

## SITUATION

Based in the United Kingdom, Aqualisa manufactures high quality showering products for both domestic and commercial applications. To stay competitive and grow market share, it invests heavily in new products that appeal to both plumbing installers and end users. When recent market research among installers showed that increased sales of combination and multi-point boilers were driving demand for a new pressure balancing valve, Aqualisa stepped in to capitalize on this burgeoning market by developing a product specifically for these new high pressure water systems.

## OBJECTIVES

- ✓ Produce a new mixer valve which would be suitable for unbalanced, high pressure domestic hot and cold water systems.
- ✓ Design the valve with a stylish and appealing shape.
- ✓ Ensure that the valve was easy to install so plumbers would choose the product and recommend it to potential customers.
- ✓ Get the new product to market quickly.

## PROCESS VISION

- ✓ Be able to electronically visualize and create more organic and complex shapes that appeal to the end user.
- ✓ Ensure that the integrity of the design is set at an early stage and maintained throughout the development process.
- ✓ Exchange information with suppliers and toolmakers also using 3D solid modeling.

## ACTIONS

- ✓ The Aqualisa designers sourced the internal mechanism from their project partner, an American manufacturer, and worked with an industrial design consultant to develop the external shape around the valve.
- ✓ The industrial designers developed the aesthetic design using Alias. Aqualisa's design engineers then imported the Alias files into I-DEAS Master Series™ software and created 3D models. These electronic models were shown, at an early stage, to colleagues and Aqualisa's American project partner for review and approval. On previous projects, internal approval for a product was not possible until physical mock-ups had been made.
- ✓ I-DEAS Finite Element Modeling™ software was used to verify the strength of the structural bracket that attached the shower to the wall.
- ✓ The 3D I-DEAS geometry was then used to generate stereolithographic models which allowed the team to feel the shape of the product,

# Aqualisa's Return on Investment Flows Quickly



*"On our first project using I-DEAS™ software, we cut our cycle time by 25% and reduced tooling development to less than 1% of the tooling budget. The reduction in late tool modifications and the early launch of the product paid for our initial investment in the software."*

- Paul Pickford  
Design Manager  
Aqualisa Products Limited



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try out the controls, and conduct performance tests using pressurized water. They also enabled Aqualisa to obtain feedback from potential customers. After verifying the design concepts in this way, the engineers sent the 3D model information directly to the production injection molding toolmakers who then ordered tool steel and began work on the tool design.

✓ At the same time, twelve sets of polyurethane castings were made into working models. Six were installed into customers' houses for field trials; two were used for performance tests in the laboratory; and the remainder were used for packaging, design, production engineering, marketing and training in the servicing department.

✓ Tool design progressed during the evaluation, and manufacture began as soon as the engineers were satisfied with the results from evaluation of the polyurethane castings.

### RESULTS

✓ Aqualisa hoped the implementation of an integrated 3D CAD/CAM/CAE system would cut about 30% off their product development cycle. However, using I-DEAS as an enabling technology for concurrent engineering allowed the company to cut the cycle time by 50%.

✓ With its previous 2D AutoCAD system, it took Aqualisa six weeks to get from first-off molding samples to approved production moldings (tooling development). I-DEAS also enabled the engineers to cut that time in half by providing the ability to review the design and carry out more design iterations before injection molding tooling started. As a result, the tooling development has previously cost up to 10% of the tooling budget. On this project it was less than 1%.

✓ The speed of the design process resulted in the new shower being launched to coincide with the peak selling period of early autumn. The product was immediately adopted by a major plumbing merchant as part of a special installation pack, and sales of 30% of the annual forecast were achieved within the first two months.

✓ The product met Aqualisa's performance and aesthetics objectives, and the company could be assured that the integrity of the design would be carried through to tooling.

✓ The reduction in late tool modifications and the early launch of the product paid for the initial investment in I-DEAS.

### PLANS

Aqualisa plans to install more seats of I-DEAS and is looking at investing in its own rapid prototyping equipment.

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