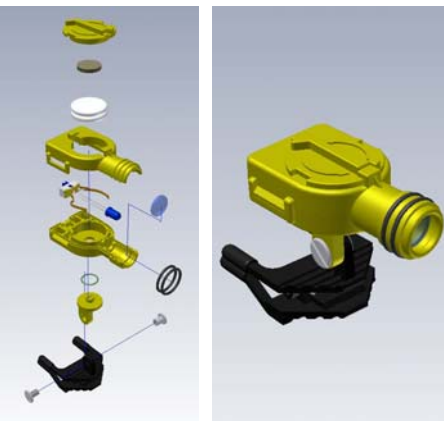


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product lifecycle management  
mechanical design



“Using Autodesk Inventor®, our rapid prototyping machine, and Avatech’s expertise, we have literally reduced time-to-market for some products from two years to six months. The speed of the design-to-model process has improved significantly and the 3D visual representation has been fantastic, allowing us to reduce interferences and get a lot more done in a shorter period of time.”

— Ira Cooper  
Owner and President  
Q-Lighting  
[www.q-lighting.com](http://www.q-lighting.com)



## INNOVATOR Q-LIGHTING GENERATES NEW PRODUCT LINES FASTER WITH AVATECH EXPERTISE

Family-run operation retains competitive edge in specialty and wearable lighting markets.

### THE ORGANIZATION

Based in Lexington, Kentucky, Q-Lighting produces portable and wearable lights used by campers, boaters, professional musicians, electricians, mechanics, doctors, and anyone with the need to illuminate small items in poorly lit areas. Incorporated for over 35 years, the company employs 40 people, most working in the assembly plant where the lights are hand-built with specially manufactured parts from proprietary designs. Q-Lighting provides reliable, customizable products sold through retailers across North America.

### THE CHALLENGE

Q-Lighting attempted selling into “big box” stores like Wal-Mart and Home Depot, but quickly realized their capacity would not meet the demand of these giants and they would become too dependent on single contracts. Management decided to work with smaller specialty distribution outlets, like Ace Hardware and Eddie Bauer. To meet the needs of these niche channels, the company needed to improve design turnaround time to keep up with customization requests. The challenge was to shrink time-to-assembly and at the same time eliminate massive part modeling costs. Most of the parts Q-Lighting uses are plastic and require molds for manufacturing. The process of transforming a 2D drawing into a mold drained valuable resources.

### THE SOLUTION

Avatech Solutions Senior Application Expert, Carl Smith, a mechanical engineer and an Autodesk Certified Instructor, moved the company from Autodesk AutoCAD® to Autodesk® Mechanical Desktop® and then to Autodesk Inventor® to take advantage of the product’s new 3D capabilities.

“We look to Avatech as the technology experts that can help us become leaders in what we do, and have worked with Carl Smith at Avatech for years as we have evolved,” said David Russell, Design Engineer at Q-Lighting.

The company had hundreds of components already created in Mechanical Desktop and did not want to lose that work. Avatech ensured this by helping convert the geometry and providing customized title blocks and fonts using company standards. This turn-key solution enabled designers to concentrate on new work and innovation—not on details which were easily standardized. Carl then spent a week with the in-house design team helping them learn the new programs by working with them on actual production drawings as assignments.

Seeing Autodesk Inventor's ability to reduce the cost of modeling, the forward-thinking owner and president of Q-Lighting, Ira Cooper, decided to complement it by acquiring an in-house rapid prototyping machine. Now, the engineering team generates 3D files for a new product and tests it virtually—all in Autodesk Inventor. When the team is satisfied with the result, they send the Autodesk Inventor file to the rapid prototyping machine which generates a physical 3D model.

"Virtual testing and creating physical models allows us to easily see whether the assembly will work prior to creating new parts. Now, instead of spending \$30,000 for a fully built out working 3D model, it costs us around \$700 in materials, plus our time—and we control the process," said Cooper.

## **SIGNIFICANT REWARDS**

### **Virtual Testing: Eliminating Months of Modeling**

"Because we are one of the last family-owned businesses in this market, we need every possible advantage to maintain an edge on our competition," said Ira Cooper. "This new process with virtual testing capabilities in Autodesk Inventor, and the rapid prototype machine makes us an extremely efficient design organization, helping us to get our products on the shelf before our largest competitors."

### **No More Math: Improving Part Fits**

Many parts Q-Lighting uses to house their electronics snap together. Different tolerances for the snap shafts and their corresponding holes are used for different purposes. With Autodesk Inventor, designers can be assured that if they change a shaft diameter, the hole will resize to accommodate the change. "This let's us quickly adapt an existing part for a new product, without having to do the math, because Autodesk Inventor does the work for us."

## **ABOUT AVATECH**

Avatech Solutions is a leading engineering systems integrator, with unique solutions that enable companies to more effectively design, develop, and manage projects, products, and facilities.

We get results with the unique capabilities of our team of industry-experienced professionals—application engineers, consultants and strategists, trainers, software developers, and project managers.

With offices nationwide, we specialize in process optimization, software implementation and integration, standards development and deployment, education, and technical support.

Our expertise is real. And so are the results that we bring to our clients. Avatech can help you succeed, with solutions that align your technology and processes to your organization's goals—for results the way you define them.

To learn more call 1.800.706.1000 // visit [www.avatech.com](http://www.avatech.com)

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### **3D Design: Decreasing Time While Increasing Precision**

"Working in 2D is slow. It is a drafting process, not a design process. If you miss a detail on a design, or don't remember to change a layer, you get problems. Autodesk Inventor does away with all that by automating updates," said Russell. "We are not a big company and don't have a huge design department, so Autodesk Inventor makes us faster and more efficient."

### **Reusable Design: Improving Assembly Accuracy**

From the design department's work, Autodesk Inventor helps produce assembly instructions – publishing the exploded views directly from parts information. Similarly, the web site, through which Q-Lighting sells products direct to consumers, also takes advantage of Autodesk Inventor studio drawings.

## **THE FUTURE**

The company is enjoying the benefits that Avatech has helped them achieve. "Q-Lighting has 16 new products in development and we know we can get them to market quicker than ever before," said Russell. "We are working on a Bil-lite with clamps, a new kind of snake light and a fresh line of music stand lights."

"We look forward to working with Avatech to produce innovative new designs that take advantage of design re-use and produce complete assemblies in far less time," concludes Cooper.



**AVATECH**  
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