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Nick Baker, Head of Engineering, Supacat

Saving Lives: Supacat's RNLI Launch And Recovery System



Supacat is an innovative engineering design house producing and supporting high-mobility, all-terrain vehicles. Based in Devon, the company develops high performance vehicles for defence purposes, as well as other specialist vehicles and equipment for extreme environments.

They were given the challenge to design and build from a clean sheet, an all-weather Launch & Recovery System for the RNLI that could carry their new 18-tonne Shannon-class lifeboats to the water's edge and launch within minutes. The vehicle needed to be able to traverse across gravel and shingle beaches and withstand the onslaught of heavy waves as well as being fully submersed.

The company had also outgrown its current Workgroup PDM system and needed to migrate to a system that would allow them to manage their CAD data more effectively. The Australian office also needed to access, work on and store data efficiently within a common vault based in the UK.

The Solution

Supacat's design team were able to start the pre-production vehicle from scratch modelling in SOLIDWORKS and used the software for producing all the components of the Launch & Recovery System

There was no pre-conception of what the vehicle system had to look like, only a pre-requisite that the vehicle system would be designed in SOLIDWORKS, to be compatible with the RNLI's own CAD system.

Having SOLIDWORKS was key to Supacat winning the contract and meant the vehicle could be designed and developed in conjunction with the RNLI. NT CAD/CAM was able to support Supacat by making sure they had the latest releases of SOLIDWORKS and that the software was compatible with the RNLI's.

The RNLI needed all the files to be in SOLIDWORKS, so that any ancillary equipment they subsequently decided to design independently for their lifeboat system could be easily accessed and integrated.

Supacat's head of engineering, Nick Baker, says, "SOLIDWORKS is an intuitive programme which, when you are working with thousands and thousands of parts, proved more than capable for dealing with an assembly of this size".

The Challenge

To design and build from a clean sheet, an all-weather Launch & Recovery System for the RNLI that could carry their new 18-tonne Shannon-class lifeboats to the water's edge and launch within minutes.

The company also had a secondary requirement to improve its product data management system and allow them to work with their Australian office more efficiently.

“We could have five or six engineers working on the launch recovery system and bringing all those parts together for the assembly, meant we could model and assemble most of the parts before manufacture. It gave us the advantage of being able to flag up any design issues or clashes, reduce scrappage and ultimately get the design right first time.”

The two biggest technical challenges Supacat faced were designing the vehicle to maintain a low ground pressure and designing the equipment to be able to withstand the treacherous sea conditions.

Instead of using a distinct towed trailer like the old launcher, Supacat developed a four-track drive hydraulic control system, which could manage the integrated movement of both parts of the articulated vehicle: the tractor unit and carriage.

Nick and his team then had to design a watertight cab and engine housing to sustain a 9m tide over the top (9m is the highest ever recorded UK tide). “We needed to make sure the vehicle could be evacuated and left hatch-down, so that the engine bay and cabin do not flood, and then it can be recovered when the tide goes out. It was a challenge to understand corrosion in a salt environment. We did stand alone salt spray tests on components and most of the structure is hot zinc sprayed to five components a 50 year life,” adds Nick.

The Results

The new RNLI Launch and Recovery System is now operational at four UK beaches (Dungeness, Exmouth, Hoylake and Ilfracombe), with St Ives due to receive their L&RS in November 2015. The system’s rear cradle can be rotated 360 degrees and allows a boat to be picked up from a beached position bow first and turned around ready for re-launch bow first within five minutes. The RNLI estimates the advanced manoeuvrability of the new Shannon-class lifeboat and the Launch & Recovery System means more than 56,000 people will be rescued in its lifetime and more than 1,500 lives saved.

EPDM

With 24 licenses of SOLIDWORKS and a second office in Australia, Supacat subsequently initiated a six-month project with NT CAD/CAM to integrate a new PDM system. After pushing Workgroup PDM to its limit, (It’s meant for no more than a team of 8-10 staff but we were a team of 30 in the UK alone,” says Nick) Supacat made the decision to implement SOLIDWORKS Enterprise Product Data Management (EPDM).

“The business case for EPDM was that it could increase our productivity by upto 20 per cent,” says Nick. “Before we used to manually create PDFs from the SOLIDWORKS drawings, whereas now it’s all part of the workflow. This is just one of the benefits that has made us slicker and more streamlined.

“With EPDM we have taken the pain and made the gains,” he adds. “The main reason was to link up with our office in Australia. We needed a replicated vault as our engineers in Australia couldn’t work through the VPN connection into our UK vault and Workgroup limited us to one site. With EPDM we now have a system in place that can be expanded to other sites nationally and worldwide if required.

“We have automated a lot of our processes and there is a lot more functionality that we are hoping to benefit from.”

NT CAD/CAM

A customer of NT CAD/CAM’s since 2004, Nick Baker says it’s important to have an open relationship with their SOLIDWORKS supplier, “We need our CAD reseller to be open, honest and to be responsive when we need answers, and NT CAD/CAM stands up to the mark.”

Benefits:

- SOLIDWORKS stipulated by customer as the CAD of choice
- Modelling of large assemblies made easy
- Components designed for a 50-year life
- Increase in productivity with Enterprise PDM

Industry:

- Automotive and Transportation

Product Used:

- SOLIDWORKS
- Enterprise PDM

