SCOTT BADER

# Press Release

## CTruk Twin Hull FRP Workboats Built to Demanding Offshore DNV and BV Standards with Scott Bader's Crestomer® 1152PA Structural Adhesive

CTruk Boats Ltd., located in the UK at Brightlingsea, Essex, designs and builds multi-purpose composite marine craft used as workboats for offshore wind farm support, as well as customised vessels for military, security, disaster relief and commercial applications. Established in 2010, the company has a clear business mission to provide safe, fast and highly flexible working vessels by taking an innovative design approach. The company's patented modular pod system, initially created to meet the complex requirements of offshore wind support work, is a key example of CTruk's innovative design approach to problem solving; the unique 'moveable' FRP deck pods enable an operator to change the vessel's functionality in just a few hours. Vacuum resin infusion processing technology to minimise laminate weight and increase productivity, along with advanced composite materials are used by CTruk in preference to fabricating with aluminium. To meet stringent offshore vessel standards, only materials and processes that have been fully approved by Det Norske Veritas AS (DNV) and Bureau Veritas (BV) are used in production. This includes Scott Bader's Crystic Crestomer® 1152PA urethane acrylate structural adhesive, which is specified by CTruk for all FRP bonding.

***FRP Bonding Advantages***

To further reduce weight, increase productivity and cut labour costs, CTruk uses a structural adhesive where possible for FRP-FRP joint bonding in its designs. Scott Bader's Crystic Crestomer 1152PA is specified in all CTruk composite marine craft for structurally bonding in; hull stringers and bulkheads, transom sections, engine beds, deck sections and for hull to deck joints. Jim Cutts, CTruk's Director of Engineering commented: *"As we manufacture vessels to full marine classification, the company must use materials that have gone through rigorous type-approvals. The CTruk design team only specifies proven products that are known to meet DNV and BV requirements with reliable and consistent results. Crestomer 1152 is one such product, giving the advantages of high-elongation, toughness and impact resistance at an economical cost."* Published Scott Bader technical data for cured Crestomer 1152PA gives typical physical property values of 100% elongation at break and a maximum tensile strength of 26 MPa (to BS EN ISO 527-2:1196 test method); the limiting factor is the fibreglass substrate failure, not the Crestomer adhesive joint strength. Crestomer 1152PA is MEKP cured, supplied to CTruk pre-accelerated in 25 Kg pails, which is applied by hand. It offers a good level of application flexibility on the shop floor during the bonding assembly stage, as the Crestomer 1152PA grade has an open working time of up to 50 minutes (at 2% w/v catalyst, 25°C) and is suitable for gap-filling joints up to 25mm.

***Design Change Approval***

According to CTruk, depending on the application area and vessel specification, most FRP joints must also be over-laminated. However, as saving weight and production costs are key objectives, the CTruk design team is constantly looking to identify any new areas where it is possible to only bond with Crestomer. Seb Shillaker, Head of Production explained: *"Whilst most of CTruk's construction applications for Crestomer 1152 include an over-laminating procedure, we do also use purely bonded connections in a number of areas, such as some structural flanged connections. This gives us clear*

*advantages, with savings on labour, materials and a lower overall vessel weight."* Any design change must comply with offshore vessel DNV and BV standards, therefore any new applications using only adhesive joints (with no over-laminating) must be submitted for approval, along with detailed calculations. Optimising safety with performance is critical and so the CTruk design team use Finite Element Analysis (FEA) to ensure that hull and deck structures meet rigorous strength criteria and comply with the relevant class specifications.

CTruk has successfully obtained approvals for certain FRP bonding only application areas, so that in current craft build specifications the main deck beam, in spite of it being a high impact area, is now also joined only using Crestomer 1152PA structural adhesive, as well as some of the hull and deckhouse structural flange connections.

***Proven Offshore Bonding Performance***

CTruk was confident in gaining these 'bonding only' application approvals due to its rigorous design criteria and the fact that Crestomer 1152PA, like all products in the Crestomer range, has approvals from DNV, RINA and Lloyds Acceptance (Statement of Acceptance MATS/1785/3) for use as structural adhesives in the most critical FRP bonding marine applications and are well proven in use. One of the most demanding, long established, offshore applications for Crestomer 1152PA is to bond the FRP hull stringers and other parts of 'free fall' design fibreglass lifeboats, as used on rigs in the Norwegian offshore oil and gas sector. The Crestomer bonded hull and deck structures of these type of lifeboat are tested to DNV-OS-E406 standard, which requires the lifeboat to be able to withstand free falling from a drop height of over 60 metres. Crestomer structural adhesives, originally developed by Scott Bader for marine applications, have been used all over the world for over 30 years by leading FRP boat builders of leisure, commercial and naval marine craft for a variety of demanding hull and deck structural bonding applications.

***CTruk Looking Forward***

With a rapidly growing order book and new designs in the pipeline, the CTruk management team is looking forward with confidence, to continued innovation and taking full advantage of the enormous design flexibility, possible from using advanced composite materials and fabrication processes. SC Falcon, which successfully completed sea trials in February 2014 and which is now in service, is the most recent CTruk offshore wind farm support vessel (OWSV) to be designed and fabricated using advanced composite materials and Crystic Crestomer bonding technology. This year, CTruk also plans to exhibit its ground-breaking CWhisper SWATH 20m offshore wind support vessel design at Seawork 2014 (10-12 June in Southampton) alongside its latest military and security craft, the 11m twin-hull CTruk THOR. For further information about CTruk Boats Ltd. go to www.ctruk.com.

For further information on the complete Scott Bader range of Crestomer and Crestabond® primer-less MMA structural adhesives, along with high performance Crystic® resins, gelcoats, bonding pastes and pigments available globally for the fabrication of composite parts go to www.scottbader.com.

**End.**

**Issue Date:** 5 May 2014 *Ref: SB_05_2014-1* **[ Word Count: 1010 ]**

**Websites of Key Companies in this article:** www.scottbader.com www.ctruk.com

**Photos:**


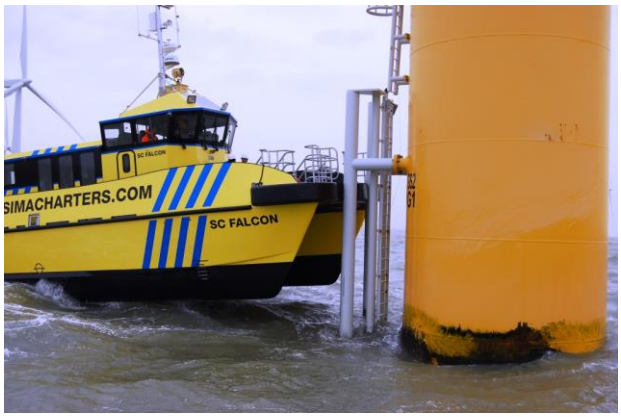


**Photo caption:**
SC Falcon is the most recent CTruk offshore wind farm support vessel (OWSV) to be designed and fabricated using advanced composite materials and Crystic Crestomer® bonding technology.

## About Scott Bader

Scott Bader was established in 1921. Today it is a €237 million global chemical company, employing over 600 people worldwide. It is a common trusteeship company, having no external shareholders, with a strong commitment to supporting its customers, workforce and the environment.

Scott Bader's headquarters is based in the UK where it has purpose-built, state-of-the-art technical facilities that provide R & D as well as complete evaluation, testing and application support. It has manufacturing facilities in Europe, The Middle East, India, South Africa, Canada and South America.

For further information regarding Scott Bader, please call +44 (0)1933 666638, visit www.scottbader.com or e-mail: enquiries@scottbader.com.

## About CTruk

Established in 2010, UK-based CTruk designs and builds safer, faster, better and more cost-effective composite high-speed marine craft with applications in the commercial, military and security and disaster relief sectors. The company has built numerous vessels for the offshore wind support industry, including a ground-breaking 20m SWATH, as well as a proof-of-concept military vessel. In 2013 the company delivered the first CTruk 20T MPC built to Bureau Veritas (BV) | X HULL • MACH Wind Farms Service Ship–S1 classification rules.

As well as building vessels to full BV class, CTruk continues to offer standard craft built to DNV or BV letters of compliance. CTruk uses a cutting-edge vacuum resin infusion technique at its Essex shipyard to build composite boats to the highest standards, saving up to 40% on weight. CTruk's patented moveable wheelhouse and flexible deck pod system give its vessels greater versatility. The team is locally based with a long collective history of working and sailing on the UK's east coast. To find out more go to: www.ctruk.com

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