DNV·GL

TYPE APPROVAL CERTIFICATE

Certificate No:
TAF00000UG
Revision No:
2

This is to certify:

That the Jet Fire Protection

with type designation(s)
JET FIRE PIPE & CABLE PENETRATION SYSTEM

Issued to
Roxtec International AB
Karlskrona, Sweden

is found to comply with
DNV GL offshore standards

Application :

Approved for use as jet fire penetration system for pipes and cables.

Issued at **Høvik** on **2018-06-04**

This Certificate is valid until **2022-12-06**.
DNV GL local station: **Malmö**

Approval Engineer: **Marius Mørner**

for **DNV GL**

Digitally Signed By: Schei-Nilsson, Mårten
Location: DNV GL Høvik, Norway
Signing Date: 14.06.2018

Mårten Schei-Nilsson
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Job Id: **262.1-015100-4**
Certificate No: **TAF00000UG**
Revision No: **2**

Product description

Roxtec Jet Fire Pipe & Cable Penetration System.

Pipe penetration:
The pipe penetration system consists of a Roxtec SLFO/RI 400 sleeve and a Roxtec SLFO/RI 400 extension frame and two Roxtec RS 400 seal made of Roxylon rubber.
The Roxtec SLFO/RI 400 sleeve is bolted on the exposed side of the division (bulkhead or deck), and the Roxtec SLFO/RI 400 extension frame is bolted on the unexposed side. On each side of sleeve and extension frame an Roxtec RS 400 is installed.
The extension frame and 300 mm of the penetrating pipe on the unexposed side are insulated with 100 mm ceramic fibre (96 kg/m^3). The space between the pipe and the extension frame is filled with ceramic fibre (96 kg/m^3). Maximum pipe outer diameter 324 mm.

Cable penetration:
The cable penetration systems consists of S-series frames, filled with different types and size of Roxylon rubber modules to be adopted for a range of cable outer dimensions, with Roxtec wedge compression units and stay plates. The frame is welded on the unexposed side of the division (bulkhead or deck).

Cable penetration system no.:
1. frame SF 6x4, 593x298x60 mm (HxWxD), Roxylon modules installed on the exposed side. Maximum cable outer diameter 49 mm. The transit is uninsulated (10 mm Chartek on exposed side)
2. frame SK 8+8x2, 598x273x200 mm (HxWxD), Roxylon modules installed on the unexposed side. Maximum cable outer diameter 103 mm. The transit is partially insulated (Firemaster 100 mm 96 kg/m^3 outside steel sleeve)
3. frame SK 8+8x2, 598x273x200 mm (HxWxD), Roxylon modules installed flush on the exposed side. Maximum cable outer diameter 103 mm. The transit is fully insulated (Firemaster 100 mm 96 kg/m^3 outside steel sleeve, Firemaster 96 kg/m^3 completely filled inside steel sleeve)

Combined cable and pipe penetration no.:
4. two frames S 8+8x1 back-to-back, 580x130x300 mm (HxWxD), Roxylon modules installed flush on the exposed side and one on the unexposed side. Maximum cable outer diameter 43 mm. Maximum pipe outer diameter 20 mm. The transit is fully insulated (no insulation inside sleeve, "Gullfiber Brandskiva Typ 8381-50" 125 mm 150 kg/m^3 outside steel sleeve, "Carborundum, Durablanket S D128-25" 25 mm 128 kg/m^3, "Gullfiber Brandskiva Typ 8381-50" 50 mm 150 kg/m^3 behind module)
5. two frames S 8+8x1 back-to-back, 539x305x350 mm (HxWxD), Roxylon modules installed flush on the exposed side and one on the unexposed side. Maximum cable outer diameter 79 mm. Maximum pipe outer diameter 30 mm. The transit is fully insulated ("Firemaster X-607" 128 kg/m^3 completely insulated inside sleeve between frames, "Firemaster X-607" 100 mm 96 kg/m^3 outside steel sleeve and behind module)

For further details see the drawings listed under Type Approval documentation below.

Application/Limitation

Approved for use as jet fire penetration system of rating:
(Type of fire/Type of application/Critical temperature rise (°C)/Period of resistance (minutes))

Pipe penetration system:
Approved for use as a jet fire barrier of rating "JF/pipe penetration seal/180/50" or "JF/pipe penetration seal/195/60".

Cable penetration system no.:
1. Approved for use as a jet fire barrier of rating "JF/cable transit system/180/5".
2. Approved for use as a jet fire barrier of rating "JF/cable transit system/180/35" or "JF/cable transit system/205/60".
3. Approved for use as a jet fire barrier of rating "JF/cable transit system/180/60".

Combined cable and pipe penetration system no.:
4. Approved for use as a jet fire barrier of rating "JF/cable and steel pipe transit system/180/60".
5. Approved for use as a jet fire barrier of rating "JF/cable and steel pipe transit system/180/60".

Restricted application: Jet fire against the uninsulated side of the division (bulkhead or deck)

Any project specific design solutions arrived at on basis of this certificate are to be further validated by project specific approvals carried out by the appointed verifying authority for each project in each case at the detail engineering stage.

Each product is to be supplied with its manual for application and maintenance.

Type Approval documentation

Certification in accordance with Class Programme DNVGL-CP-0338, October 2017.

Pipe penetration system:
- Test report no. NBL F10106 dated 13 October 2010 from SINTEF NBL, Trondheim, Norway
- Drawing no. S1021275 rev. A, dated 2010-08-26
- Drawing no. S1006598 rev. E, dated 2010-04-21
- Drawing no. S1018927, dated 2009-11-19
- Drawing no. S1017920 rev. D, dated 2012-09-03
- Drawing no. S1527969 rev. A, dated 2018-04-27

Cable penetration system no.:
For all cable and pipe & cable penetrations: Drawing no. S1527905 rev. B, dated 2018-05-03 by Roxtec, numbered as follows:
1. Test report no. F20024-01-05 dated 2015-03-16 from SP Fire Research, Trondheim, Norway.
    a. Drawing no. S1005530 rev. B, dated 2006-12-21 by Roxtec
2. Test report no. NBL F10107 dated 15 November 2010 from SINTEF NBL, Trondheim, Norway.
    a. Drawing no. S1021120 Rev. C, dated 2010-09-15 by Roxtec
    b. Drawing no. S1021098 Rev. C, dated 2010-08-26 by Roxtec
    c. Drawing no. S1010162 Rev. A, dated 2009-01-28 by Roxtec
3. Same documentation as for no. 2

Combined cable and pipe penetration system no.:
For all cable and pipe & cable penetrations: Drawing no. S1527905 rev. B, dated 2018-05-03 by Roxtec, numbered as follows:
4. Test report no. 846031.02 dated 1997-11-04 from SINTEF, Trondheim, Norway.
    a. Drawing no. T9734-002, dated 1997-08-18 by Roxtec
    b. Drawing no. T9734-005 rev A, dated 1997-08-19 by Roxtec
    c. Drawing no. T9738-002, dated 1997-09-19 by Roxtec
5. Test report no. NBL-107332 dated 2005-06-03 from SINTEF NBL, Trondheim, Norway.
    a. Drawing no. S1007789, rev. A, dated 2007-05-30 By Roxtec
    b. Drawing no. S1007732, dated 2005-04-08 by Roxtec
    c. Drawing no. S1007670, dated 2005-03-17 by Roxtec

Tests carried out

Tested according to ISO 22899-1 (2007), Determination of the resistance to jet fires of passive fire protection materials.

Combined cable and pipe penetrations no. 4 and 5 tested according to the Offshore Technology Report OTI 95 634 "Jet-fire resistance test of passive fire protection materials", issued by "Health and Safety Executive" UK and the Norwegian Petroleum Directorate.

Marking of product

The product or packing is to be marked with name of manufacturer, type designation and fire-technical rating.

Periodical assessment

DNV GL's surveyor is to be given permission to perform Periodical Assessments at any time during the validity of this certificate and at least every second year. The arrangement is to be in accordance with procedure described in Class Programme DNVGL-CP-0338, Section 4.