Adaptive Corporation

The Digital to Physical Product Lifecycle Company

Wilson

Wilson Sporting Goods Case Study

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

Chicago-based Wilson Sporting Goods Co., a division of Amer Sports Corporation, is one of the world's leading manufacturer of sports equipment, apparel and accessories. Wilson is a global leader in high performance products using player insights to develop products that push equipment innovation into new territories.

The Innovation Group of Wilson's golf division is responsible for developing the entirety of the golf product line including initial design, evaluation, and testing. The group works with tour players on performance and specific needs and with the supplier base on sourcing and quality.

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.

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 Systèmes 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

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> *Principal Designer for Metal Woods at Wilson*

“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.