Wilson Golf Hits It Long and Straight with Adaptive and Simulation Software

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A world of dynamic change

In the competitive world of golf club manufacturing, the ability to quickly adapt to new material and design concepts is of paramount importance. Golfers at every skill level, whether weekend high handicappers or professional tour players, are always on the lookout for equipment that can provide that longer drive or straighter approach shot. The innovation group is under constant pressure to meet these demands as quickly as possible.

“We are a very small group and time is the most valuable commodity we have,” says Jon Pergande, Manager of Innovation at Wilson Golf. “It seems every year we get tasked with developing more products with advanced features and technologies. The challenge has been getting to our final design as fast as possible.”

The traditional manufacturing process of designing products with CAD, having prototypes made, physically testing, and going through the same process when modifications are required was hampering rapid product development. The innovation team took steps to speed up the process by bringing in 3D printers but needed to accelerate the process even further.

Adaptive and SIMULIA software helps drive rapid development

Wilson Golf began researching advanced CAE (computer aided engineering) tools to improve their design efficiency. They investigated tools for FEA (finite element analysis) and CFD (computational fluid dynamics) and with the help of Adaptive chose the Abaqus™ Unified FEA product suite from SIMULIA to solve both of these needs.
Wilson Sporting Goods Case Study

"We purchased Dassault Systèmes Abaqus Unified FEA software from Adaptive and began using it for our stress analysis for our irons and metals woods," says Mark Spencer, Principal CAD Designer for Irons at Wilson. “Prior to that we were doing a lot of our testing using an outside third party. Abaqus gave us the ability to do it in house.”

“The next big step forward was trying to evaluate performance,” says Pergande. “Performance in golf clubs means getting thinner and stronger by optimizing weight and materials. We needed a way to fine tune our designs with FEA. That’s where Adaptive and Abaqus have really fit in to help us get to that final part faster.”

Driver vs Driver Reality Show: The Birth of the Triton Driver
Wilson Golf relied heavily on Abaqus Unified FEA suite in 2016 during the run of a reality television show called Driver vs Driver. That they produced with the Golf Channel. The goal of the show was to engage the public to help design and manufacture a new and innovative driver.

“The concept was to solicit driver ideas from general consumers, industrial design groups, and engineering students,” says Pergande. “We then worked through the product development process with the finalists to get those ideas into parts. Contestants were eliminated each week and at the conclusion of the show we had a winner. It turned out to be the Triton driver which we then brought to market.”

Once the winner was selected, Wilson Golf had to get the winning design into production.

“We had some initial issues with the sole of the club,” says Kevin Mayoux, Principal CAD Designer for Metal Woods at Wilson. “We used Abaqus to solve the problem by developing a more efficient structure. Adaptive spent three days working with us running through geometry changes to help relieve the stress in the sole based on the impact that a driver would endure. It was a pretty big win for us because we were able to quickly adapt the design without having to send it out and produce physical prototypes. We were able to simulate the testing through FEA to project a more durable reaction.”

Using Abaqus was crucial for Wilson allowing them to meet the multiple deadlines of a television shoot, product development schedule, and a sales/marketing product launch.

“Time is everything when you are talking about a reality show and turnaround time is key,” explains Pergande. “If we didn’t have Abaqus to optimize our designs we would have been creating physical iteration after iteration. Not only is that CAD time, but it would have caused delays getting the designs to a supplier, creating new tools, making and testing the parts and hoping it would pass the durability requirements. It just wouldn’t have been possible. The time we saved with Abaqus was priceless.”

Other projects relying on Abaqus
Wilson is working with Adaptive and using Abaqus software on several other development projects. Their C200 and D300 irons include a new FLX FACE™ technology that fills the club head with polymer and removes material from the top line, sole, and toe of the club to free up movement of the face to allow it to flex more. Greater flex leads to faster ball speed and higher performance.

“This was new, unique technology not only to Wilson, but to the industry as well,” says Pergande. “We needed to get a good feel for it quickly to avoid multiple iterations of prototypes to find out where the performance and durability lines crossed. Abaqus allowed us to rapidly establish what we wanted to bring to market.”

This FLX FACE technology is being incorporated into new product developments going forward. Wilson is also using Abaqus software to conduct material characterization for equipment for other sports including basketball and soccer.

Providing a competitive advantage
The Wilson Golf team feels Adaptive and SIMULIA is providing Wilson with a significant competitive advantage.

“Since we started using Abaqus, we’ve been able to figure out where we can push the limits,” says Spencer. “Abaqus is a perfect fit for our product development timeline and the resources we have,” says Pergande, “It helps us keep our innovation team as lean as possible while allowing us to produce the highest quality, the most innovative, and the best products we can. The market puts a premium on new and innovative products and the things we’ve used Abaqus for are helping us internally push the bounds of what we think we can do. The faster we can get information to help build performance by optimizing weight and controlling stress the better we can design early on and the more innovative we can be.”

Wilson and Adaptive prove to be productive partnership
Wilson Golf’s innovation team is clearly pleased with their relationship with Adaptive and their application of Abaqus software.

“We came to Adaptive looking for more than just software,” says Pergande. “We were looking for a partner to help us effectively leverage a simulation solution. They helped us develop a model and process to evaluate and select the best designs. Adaptive has been easy to work with. Their customer service is great and they have been very responsive to our needs. They’ve always been focused on helping us be successful.”

The Adaptive team provided extensive onsite training and technical support to make sure Wilson Golf got the most out their investment in Abaqus. As issues and questions arose, Adaptive responded quickly to help provide quick resolution.

“We brought in Adaptive and Abaqus for a very specific need,” says Pergande. “We have since used them for other specific needs but we realize we have only scratched the surface of the software’s capability. We are already in the process of figuring out the many features of the product and it is leading us into different directions both from a design perspective and an evolution of our current way of approaching products. We think we have only just begun to take advantage of the benefits of Abaqus and we look forward to expanding our relationship with Adaptive even further as they show us how to expand our use of the software.”

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Driven by the Digital to Physical Product Lifecycle
Wilson Golf relies heavily on Abaqus Unified FEA suite to help design and manufacture new and innovative products. This has allowed them to rapidly establish what they wanted to bring to market.

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Wilson: Driver vs Driver

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**Challenge**

- Help Wilson Golf streamline the design and development process in a highly competitive, innovation-driven world of golf equipment manufacturing

**Solution**

- Implemented the simulation and FEA capabilities of Abaqus Unified FEA suite from Dassault Systemes SIMULIA offering
- Helped develop simulation testing process
- Provided on-site support and training for rapid implementation

**Benefits**

- Reduced reliance on physical prototypes
- Cut weeks out of the development and testing process
- Enabled rapid modifications and design iterations
- Accelerated time to market of products with innovative designs and materials
- Provided a competitive advantage in the fast moving golf club design market

Adaptive’s unique “Digital to Physical” product portfolio includes CAD/CAM, CAE, PLM, business analytics, metrology, and 3D printing solutions from leading IT providers. Leveraging these tools helps you accelerate cycle times throughout product planning, development, manufacturing, and after market service. This allows you to drive revenue growth by pursuing new markets, additional opportunities, and an expanded product line.

The Adaptive team works closely with you to understand your business challenges so we can deliver the appropriate software, hardware, and professional services to help you overcome them. Join the more than 500 of our customers including leading discrete and process manufacturers of industrial and consumer products and their suppliers who have benefited from the Adaptive Advantage.

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