

Engineering Tomorrow: Achieving More with Less



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We've done some great things around product cost management with aPriori, but what really gets me excited is the potential when we think digital manufacturing. At Danfoss, we strongly invest in digitalization in the areas of Connected Products & Services, Digital Customer Experience, Speed & Agility, and our IT infrastructure.

Over the next few years, we'd like to make aPriori's digital manufacturing simulation software accessible to everyone at Danfoss.

Danfoss plays an active role in the main growth themes in a world that is rapidly changing: Digitalization, Electrification, Infrastructure, Food, Energy and Climate are the key focus areas of our business. Sustainable and smart cities for millions that touch the sky. A richer harvest to feed a growing world. Keeping food fresh and our children warm in a world that can 'do more with less.' This is how Danfoss is Engineering Tomorrow.

Quality, innovation, and reliability are rooted in our DNA. Our technologies and products can be trusted to push the boundaries for what is possible, deliver exceptional performance, and answer the real needs of our customers.

Like most companies, one of the biggest challenges we face is to stay competitive in hyper-competitive markets. Keeping control of and continuously optimizing our product cost—while maintaining and improving our products—is a real customer demand. And when doing business on a global scale, it's a clear priority for us to deliver more with less.

Do More with Less in a World of Rising Costs

Recognizing that it is getting increasingly challenging to improve our product cost, we continuously need to ensure every single part of our products are competitively priced. Hence, we needed to find more advanced ways of analysis to see whether our products—or which ones, for that matter—required cost optimization.

By achieving more with less, we keep realizing the potential of this amazing world.

Questioning if we source or manufacture our parts at the right prices—taking into consideration the most economic manufacturing processes available in the market, and analyzing if our designs are optimized for cost at various performance levels or if our competition has product cost advantages—became fundamental for us and had to be answered thoroughly.

By prioritizing products with a clear business rationale for cost reduction—e.g. where our profit margins were in decline—we started to systematically identify cost reduction potentials by applying costing techniques, combined with value engineering methodologies. We saw this as the perfect opportunity to find ways for us to improve our competitiveness.

In the beginning, we used some consulting firms to provide that service. We then spent a considerable amount of energy investigating how to strengthen this competency in-house in terms of processes, people, and tools. When we came across aPriori through a workshop, we felt this digital manufacturing simulation tool could meet our requirements. When we learned that aPriori helps manufacturers collaborate across the product development process to make better design, sourcing and manufacturing decisions, drive product costs lower and create higher value products in less time, we knew it was the right choice for Danfoss.

Implementing a new tool in an organization the scale of ours, required lot of change and organization readiness. Therefore, we positioned product cost management as a new and individual function within the company at the corporate level (i.e. not part of any other function like R&D, Procurement, etc.), which goes far beyond the tool alone. So, we decided to build processes and programs around the tool and onboarded experienced Cost and Value Engineers to drive value and impact out of this change. This was done in collaboration with our Procurement, R&D, Manufacturing and several other functions within the business units.



Reducing Costs Requires Effort from Everyone on Your Team

At Danfoss we believe we have a unique setup for product cost management and how we integrated aPriori. Companies often just buy software licenses and simply try to push it throughout the organization. We recognized the value in aPriori quickly, and we now have 3 separate processes established at Danfoss to maximize aPriori use and deliver value to the business:

1. Taking Cost Out of Existing Products

This is a process that runs over several weeks, driven by a facilitator, targeting existing products that need a cost reduction. It starts with a preparation phase, where we investigate the product. We analyze and compare it to competitors' and do the same on the suppliers' side. It includes tear-down, should-cost analysis, idea generation workshops, idea evaluation, business case preparation, implementation plans, etc.

From all this, we clearly understand where we have opportunities to optimize product cost or improve the value, depending on the items which higher impact potential.

2. New Product Development— Launching at the Best Cost

If we are looking at new product development, e.g. the next generation of an existing product, we use our costing and value engineering capabilities to provide the project team with ideas and cost targets for every part, during each step of the process. So, when we launch a product to market, we are sure we have the best possible product cost.

We used to do cost reduction analysis after launching a product, but we can now do it proactively, before it hits the market. This move is saving us time and money, by minimizing costs earlier in the product life cycle.

3. Procurement Negotiations— Letting the Facts Speak

Our buyers can pick a supplier and we will analyze what an order should cost versus the proposed cost, and then identify the gaps. This information empowers the procurement teams with facts so they are better prepared to achieve positive outcomes during vendor negotiations.

Now, our buyers can utilize hard data on what a part should cost, so we can have more informed conversations with suppliers and make sure we're getting the best prices.

Over the past two years, we have completed many programs across Danfoss worldwide. As a result, we have a strong pipeline of ideas coming from many places in the company. And now, we are creating more dedicated teams within the business units to drive implementation to a higher level.

Full Steam Ahead

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Building strong relationships between buyers & suppliers

Target Costing

We're looking to connect aPriori and our sourcing platform, so that when we start the sourcing process, it will cost out the products automatically and give us the target costs. As we get quotes from our suppliers, we will have some algorithms in place to compare the quotes against the target costs generated from aPriori. This will also help us identify which suppliers have the best materials and process costs, so when we initiate the sourcing, the buyer can make a more informed choice based on these recommendations.

Design of Experiments (DoE)

Our Value Engineers apply value engineering methodologies, seeking to understand how to optimize the product cost and value of our existing and upcoming products.

The traditional way of approaching is the waterfall approach: structural simulation, optimized design, fluid dynamics, and cost. We're looking to connect aPriori with the fluid dynamic simulation and the structural simulation. By doing this concurrently, we are much more likely to find the optimum result quicker than if they attempted to continue this process manually, through spreadsheets and templates.

We're looking at incorporating aPriori as a key tool to help automate these processes, which can also help analyze the design of experiments (DoE). It will help identify the cost of the design as well, and allow our Engineers to maintain the integrity of the part's function while reducing its overall cost.

Engineering Tomorrow

What we shared above are just a few examples of what we hope to achieve by automating and digitizing our product cost management processes using aPriori. But we're just starting to scratch the surface of what we can do with this tool. This doesn't just help us save on costs, but is helping in changing the way we approach our products and processes, to do more with less. Together, we are engineering a better tomorrow.

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<https://upshotstories.com/stories/engineering-tomorrow-achieving-more-with-less>



