

## USING ARTEC 3D SCANNERS FOR REVERSE ENGINEERING NAVAL SHIPS



Time saver



High accuracy



Cost-effective



An LCVP impeller and  
Artec Eva 3D scanner

## THE PERFECT SOLUTION FOR REVERSE ENGINEERING AND QUALITY CONTROL

Marinebedrijf Koninklijke Marine is a Dutch company responsible for the maintenance of all naval vessels and submarines of the Dutch Royal Navy, as well as M-class frigates of the Belgian Navy. The company also creates new parts for its ships and makes modifications of everything from the hull to weapon systems and engines, using both Eva and Spider 3D scanners for the best results.

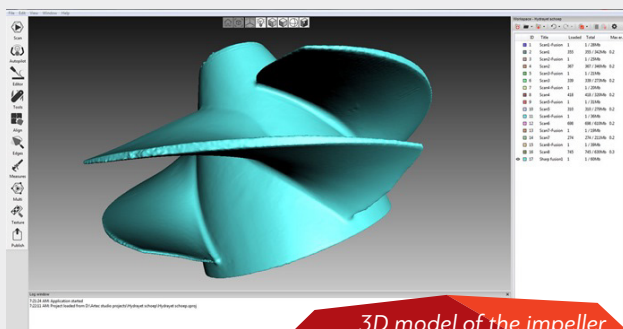
One example of this is when an impeller of an LCVP (Landing Craft Vehicle Personnel) needed to be repaired. This boat goes up onto the shore when dropping off marines, and when it needs to reverse back into the water, the LCVP moves backward and the impeller sucks in sand and rocks beside the water. These rocks hit against the impeller and cause small pieces of it to break off.

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Landing Craft Vehicle Personnel

The team 3D scanned the impeller and by using the resulting STL file they programmed their robotic welding system to perform accurate welding only on those areas where material needed to be added.



3D model of the impeller

3D scanning is also used for reverse engineering seats on FRISC-type high-speed boats, which can make up to 80 km/h and are used for intercepting purposes.

Because of the high impact on the waves, the seats can crack and need repairing. In a recent

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project, Marinebedrijf Koninklijke Marine scanned one of the seats with Artec Eva and used the 3D information to create a reverse engineered mold, from which the seats are repaired.



FRISC-type boat seat

"After collecting data, we are using all the tools available in Artec Studio to get a perfect model," says Ben Jansen. "If we need to do modifications where Artec Studio does not have the necessary tools, such as adding material to the 3D model, we export the file to other software, where we can make the required changes."

After post-processing, the model is usually exported to Spaceclaim, a CAD package for reverse engineering, and a 3D file for 3D printing, milling or 3D welding is created. If necessary, 2D and 3D drawings are made for tool shops within the Royal Navy.

*"In all of this the role of 3D scanning is growing rapidly," says Ben Jansen. "We noticed that when you have a perfect tool like this, also other people suddenly see the impact and how easy it is to make a matching scan of an object. Then they want to use the scanner as well."*