



# HILL AND SMITH

## OVERCOMING DESIGN BARRIERS WITH AUTODESK

Hill and Smith cuts design time by 33% with Autodesk Product Design Suite delivered by Majenta



### A Clear Road from Design to Manufacturing

If you have a crash on a motorway you want the safety barriers to work. Thankfully, these roadside features are designed to meet the highest standards of functionality and Hill and Smith is an expert in this area. Part of Hill and Smith Holdings PLC, the company employs 120 people and has vast experience in manufacturing vehicle restraint systems. These include steel, wire rope, impact protection and industrial barriers for use on public highways and private sites. Customers include government agencies and commercial organisations.

In the field of road safety, Hill and Smith has a reputation for the quality of its products and service. With a 160 year trading history, it continues to improve and expand its product development process. "We are acutely aware of the value of efficiency and are always looking to streamline our design process", says Martin Peach, Head of Design, Barrier Division. "As we produce some quite complex metal forms we recognised that there was scope to improve the way in which the design team communicates with the shop floor. We therefore decided that it was time to make the transition from 2D design and drawing to 3D solid modeling. It was natural for us to seek guidance from Majenta Solutions which has been a trusted partner for several years and had already assisted other divisions of the company to move to 3D."

### Gaining a Complete Box of Tools

In 2012 Hill and Smith Barrier Division installed several seats of Autodesk's Product Design Suite (PDS), a comprehensive solution delivering 3D design, simulation, collaboration, and visualisation tools. Majenta Solutions provided the software with a support package; set up an automatic licence subscription to PDS and delivered introductory training for users. This covered the solid modelling of parts and designing for specific manufacturing processes such as the use of sheet metal and the intricacies of folding and unfolding. "The training we received was excellent," said Martin Peach again. "We were given really helpful instruction booklets and whenever we had a question it was answered clearly. It was easy for us to get to Majenta Solutions' fantastic training facilities at Whitley and we all felt that we learnt a lot."

#### Customer

Hill and Smith Ltd  
www.hill-smith.co.uk

#### Industry

Industrial/Automotive

#### Business challenges

- Streamline workflow from design into manufacturing
- Minimise queries from the shop floor and the need for design modifications

#### Keys to success

- Thorough training
- Ease of use
- Visualisation capabilities

#### Solution

Provision of a comprehensive suite of software tools from Autodesk; supplied and supported by Majenta Solutions, Autodesk Gold Partner

#### Business impact

- Shop floor queries down by 50% over the first few months.
- Design time cut by 33%
- Two to three weeks of design team time saved per year through re-use of parts



In addition to tools such as Inventor®, AutoCAD®, Showcase® and Sketchbook® Designer, PDS incorporates Vault Basic®, the file depository. This enables the Hill and Smith design team to manage, track and control all CAD data. As each file has to be checked in and out of Vault, no file can be removed if someone is working on it. Martin Peach again: "Majenta Solutions really helped us to make the transition to 3D by providing specific training for all aspects of the software, particularly how to build parts and assemblies and how to organise all our data into Vault."

### Clear Design Intent

Hill and Smith has to meet European standards and this involves putting products through a stringent testing process conducted by an approved organisation. All barrier products have to be put through a range of crush tests. Martin Peach explains that designing in 3D is really helping to improve quality standards. "Because we are forming metal into quite sophisticated shapes, problems sometimes arise on the shop floor. With 2D there was inevitably a degree of guesswork. With 3D visualisation capabilities everyone can understand how parts fit together to create overall strength, particularly at the assembly stage. We can begin a design with a flat sheet of metal, fold it up and then unfold it. As we can produce drawings to show both the folded and unfolded design, we always know that any holes and fold lines will match up exactly. Our colleagues on the shop floor can look at a model on screen and really understand the design intent; they consider this the icing on the cake."

The success rate for getting things right the first time has soared. "When we send a new set of drawings to the shop floor the machine operatives always check with us if anything is unclear. Now we can issue drawings accompanied by a 3D picture and an isometric view. It is much easier to manufacture from such thorough information. As a result shop floor queries have reduced by 50% over the past few months. Given the fact that I spend 30 minutes resolving a typical query and modifying a drawing I am saving a huge amount of time and avoiding delays on the shop floor."

### Shorter Development Process

In addition, the design process is speedier. "If any manufacturing modifications are required, adjustments are much quicker because we have cut design time by 33%. It now takes between one hour and one day to design an average component depending on its complexity. This translates into about one week to design a system using standard parts, and two or three weeks to develop and crush test a new product. Our overall development time has been dramatically reduced."

The company is also saving time through re-use of parts. "Digital information for every designed part is now placed into a library so that standard barrier lengths, posts and bolts can all be accessed and easily used again. "In 2D we would have had to redraw everything, now we simply pull out the 3D model from Vault. Using Inventor it takes about a day to pull components into a design and produce a drawing. Before, it would have taken about a week to redraw one part. This sort of situation arises about four or five times a year and means that we save another two or three weeks of design team time each year."

A progressive company, Hill and Smith is not complacent about these improvements and is already planning the next phase of development. "We would like to integrate Vault with our accounting package so that we can streamline the way in which we create Bills of Material," comments Peach. "As Majenta Solutions is also a Microsoft reseller as well as a Gold Partner to Autodesk, we know who we will be talking to."



"We trust Majenta Solutions because everyone we speak to has made a real effort to understand our business and our priorities. And we have noticed that because the training we received was so thorough we do not often get stuck, we really have not had to make many requests for support."

Martin Peach, Quality Manager/CAD Engineer, Barrier Division, Hill and Smith Ltd

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