it could yield the greatest possible impact on product cost reduction.

## THE SOLUTION

Bass liked what he saw in aPriori, so he turned it over to his cross-functional team, co-led by Mike Klappholz, Product Development Manager, Mechanical Systems and Pat Ginn, Plant Manager at ThyssenKrupp’s Middleton, Tennessee plant to put the software through its paces. Other team members included: Jeff Duvall, Chris Jackson, Max Miller, Bret Lirette, Kevin Perkins, Ashton Feehan, Jason Capriotti, Jeremy Prather, Jim Cofer, John Heuer, Victoria Bakulina, and Cedrick McCormack.

Working with this team, representing people from product engineering, product development, manufacturing and procurement, Klappholz and Ginn evaluated aPriori over the course of 10 weeks starting in January 2011. Working closely with aPriori staff, the ThyssenKrupp Elevator cross-functional team was trained on the system so it could vet every aspect of it and understand how it could reduce product costs and add value specifically in the ThyssenKrupp Elevator environment.

The team’s first step was to look at a very mature product part – an elevator rail bracket. This was an item that had already been through many cycles of cost reduction over the years. They weren’t expecting much, but aPriori surprised everyone by identifying product cost savings in the way the part was designed and manufactured.

From there, Klappholz and his team began to look for opportunities in other areas of engineering. The timing was excellent as ThyssenKrupp Elevator had just started the

development of several new products so the team was able to start using aPriori from initial product design. Klappholz had a team of 10 mechanical engineers on his staff and was also interested in how different members of his group would take to the aPriori system. He had a mix of new, younger engineers well versed in 3D design, and older, more experienced engineers accustomed to manual cost-management processes that depended on manufacturing expertise and knowledge. He was pleased to see that both groups took to the system quickly and found it easy to use. They were able to instantly and precisely determine the cost of a part or product from a CAD model, based on the materials to be used and the actual ThyssenKrupp Elevator manufacturing environment. With a click of a button, they could get a precise, real-time cost assessment at any time during the design process. As design changes were made, aPriori automatically re-assessed the design and provided an updated product cost in real time. Using this new level of cost knowledge, Klappholz and his engineers are now able to make more informed design decisions and avoid costly product design decisions earlier in the product lifecycle.

ThyssenKrupp was also interested in product cost management best practices and what it could learn from other users of aPriori. So Klappholz and his team spoke with another aPriori user, Polaris Industries. These discussions reinforced the benefit of incorporating the core disciplines in aPriori into ThyssenKrupp Elevator's own product cost management process to make cost optimization a fundamental part of the engineering and design culture at ThyssenKrupp Elevator. Today, that's become a reality with almost all product design reviews requiring the use of aPriori to ensure that product and parts are cost optimized.

aPriori is also being used by the manufacturing group at the Middleton, TN plant. ThyssenKrupp Elevator does much of its own manufacturing in Tennessee and is looking for every opportunity to remove cost, including optimizing processes and routings on the shop floor. aPriori can model any manufacturing facility and take into account the unique capabilities or different machines in operation at any given time. ThyssenKrupp Elevator manufacturing engineers are using aPriori to help them find the most efficient routings for a given part or product. This reduces manufacturing costs and enables faster time to market. aPriori is also a very flexible system that has been configured to give manufacturing engineers complete control over the costing process –so they can easily change inputs and adjust routings as needed based on machine availability, maintenance schedules, etc. and quickly get a new cost estimate.

The procurement team at ThyssenKrupp Elevator is also saving time and cost with aPriori. When sending projects out for bid, team members now have a cost standard to compare any quote against. This enables them to do fact-based negotiation with their suppliers and collaborate more effectively with them to bring costs to the forefront of the discussion. For example, for one product part, they were able to procure it for less than originally quoted based on a small change in the product design specs which had no impact on product quality.

### THE RESULTS

Since deploying aPriori, ThyssenKrupp Elevator has seen many direct benefits to its product development process and its overall business.

- The design team is able to evaluate and cost 3X more design alternatives than before they implemented aPriori. This facilitates product innovation while also delivering incremental cost savings.

### About aPriori

aPriori software and services generate hard-dollar product cost savings for discrete manufacturing and product innovation companies. Users include some of the leading manufacturers in Europe and North America. Leveraging aPriori's **real-time product cost assessments**, employees in engineering, sourcing and manufacturing make more-informed decisions that drive costs out of products pre- and post-production. As a result, manufacturers launch products at cost targets, maximize savings in re-work projects and never overpay for sourced parts.

To learn more about aPriori and its product cost management solutions and services, visit [www.apriori.com](http://www.apriori.com) or call 1.978.371.2006. To see an overview demonstration of aPriori, [click here](#).

- It used to take design engineers approximately one week to get a ballpark quote back from the manufacturing team. Now, with aPriori, the designers can create a highly detailed cost estimate in aPriori within one hour. And, they can make a change to that design and understand the cost implications with one click. This reduces ThyssenKrupp Elevator's time to market by eliminating the lag waiting for quotes back from the manufacturing team.
- In procurement, ThyssenKrupp Elevator has reduced its cost of sourced goods.

"aPriori accelerated many of the things ThyssenKrupp Elevator was already trying to accomplish around product cost and time to market. It simply provides a faster, more powerful way to accomplish them. Now cost management is part of our ongoing process—and we stick to it," says Klappholz. "We're using the platform to follow products and manage costs from initial design through implementation in our plants. That makes the effort to remove cost much smoother and it's far less disruptive to our business and our customers." For the company, aPriori is helping the company take the ambiguity out of what a new design might cost. It ensures consistency in the cost-estimating process and it enables engineers to evaluate one design over another in real time. This accelerates the development process. Time and effort in manufacturing have also been reduced by aPriori's ability to recommend optimal process routings to meet product specifications and requirements. All this enables ThyssenKrupp to go to market with products that are cost and quality optimized from the start.

Going forward, Klappholz is focused on keeping his team aware of product cost management and the positive impact it's having on ThyssenKrupp Elevator's business. He wants to make sure it's second nature for his team and the company. "Providing tools like aPriori goes a long way towards that end. For the engineers in the trenches, aPriori provides the tools they need to be efficient and effective and they can grow with the system," he says. "As engineers use the system, they are learning to design for cost effectiveness from the outset—further accelerating design cycles and increasing efficiency. The system is building cost proficiency as a core competency."

ThyssenKrupp Elevator is also looking to expand the discipline of product-cost management to other development centers around the world. Bass and Klappholz believe aPriori supports a "best practice" that can potentially be leveraged in other plants worldwide.



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