

# Stanley Black & Decker Chooses Altair's HyperWorks Unlimited for CAE Design Exploration



**Key Highlights**

**Industry**  
Manufacturing

**Challenge**  
Affordable HPC for CAE Design Innovation

**Altair Solution**  
HyperWorks Unlimited

**Benefits**

- Comprehensive CAE suite with fast, powerful solvers
- Pre-configured HPC system that's easy to support
- Major cost savings over traditional hardware or software purchase

### Customer Profile

Stanley Black & Decker (NYSE: SWK), an S&P 500 company, is a diversified global provider of hand tools, power tools and related accessories, mechanical access and electronic security solutions, healthcare solutions, engineered fastening systems, and more. The company delivers the hardworking, innovative, powerful tools that help professionals around the world build, repair, and protect the world's most valuable things. Stanley Black & Decker is the leader in tools and security with brands including Stanley Tools, DEWALT, Mac Tools, Porter-Cable and more. Their products range from airport doors to residential locks and deadbolts to the hydraulic breakers that rescue trapped earthquake survivors.

As the company's website states, "No matter where you live, what car you drive, what stores you shop at, or what building you work in,

you can bet that we had a hand in making it work. And you can guarantee that we'll keep making it work.

### The Challenge: Improving the Capacity for Design Optimization and Innovation

As a global power tool leader, Stanley Black & Decker (SBD) is constantly seeking ways to maintain a competitive edge and bring better-performing products to market faster. In particular, when it came to optimizing the hammer mechanism design for their top-selling rotary hammers, SBD engineers knew they needed a computer-aided engineering (CAE)-based approach.

"The hammer business is extremely competitive, and rotary hammers are the most complex power tools on the market, so we have to use the most innovative methods available to optimize performance," said Andreas Syma, Director of Global Computer Aided Engineering at SBD.

# Stanley Black & Decker Success Story

**“We already knew Altair had some of the top-performing solvers on the market, like MotionSolve and RADIOSS. With HyperWorks Unlimited, Altair has introduced a truly groundbreaking solution that sets a new standard for design exploration. Altair proved the total value of HyperWorks Unlimited was far superior to purchasing dedicated HPC hardware or extending our existing licenses.”**

## Andreas Syma

Director of Global Computer Aided Engineering, Stanley Black & Decker, Inc.

“Optimization by CAE is the only realistic way to achieve this; the requirements are just too complex to rely on experience based knowledge or pure physical testing.”

CAE-based optimization enables engineers to:

- Handle the extremely high complexity of a physical product
- Test several hundreds of designs at a time
- Provide a deeper understanding of how the product physics works

“Real optimization is only possible with computer-aided methods,” explains Syma.

“There is only so far you can take a system with physical testing – you have to explore how the physics works at a higher level, made possible with CAE, to gain new insights and see what is needed to improve the system. The simulation-based optimization approach gives a very high reward on engineering work, in terms of performance, durability, cost and weight – it results in a much higher-value product, especially when applied early in the process.”

Previously SBD had been using workstations running LS-DYNA with an optimization runtime of about three weeks. “A three-week runtime

wasn’t sufficient to stay competitive – our goal was a runtime of one weekend, where our engineers could start a job Friday and have the results Monday,” said Syma.

SBD team members knew they needed more computational power to drive desired performance improvements, but they were concerned about simply investing in more hardware or compute cores for three reasons:

- Cost of high-performance computing (HPC) hardware/cores
- Effort to maintain and support a complex HPC system
- Ability to fully leverage this hardware with the necessary software licenses to keep utilization high

In other words, even if SBD could justify the expense of acquiring and maintaining an HPC system, could the company ensure availability of the required costly CAE software licenses, and maximize utilization of these licenses on the system?

“We understood the business case and knew this method was necessary – but we were unsure whether a traditional hardware solution would give us the results we wanted,

regarding calculation time for the optimization methods. We didn’t want to make a hardware investment and then have trouble getting the results we needed,” says Syma.

## The Solution: HyperWorks Unlimited with Altair Solvers

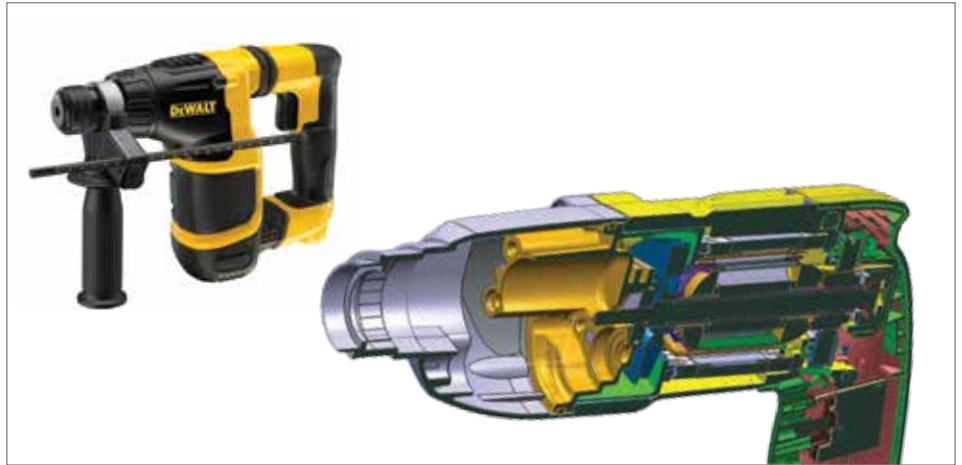
SBD secured offers from three leading HPC hardware providers but were still concerned about the additional licensing cost necessary to truly take advantage of the system – to optimize use of the software licenses in a cost-effective way. The complexity of managing an HPC system was also a concern.

Then Altair introduced SBD to HyperWorks Unlimited™, a fully-managed HPC appliance for CAE. This turnkey appliance includes pre-configured HPC hardware and software, with unlimited use of all HyperWorks® applications plus PBS Works™ for HPC workload management.

The team was already familiar with Altair software, in particular the structural analysis solver RADIOSS® as well as HyperMesh®, HyperView® and MotionSolve®. SBD engineers ran a benchmark study that proved RADIOSS in conjunction with HyperStudy® would be equivalent in accuracy

## Project Summary

Stanley Black & Decker chose Altair's HyperWorks Unlimited to optimize their CAE processes for power tool design. The fully supported HPC system includes the market-leading HyperWorks suite of solvers, meshing and visualization products as well as the PBS Works suite for HPC workload management. Now Stanley Black & Decker can explore concepts more deeply, reduce cycle times and make better decisions faster.



and performance to the LS-DYNA/optiSLang solution they had been using. Based on the results, SBD decided to move forward with the Altair HyperWorks Unlimited solution.

“RADIOSS with HyperStudy is proven to perform just as well as our LS-DYNA solution with optiSLang,” said Syma. “We also investigated more products in the HyperWorks suite and found their inclusion made HyperWorks Unlimited even more attractive – a traditional HPC system plus a standalone solver license purchase doesn't provide the same value. And having a single provider as reliable as Altair means we just make one call for support on any part of the solution – hardware or software. This is the way HPC should be for all CAE engineers – this simple, this powerful, this reliable.”

### The Result: Expanded CAE Capabilities for Unlimited Exploration

SBD chose a 160-core HyperWorks Unlimited system, which Altair delivered and installed in just a few days. “The system just works,” says Syma. “It's bringing up our utilization with no performance or maintenance issues to date.

HyperWorks Unlimited is exactly what we needed, top-performing solvers packaged and delivered on pre-configured hardware that's easy to setup and use. It also comes with a full suite of CAE and HPC products that will scale up to meet all our optimization requirements, without the need to worry about buying more licenses. All the configuration work is done for us, we have all the software we need for unlimited exploration, and it's affordable. It's almost too good to be true,” says Syma.

Altair provides full support for HyperWorks Unlimited hardware and software, a very important decision factor for SBD. “We're new to HPC, so our IT team needed to feel comfortable that the solution would be easy to manage without hiring new staff or slowing down our engineers. With HyperWorks Unlimited, we don't have to be HPC experts to get the top performance we need from our CAE applications.”

Now SBD engineers have new optimization capabilities and can embrace simulation-driven exploration to meet their design requirements, exploring concepts more deeply, reducing

cycle times and making better decisions faster. Engineers can perform their optimization runs over a weekend instead of a week. SBD plans to expand usage at its current site and then bring the same level of HPC capabilities to other sites.

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**“Altair's engineering leadership was a key factor in the decision. We wanted a supplier who understood both the CAE applications and the underlying HPC fabric – no other single vendor has the expertise we needed in both areas.”**

#### Andreas Syma

Director of Global Computer Aided Engineering, Stanley Black & Decker, Inc.

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## About Altair

Altair empowers client innovation and decision-making through technology that optimizes the analysis, management and visualization of business and engineering information. Privately held with more than 1,800 employees, Altair has offices throughout North America, South America, Europe and Asia/Pacific. With a 27-year-plus track record for high-end software and consulting services for engineering, computing and enterprise analytics, Altair consistently delivers a competitive advantage to customers in a broad range of industries. Altair has more than 3,000 corporate clients representing the automotive, aerospace, government and defense, and consumer products verticals. Altair also has a growing client presence in the electronics, architecture engineering and construction, and energy markets.

## About HyperWorks Unlimited

HyperWorks Unlimited™ is a fully managed, state-of-the art appliance for computer-aided engineering (CAE), with fully configured HPC hardware and software – offering unlimited use of all Altair HyperWorks® engineering software. A private cloud computing solution that's easy to install and manage, only HyperWorks Unlimited offers best-in-class application software, HPC workload management tools via the PBS Works Suite, and an industry-leading licensing and business model to fit a company's growing simulation needs. With HyperWorks Unlimited, companies can develop superior products faster, simplify IT administration and gain competitive advantage with unlimited access to industry leading technology, backed by Altair's global know-how and domain expertise.

[www.altair.com/hwul](http://www.altair.com/hwul)



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