



Solent Composite Solutions



ProTek® Product Description and Benefits

ProTek® Product Description

Blast resistant and fire resistant products are formed from a composite material that is sold under the Registered Trade Mark **ProTek®**. The product is free of asbestos or other components and does not pollute the environment during its life. The product does not degrade due to heat or fire with no vapours or toxic fumes noxious for health and environment and is not combustible under normal atmospheric conditions.

ProTek® products are tough and are formed from impact resistant material which is also fire resistant and flame resistant and which has a fire resistant and/or a flame resistant coating. The structural composite elements resist explosion blast overpressures up to 2.5 barg. The coating protects the composite sandwich structure from hydrocarbon jet and / or pool fire for more than 2 hours. The internal insulation layers of the composite sandwich structure ensure that the heat of fire is resisted for more than 2 hours.

All performance aspects have been fully and independently tested in large scale explosions before hydrocarbon jet fires and hydrocarbon furnace fires to demonstrate that they meet international standards and the products have Third Party Certification from recognised classification societies.

Benefits of ProTek® Products

- **Third Party Certification** to meet demanding project blast and fire requirements
- High strength composite products proven to resist significant blast and other structural loads and deliver hydrocarbon fire protection, thermal insulation and noise reduction
- **Low weight** – at least half the weight of metallic products
- Fast, low cost installation of lightweight products with bolted connections that can be easily assembled / demounted within available space by local labour without special tools
- No hot work or use of hazardous chemicals or habitats during assembly
- Resistant to extreme environments of high winds, heat, cold and saline atmosphere and entirely impervious to water penetration and damage by chemicals, sunlight or sand
- **Fit and Forget** - zero maintenance required guaranteeing a low lifecycle cost for many years
- **50 year design life** based on continued offshore exposure exceeding 28 years with zero claims

ProTek® Certification Summary

ProTek® products are certified by recognised Third Party international classification societies such as ABS (American Bureau of Shipping), DNV GL (Det Norske Veritas Germanische Lloyd) and Lloyd's Register of Shipping.

ProTek® products are also manufactured to a high quality standard certified by Bureau Veritas.

ProTek® Certification and Type Approval

ProTek® products are engineered and designed in accordance with a DNV GL certified design methodology that allows Solent Composite Systems to certify their own products up to 1.3barg explosive blast, 140 minutes Hydrocarbon Jet Fire and 150 minutes Hydrocarbon Furnace Fire.

This approach recognises that ProTek® products have been rigorously tested and proven by independent Third Party testing to resist full scale hydrocarbon jet fire after explosion.

After many years of certifying ProTek® projects DNV GL recommended a verified design methodology as a product certification method to overcome the restrictions of Type Approval that recognises the tested blast performance without limitation to one particular fire performance level.

There are many ProTek® projects with fire classifications from A60 through to H120 that all have different blast performance certified by the DNV GL approved design methodology.

Type Approval certificates are valid for 5 years and issued for products that comply with recognised international standards on the basis of three elements as follows:

- Design Assessment of engineering documents including drawings & calculations
- Type Testing to verify the ability of a product to meet requirements that cannot be verified by analyses and calculations with adequate reliability
- Manufacturing Surveys for product quality assurance assessment

ProTek® products are certified in the same manner because the Design Assessment and Type Testing are recognised in the DNV GL certified design methodology. This design methodology sets limits for the blast and fire performance levels that have been demonstrated by the Type Testing. The certified design methodology demonstrates that Solent Composite Systems have valid Type Testing and Design Assessment for all ProTek® products.

Manufacturing Surveys for the product quality assurance assessment have been carried out by Bureau Veritas as part of their certification of our Integrated Management System to verify compliance with international standards for Quality, Environment and Health & Safety performance.

The combination of DNV GL certified design methodology and Bureau Veritas certified quality assurance assessment satisfies the usual requirements for Type Approval for all ProTek® products over a wide range of blast and fire performance requirements.

Copies of the DNV GL and Bureau Veritas certificates are attached to show how ProTek® products are certified.



Solent Composite Solutions



ProTek® Certification Summary

DNV-GL

Folder:
PP144393
Cert No:
FGBUK-
PP02200.02
Rev.04
Date of Issue:
11-03-2016

DESIGN VERIFICATION REPORT

APPROVAL OF DESIGN METHODOLOGY FOR FIRE AND BLAST BARRIERS

Designer/Client	1 Solent Composite Systems Ltd
Contract	1 SFA 1-KN25NL
User	1 Generic Approval of Design Methodology
Equipment Description	1 ProTek® Composite Materials Fire & Blast Panels
DNV Project Number	1 PP144393

This is to confirm that the design methodology and supporting design documentation for the Fire and Blast barriers manufactured by Solent Composite Systems Ltd have been examined and found to comply with the codes and standards listed in section A and with current practices of the oil and gas industry.

In DNV's opinion the ProTek® Composite Materials Fire & Blast Panels are suitable as barriers against fire and blast loads and can be engineered, if appropriately supported by a suitable structure, to act as an enclosure or a blast wall.

The objective of the fire and blast barriers is to provide protection to people and/or safety critical equipment against blast overpressure and prevent the temperature of the protected area from rising above unacceptable limits when exposed to a 2 hour jet fire impingement.

The assessment of the design methodology was based on:

- I. Reviewing:
 - Testing and certification documentation of the ProTek® Composite Materials Fire & Blast Panels
 - Thermal analyses performed on specific projects that have been verified by DNV
 - Mechanical properties of the panels
 - Typical general arrangements drawings
 - Typical fabrication details
- II. Taking into account past experience which DNV gained from the verification of the ProTek® Composite Materials Fire & Blast Panels designed and constructed by Solent Composite Systems Ltd to function as enclosures for a number of projects for the Oil & Gas industry for onshore and offshore applications.

This Design Verification Report has been updated to take into account the replacement of OTI 95 634 by ISO 22899-1. Based on the review of the gap analysis of the two standards the previous testing program can be considered in compliance with ISO 22899-1.

This Design Verification Report has been updated to take into account the replacement of NRP-072-PEMEX-2009 Rev.0 by NRP-072-PEMEX-2013 Rev.0. Based on the review of the gap analysis of the two standards the previous testing program can be considered in compliance with the new revision with the condition stated in section C.

The design parameters that have been considered are listed in section A. Section B lists the documents used and section C lists the conditions attached to this statement.

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Det Norske Veritas

DESIGN VERIFICATION REPORT
(APPROVAL OF DESIGN METHODOLOGY)
For
Fire and Blast Enclosures

This is to confirm that the design methodology and supporting design documentation of the Fire & Blast Enclosures manufactured by Solent Composite Systems Ltd, have been examined and found to comply with the codes and standards listed in section A and with current practices of the oil and gas industry.

The objective of the fire and blast enclosures is to provide for safety critical equipment protection against blast overpressure and prevent the temperature of the equipment from rising above operational limits when exposed to a 2 hour jet fire impingement.

The verification of the design has been performed by

- I. reviewing:
 - Testing and certification documentation of the ProTek™ Panels.
 - Thermal analyses performed on specific projects that have been verified by DNV.
 - Mechanical properties of the panels.
 - Typical general arrangement drawings.
 - Typical fabrication details
- II. taking into account past experience which DNV gained from the verification of fire and blast enclosures designed and constructed by Solent Composite systems Ltd for a number of projects for the petrochemical industry for onshore and offshore applications.

This Design Verification Report has been updated to take into account the replacement of OTI 95 634 by ISO 22899-1. Based on the review of the gap analysis of the two standards the previous testing program can be considered in compliance with ISO 22899-1.

Section A of the report lists the range of design parameters that have been assessed, section B lists the documents used and section C lists the conditions attached to this statement.

Design Assessment and Type Testing – DNV GL Certification of Design Methodology



SOLENT COMPOSITE SYSTEMS LIMITED
BROADFIELDS PARK, SEAVIEW ROAD, COWES,
ISLE OF WIGHT, PO31 7US

Bureau Veritas Certification Holding SAS – UK Branch certify that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standards detailed below

ISO 9001:2015
Scope of certification

DESIGN, MANUFACTURE AND INSTALLATION OF COMPOSITE SOLUTIONS FOR THE ENERGY INDUSTRY - SPECIFICALLY FIRE AND BLAST PROTECTION FOR THE OIL AND GAS INDUSTRY AND ROTOR BLADE MOULDS AND TECHNOLOGY FOR THE WIND AND RENEWABLE ENERGY INDUSTRY.

Original cycle start date: **4 November 2011**
Certification / Recertification cycle start date: **4 November 2017**
Subject to the continued satisfactory operation of the organisation's Management System, this certificate expires on: **3 November 2020**
Certificate No.: **UK010474** Version: **2** Revision Date: **30 August 2016**



Certification body address: 8th Floor, 68 Prescott Street, London E1 6NG, United Kingdom.
Local office: 8th Floor, 68 Prescott Street, London E1 6NG, United Kingdom.
Further clarifications regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organisation.
To check this certificate validity please call +44 (0) 207 890 8998

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Manufacturing Survey – Bureau Veritas Certification of Quality Assurance