

Vigor Wave Energy AB

Customer Success Story

Autodesk® Inventor®

Autodesk® Product Design Suite
Ultimate

Autodesk Inventor enable us to do virtual installations and try to minimize risks. One example is that we were able to solidly weld the afterwards nonlinear wave breaker, long before the wave trials even began.

—Kristian Persson
Head of CAD
Vigor Wave Energy

Tomorrow's Engineers in a race to solve future energy challenges in cooperation with Autodesk.

By developing new environmental technology, Vigor Wave Energy AB could be the company that solves tomorrow's energy needs.

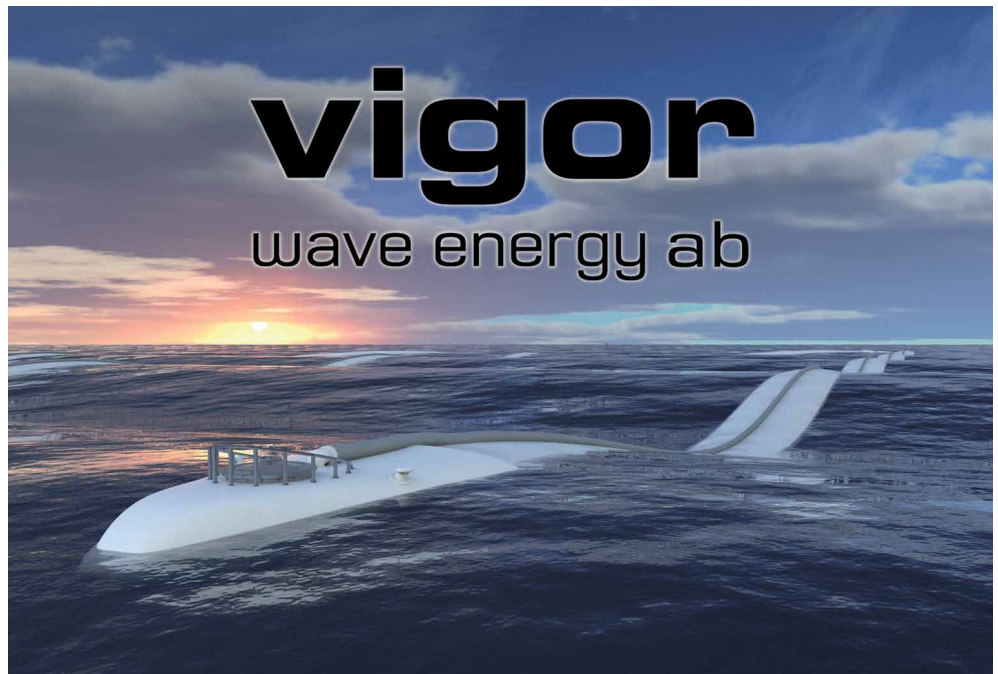


Image courtesy of Vigor Wave Energy AB.

Project Summary

Vigor Wave Energy AB was established in 2009 to further develop and commercialize a whole new idea within wave energy extraction: The Vigor Wave Energy Converter.

Vigor Wave Energy AB's solution is the only one in the world to utilise nearly all the potential in the ocean's powerful waves. The technology builds on inventor Daniel Ehrnberg's patented dissertation project. A hose several hundred metres in length uses wave power to pump water and air to a turbine and electric generator – a very simple solution, yet full of calculation technology challenges due to the water and air flow involved. The principle has been patented and practical scale tests in the company's own wave tank are showing very positive results. CFD simulations and calculations indicate that the concept will be

capable of extracting very high energy levels in a cost-effective way. The development work is being conducted on the company's own premises in Gothenburg, in close cooperation with, among others, various colleges, institutions and companies with marine expertise and experience. The work is characterized by enthusiasm, entrepreneurship, commercial driving force and an active ownership.

The business idea is to develop and sell 1-100 MW wave power stations to leading power companies. The goal that has been set is to develop, manufacture, install and certify, with help from the right combination of industrial and financial partners, a 1 MW wave power station within 3-5 years, and a full-scale 100 MW station within 5-7 years. Positioning is being carried out and is underway in the European wave power and energy sector.

The Challenge

Precision and accuracy are central to the efficiency of the system, so testing is crucial to product development. This can be expensive, time consuming, and may call for minor adjustments in difficult circumstances. For Vigor Wave Energy, whose products will be put to use out at sea, the testing process can be arduous.

The Solution

To avoid having to go out to sea every time an important test needs to be done, a testing facility has been designed, installed and commissioned underground of premises of Chalmers in Gothenburg. A custom-made 50-metre long watertank incorporating several tailor made industrial type of machines and equipment, including a wave generator, houses a scaled-down copy of the structure. Persson has extensive experience of using CAD software in various projects around the world. Nonetheless, time after time he has been surprised at how Autodesk® Inventor® can reduce lead times – from design to idea and implementation. “We recently discovered the need for several large steel beams for the structure. On Monday morning I created a draft showing what it should look like and two days later, on Wednesday morning, people were standing outside with everything ready. I have drawn many retrofits, but it has never gone so quickly. And that also includes time for the tender, creating the drawings, buying the materials and the manufacturing itself,” says Persson.

Autodesk’s products are also art defaco with suppliers which means that design and manufacturing issues can be resolved in basically real time during the design and engineering process, with far away contractors due to high degree of exchangeable Autodesk parts and files.

The Result

A fully functional wave tank capable of performing large wave testing through different tests and experiments on prototypes, components, and scaled down systems can be tested week after week. “Thanks to outstanding 3D assembly view in Autodesk Inventor Persson was able to design effective wave breakers for the wave tank. The effect can clearly be seen with little reflection coefficient.”

“Easy to cooperate with other suppliers since Autodesk’s product are de facto standard. More efficient and simplified work processes”

“Autodesk Inventor enable us to access the FEM calculation function at the touch of a button, and all within an interface that is easy to use ” says Kristian Persson, head of CAD at Vigor Wave Energy. With a simple solution utilising the renewable resource of ocean waves, Vigor technology has the potential to become a fantastic means of providing the world with clean energy.

Thanks to Autodesk’s (NASDAQ: ADSK) design software, Inventor, Kristian Persson and Roman Madorski feel confident that they can deliver results. Vigorwave participates in the Autodesk Clean Tech Partner Program. The purpose of this initiative is to provide qualifying start-ups in the clean-tech industry with digital prototyping software worth up to 120,000 Euros for a nominal price of just 50 Euros. This enables them to design, visualize and simulate their ideas in digital form before finally committing to a physical prototype.

To learn more about Vigorwave visit:
<http://www.vigorwaveenergy.com>

To learn more about the Autodesk Clean Tech Partner Program, visit autodesk.com/cleantech.

Learn More about Autodesk Product
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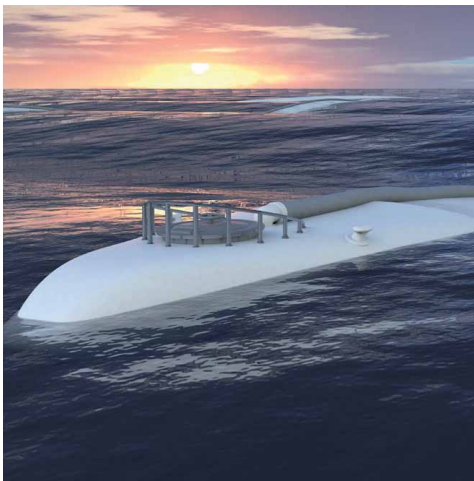


Image courtesy of Vigor Wave Energy AB.

In our world it is important that we choose the right tool to work with. We can't afford to waste half a year only to later lay the blame on a computer program. Inventor works and is very stable; that's why we use it.

—Roman Madorski
Product Developer
Vigor Wave Energy