

## Viking Yacht Company

Customer Success Story

Autodesk® Alias® Design  
Autodesk® Alias® Surface  
Autodesk® Inventor®  
Autodesk® Showcase®  
Autodesk® Vault Manufacturing

Now that we're using Inventor to simulate real-world conditions, we don't need full-scale physical prototypes. It's saving us substantial time and money on each boat design.

—Kurt Bender  
CAD Manager  
Design and Engineering  
Viking Yacht Company

# Cruising in 3D luxury.

## Viking Yacht Company speeds ahead with the Autodesk® solution for Digital Prototyping.



### Project Summary

A family-owned company established by brothers Bill and Bob Healey in 1964, Viking Yacht Company (Viking) produces luxurious, high-performance sport and cruising yachts up to 82 feet long. With the Autodesk® solution for Digital Prototyping, Viking is streamlining its design and production processes. Viking designers use Autodesk® Alias software to develop conceptual designs with Class A surfaces. Viking's engineering teams incorporate this design data into their Autodesk® Inventor® models, which are accurate 3D digital prototypes. Autodesk® Showcase® lets Viking generate realistic renderings from digital prototypes, facilitating faster design reviews. All teams manage and track components for digital prototypes using Autodesk® Vault Manufacturing. Thanks to the Autodesk solution for Digital Prototyping, Viking has been able to:

- Save substantial time and money in physical prototyping costs
- Complete important design tasks twice as fast
- Reduce errors and manual rework, speeding production cycle time
- Improve data accuracy, security, and access

### The Challenge

An industry leader, Viking delivers high-quality luxury yachts and great customer service. The company designs and manufactures 90 percent of the items in its yachts, ensuring excellence from bow to stern. For its most demanding customers, Viking produces semi-custom boats.

With six production lines, Viking can build up to 100 boats a year from 42 to 82 feet. Viking yachts are stylish, fast, price-competitive, and safe. They effectively compete with boats from custom builders that produce only two to four yachts a year.

Viking is counting on its streamlined, Autodesk software-powered design and production processes to help maintain its competitive edge. "We need to complete boats faster, more economically, and with higher quality than the competition," explains Kurt Bender, CAD manager, design and engineering at Viking. "Success depends on quick and effective design and manufacturing."

# With Alias, Viking can make changes to surfaces up to 40 times faster.

## The Solution

Viking has been transitioning to the Autodesk solution for Digital Prototyping for several years to meet its business needs. Recently, the pace of migration has increased rapidly. “People began to realize how much time Alias and Inventor software would save them, and the transition took off,” says Bender. “In a relatively short time, we’ve turned more than 30 2D CAD users into trained Inventor experts.”

## Faster Conceptual Designs

Today, Viking designers rely on Alias software to conceptualize designs and create surfaces. “Many of our new models, like the 76C, utilize all the programs associated with the Autodesk digital workflow,” says Bender. “And it starts with Alias.”

At a project’s inception, designers use Alias software to develop Class A surfacing for hulls. Viking immediately noticed a difference. “We used to depend on extensive hand fairing to address surface flaws,” says Bender. “But now, our Alias surfaces are so precise that we are able to eliminate a substantial amount of time required to work the tools. By using Alias software, we’re cutting our turnaround time on projects tremendously—which helps us get to market faster.”

## Easier Changes

Autodesk Alias software has also sped up design changes for Viking. In pursuit of design excellence, Viking routinely puts designs through many iterations. In the past, one change could mean 40 hours of design rework. Now, design changes no longer require such time-intensive manual work.

“Before when we had a change, we had to redo most of the surfaces from scratch,” explains Jamie Scherer, CAD Designer in the design and engineering department at Viking. “With Alias, the surfaces adjust automatically. Instead of taking 40 or more hours of work, Alias software lets us make changes in as little as an hour.”

## Digital Prototypes Streamline Design

When a concept model is ready, Viking easily moves it from Autodesk Alias into Autodesk Inventor software. Then engineers create a digital prototype for use in every stage of production. “We are closing the gap between design, engineering, and manufacturing,” says Bender. “Our digital prototype gives everyone a better understanding of how things fit together.”

Before moving to Inventor software, Viking designed components—such as couches, staterooms, and cabinetry—as 2D polygon lines. “It was hard to check interferences before production,” notes Scherer. “By moving to digital prototypes, we can visualize the space better and check interferences ahead of time. We are much more efficient in fixing problems on the shop floor.”

Digital Prototyping also speeds collaboration across Viking’s production team. “We used to try and collaborate around D-size prints posted around a conference room,” says Bender. “Now, we have a digital prototype we can turn around, spin, and visualize accurately. We even include production supervisors in reviews so they can spot issues that may slow production.”

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CAD Manager  
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Adds Scherer: “Our digital prototypes not only help our teams proactively create better designs, they are having a real impact on reducing errors we once caught only in production.”

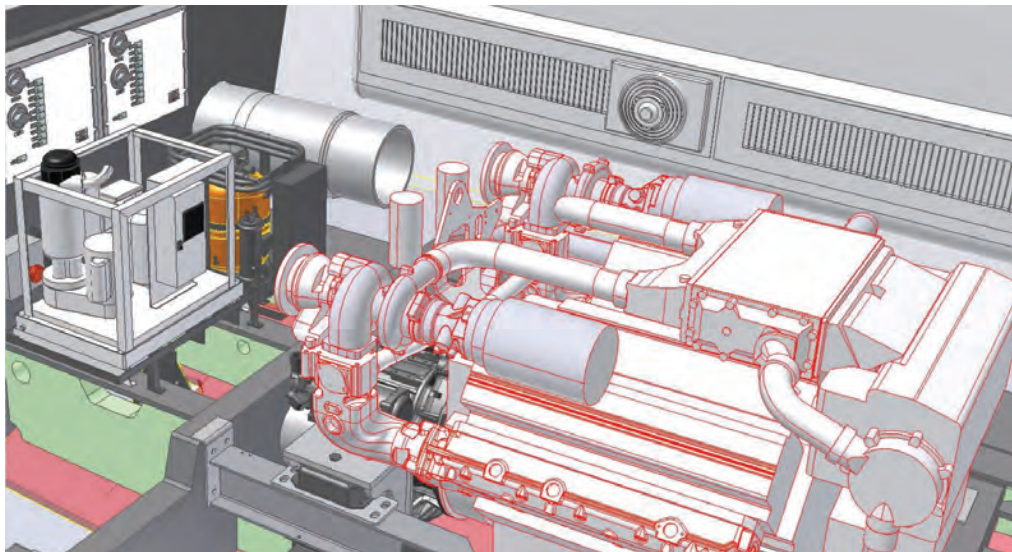
## Automating Manual Design Tasks

Autodesk Inventor Professional is also helping Viking complete designs faster and with fewer errors by automating many routine design tasks, such as routing hoses, pipes, and cables throughout a yacht. For example, Viking no longer must hand measure cable and wire lengths, a time-consuming and error-prone process.

“We had no way to design tube and pipe layouts in our former 2D CAD software and had difficulty generating wire lengths,” says Scherer. “Inventor lets us clearly, quickly, and accurately determine the lengths of pipes, wires, and cables, even when they follow nonlinear surfaces.”

## Simulation Analysis

The digital prototypes Viking creates in Autodesk Inventor help the company maximize yacht speed and performance. “After engineers locate all components inside a vessel, we can assign weights and masses to get a center of gravity and weight for the boat,” says Scherer. “This allows us to adjust engine position to control the plane of the yacht and achieve an optimum running angle.”





Viking is also using the finite element analysis (FEA) capabilities in Autodesk Inventor Professional to minimize the weight of some components. “Running stress analysis on our projects helps identify areas where we may be able to trim weight,” says Bender. “Every pound we drop contributes to boat performance.”

### Managing Data Effectively with Vault Manufacturing

Viking had struggled with data management for some time, with the engineering department devoting significant time to finding drawings for sales and service personnel. “It was clearly time to solve our data management problem, so we turned to Autodesk Vault Manufacturing,” says Scherer.

Autodesk Vault Manufacturing software securely stores and manages data in a central location, helping teams quickly create, share, and reuse digital prototyping information. “Vault Manufacturing keeps track of our data,” says Bender. “So even our sales and service people can find the information they need.”

In addition, Vault Manufacturing is secure and closely controls versions of designs. “In the past, we struggled to track the latest files,” explains Bender. “Now, the files are located in one place, and everyone must check drawings in and out. There may be 100 versions of one file, but we all know which is the most up-to-date.”

“We love using Vault Manufacturing,” adds Bender. “It’s a whole new world—and it’s cut our data management time in half.”

### Sharing Visualizations with Showcase

To bring digital prototypes to life, Viking uses Autodesk Showcase visualization software. The company no longer spends hours enhancing renderings with graphic design software; it can now quickly create lifelike visualizations directly from digital prototypes.

The company is developing its own environments in Showcase, so it can show the boats as they will appear in the water. “Customers can view our models as they will look in the New Jersey basin or the tropics,” says Scherer. “We can zoom around the boat and use the output to make a movie. Our marketing team is really excited about Showcase because it adds wow to their efforts. They even say you can smell the salt air!”



Scherer points to the ambient occlusion feature that produces realistic shadows as critical to creating a lifelike visualization. “With other rendering packages, you just don’t get that kind of realism,” he says. “Showcase really gets it right.”

Viking also benefits from the seamless interoperability between Showcase and Alias. Before, Viking had to redo renderings every time there was a change to the digital model. Now, when changes are made to a design, Viking can simply load the new Alias model into Showcase and the visualization updates automatically. “We’re saving so much time, it’s unbelievable,” says Scherer.

### The Result

With its all-Autodesk digital pipeline, everyone at Viking is able to work off a single digital model. “Collaboration is so much easier, and our Autodesk solution helps us achieve faster design times and fewer errors,” says Bender. “It’s even helping our supplier relationships. Instead of our suppliers viewing a demo boat, we can send them digital files to design around. That means they can get parts done faster so they’re less likely to hold up production.”

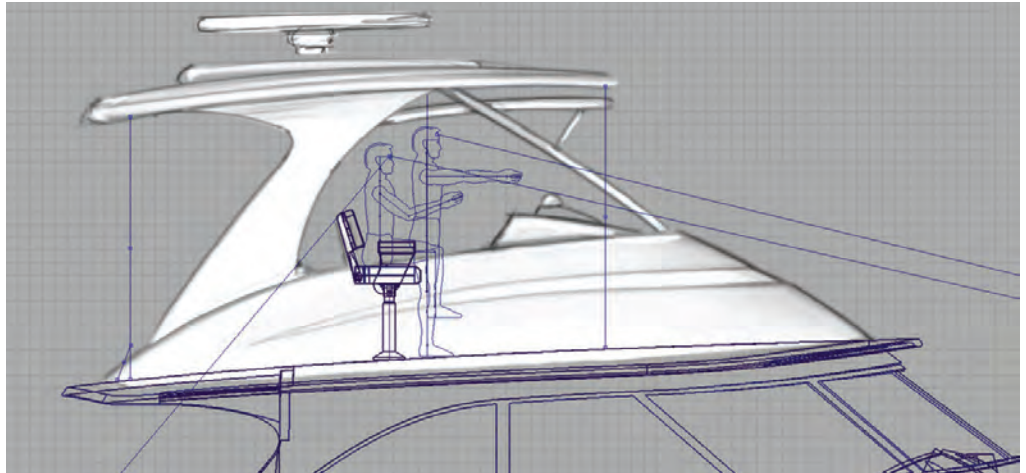
Autodesk Inventor is speeding up the design cycle by automating many manual tasks and allowing Viking’s designers to reuse standard components.

Synergis Engineering Design Solutions, an Autodesk Premier Solutions Provider, has helped Viking make the transition to the most advanced Autodesk software. “They’ve supported us very well with software implementations and training,” says Kurt Bender. “The Synergis team is both knowledgeable and very helpful. The Viking employees they’ve trained have nothing but positive feedback.”

# Inventor speeds up Viking's design cycle by automating many manual tasks.

Without a doubt, the Autodesk solution allows us to design and manufacture at the speed of thought.

—Bill Hall  
Tooling Design and Engineering  
Viking Yacht Company



The company's ground-breaking flagship, an 82-foot yacht, was released in January of 2009. Utilizing the Autodesk digital workflow had a tremendous impact on this project's design cycle and success. "Without a doubt, the Autodesk solution allows us to design and manufacture at the speed of thought," says Bill Hall who works with tooling design and engineering at Viking.

Most importantly, Viking's move to Digital Prototyping has reduced the need for costly physical prototypes. "Now that we're using Inventor to simulate real-world conditions, we don't need full-scale physical prototypes," says Bender. "We're doing design reviews and marketing using renderings. It's saving us substantial time and money on each boat design, which is critical in this economy."

#### For More Information

To find out more about how you can create better designs faster with the Autodesk solution for Digital Prototyping, visit [www.autodesk.com/commercial-recreational-transportation](http://www.autodesk.com/commercial-recreational-transportation).



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Images courtesy of Viking Yacht Company.

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