3X ENGINEERING

ROLLERKiT®

PROTECTIVE COMPOSITE SOLUTION FOR CORROSION UNDER PIPE SUPPORT

Against Corrosion Under Support (CUS)
According to ASME B31.1

OIL & GAS
ONSHORE /OFFSHORE

DOC MKT 012 – D – ENG – LC – 07/2022

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1. PRODUCT BROCHURE

3X ENGINEERING
OIL & GAS
ONSHORE /OFFSHORE

3X ENGINEERING

PROTECTIVE COMPOSITE SOLUTION FOR CORROSION UNDER PIPE SUPPORT

Any pipe support designs | Old & new installations | 4" to 56" pipe diameters | -30°C to +150°C | Oil | Gas | Water

ROLLERKiT®

Up to 28 repairs with only 1 ROLLERKiT®

OIL & GAS
ONSHORE / OFFSHORE

INNOVATIVE REPAIR SOLUTIONS FOR YOUR INSTALLATIONS

ROLLERKiT® is a preventive and curative repair system for corrosion under support (CUS), for new and old installations.

3X ENGINEERING
OIL & GAS
ONSHORE /OFFSHORE

This patented composite technology, made of high performance polymer pads welded on glass fiber fabric and epoxy resin, protects the pipe and its support against corrosion in order to preserve pipe integrity. Pads are designed to support the weight of the pipe, according to ASME B31.1.

ROLLERKiT® RANGE

Model	ROL-28	ROL-56
Pipe O.D. (inch)	4" to 28"	30" to 56"
Application	Onshore & Offshore topside	
Temperature	-30°C / +150°C (-22°F / +302°F)	
Resin	F3X8	
Size of pad (length x width x thickness in mm)	30 x 160 x 8	30 x 300 x 12
Length of the roll	3m (86 pads)	

For SPLASH ZONE & SUBSEA applications, contact us: info@3xeng.com

ROLLERKiT® COMPONENTS

ROLLERKiT® MAIN FEATURES & BENEFITS

- Dual use: protective and curative
- Avoids contact between trapped water and pipe support
- Avoids galvanic corrosion (non-metallic solution)
- Avoids catastrophic failures caused by crevice corrosion
- Eliminates and prevents from further corrosion at pipe support
- Protects from impacts
- Installation on pipe, on support or on composite wrapping depending on the level of corrosion
- A single ROLLERKiT® allows up to 28 repairs according to pipe diameter
- Installation by trained and certified applicators only

ROLLERKiT® INSTALLATION ON PIPE

ROLLERKiT® INSTALLATION ON SUPPORT

DOC MKT 022 B2 - ENG - IC - 06.2022

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2. TECHNICAL DATA SHEET

3XENGINEERING
OIL & GAS
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ROLLERKiT®

PROTECTIVE COMPOSITE SOLUTION FOR CORROSION UNDER PIPE SUPPORT
From -30°C (-22°F) to +150°C (+302°F)

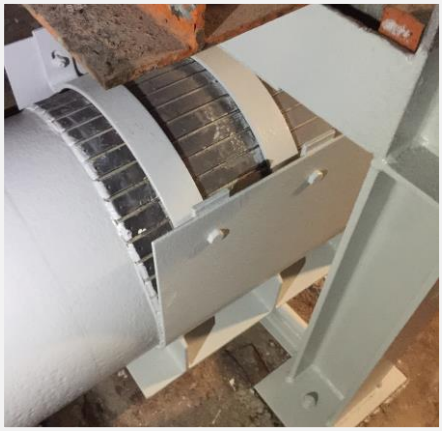
OIL & GAS
ONSHORE / OFFSHORE

TECHNICAL DATA SHEET

ROLLERKiT® DESCRIPTION

ROLLERKiT® is a patented innovation by 3X ENGINEERING (3X). It avoids contact between pipe and trapped water on pipe support, prevents from further corrosion on support, protects the pipe section on bearing, avoids galvanic effect and protects the pipe from impacts. A single kit can repair several pipes or pipe supports, of various shapes and diameters with a long-term lifetime.

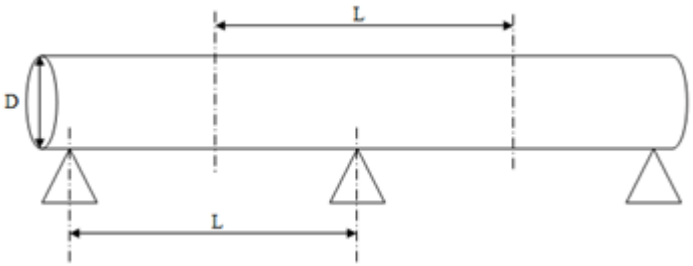
It can be used as preventive or curative repair system. Its technical characteristics also enable it to be used as an impact protection shield.

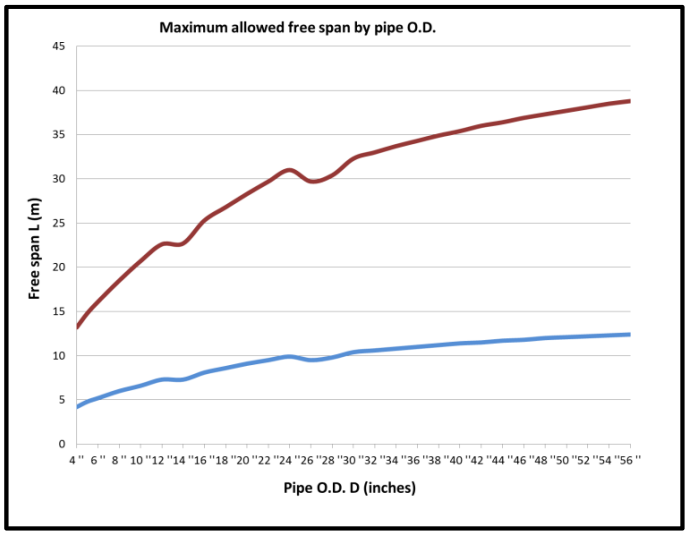




ROLLERKiT® CONCEPT

ROLLERKiT® has been engineered according to standard ASME B31.1 for the maximum free span allowed, L, but we recommend to use safety practice.

For the calculations we have considered the maximum pipe weight, 80% flooded.





ROLLERKiT®

PROTECTIVE COMPOSITE SOLUTION FOR CORROSION UNDER PIPE SUPPORT
From -30°C (-22°F) to +150°C (+302°F)

ROLLERKiT® can be applied in two different configurations:

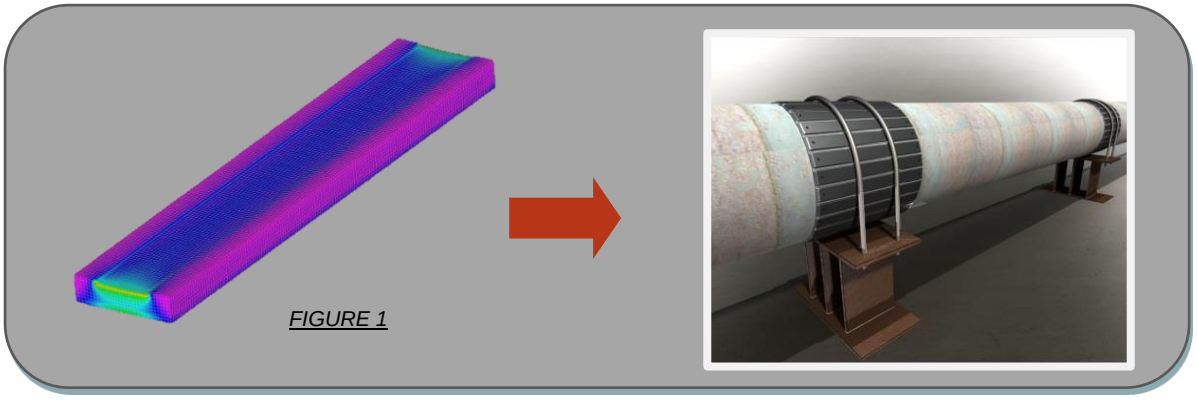


FIGURE 1

Fig. 1 illustrates the stress in the pad for ROLLERKiT® on pipe

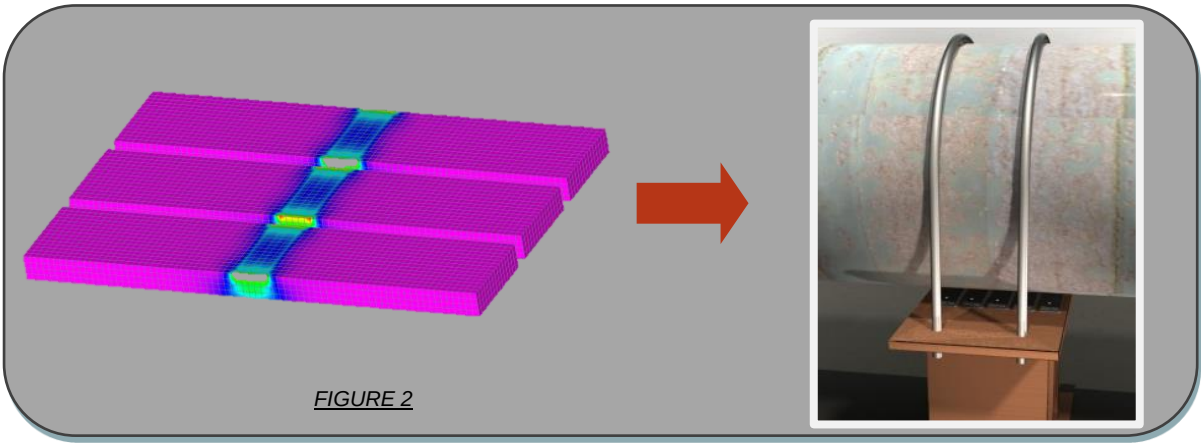
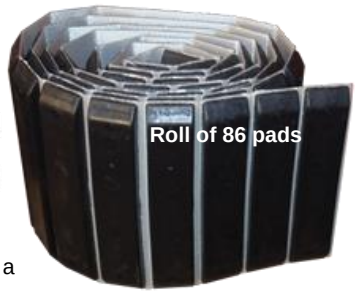


FIGURE 2

Fig. 2 illustrates the stress in the pads for ROLLERKiT® on support

ROLLERKiT® COMPONENTS

ROLLERKiT® is made of techno polymer PPS pads welded on a glass fiber fabric and an epoxy resin. The product is designed to be used for onshore application and topside of offshore platform. In case of severe environment, such as splash zone or subsea, please contact 3X Engineering to obtain suitable solution.



The techno polymer PPS pads are thermo welded on the glass fiber fabric with a laser technology. The glass fiber fabric is impr egnated with PPS powder which melts during the laser welding process and fuses with the PPS from the patch. The result is a strong and homogeneous assembly of all ROLLERKiT® components.

The glass fiber fabric ensures the patches assembly and stop the corrosion when applied with the resin on a corroded surface.

Two different versions were properly designed to support weight of pipe depending on pipe diameter: 8 mm and 12 mm.
The 8mm pad thickness ROLLERKiT® can support pipes from 4" to 28": ROL-28.
The 12mm pad thickness ROLLERKiT® can support pipes from 30" to 56": ROL-56.

Product	Pipe O.D. (inch)	length x width x thickness (mm)
ROL-28	4" to 28 "	Roll 3000x160x8
ROL-56	30" to 56"	Roll 3000x300x12

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ROLLERKiT®

PROTECTIVE COMPOSITE SOLUTION FOR CORROSION UNDER PIPE SUPPORT
From -30°C (-22°F) to +150°C (+302°F)

ROLLERKiT® IMPLEMENTATION – ON PIPE

ROLLERKiT® IMPLEMENTATION – ON SUPPORT

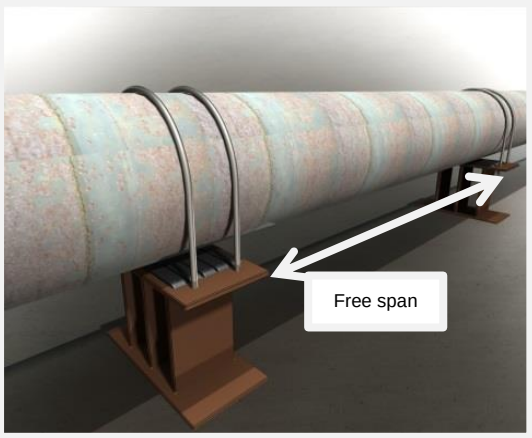
A surface preparation is needed to ensure the adhesion of the ROLLERKiT®.
The surface must present a SA 2.5 and a roughness (Rz) of 60µm minimum. Refer to surface preparation section for further information.

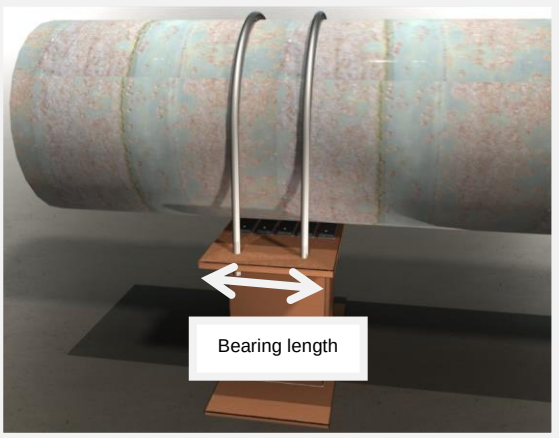
In order to prepare the surface and position the ROLLERKiT®, it is required to lift up the pipe of 20 cm minimum.

ROLLERKiT® ON PIPE

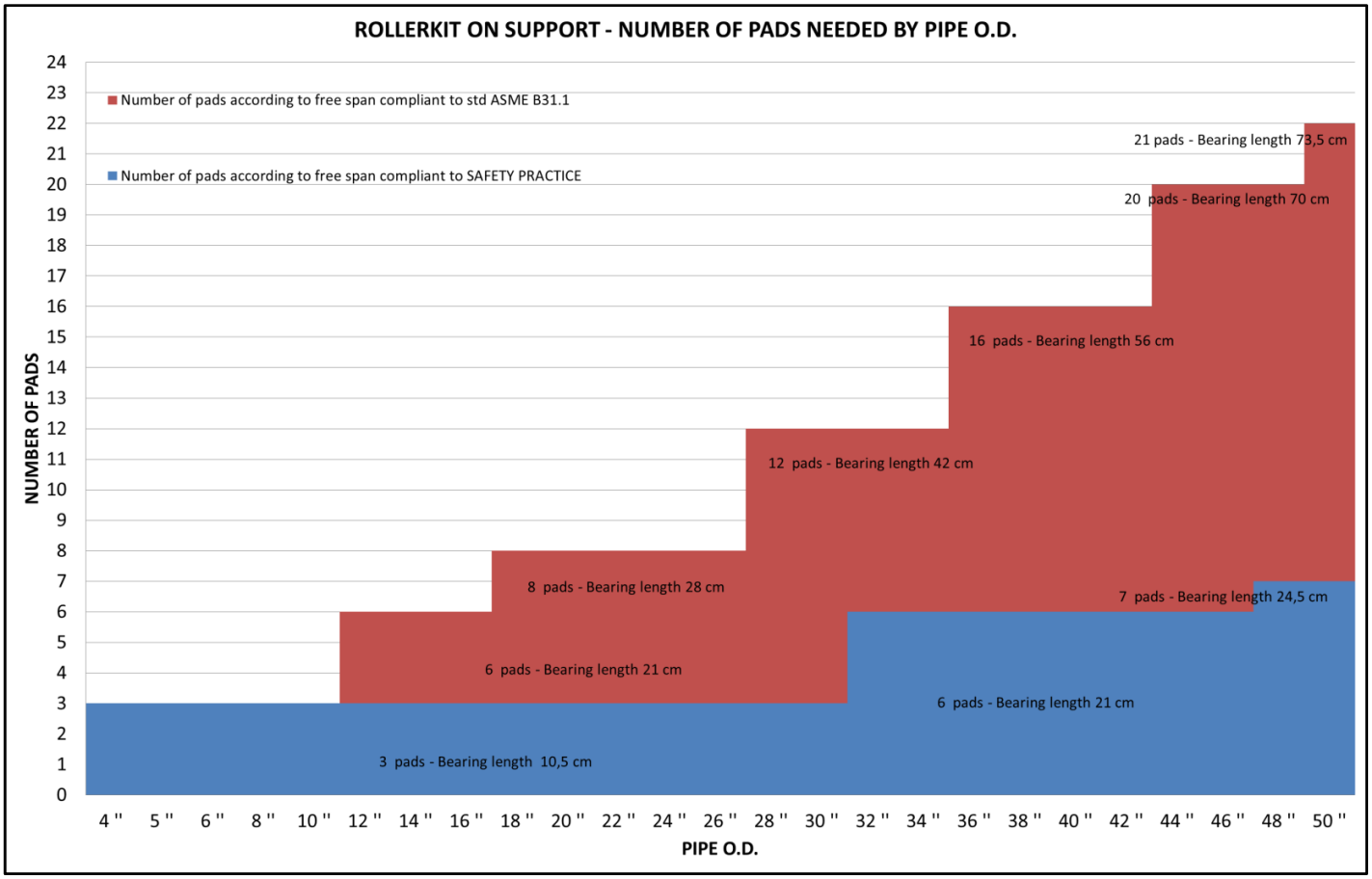
ROLLERKiT® ON SUPPORT

ROLLERKiT® ON SUPPORT





To determine the number of pads ROL-28 or ROL-56* needed by pipe O.D., please refer to the table below:



** Both ROL-28 and ROL-56 can be used for ROLLERKiT® on support*

ROLLERKiT®

PROTECTIVE COMPOSITE SOLUTION FOR CORROSION UNDER PIPE SUPPORT
From -30°C (-22°F) to +150°C (+302°F)

ROLLERKiT® SPECIFICATIONS

Application	ONSHORE & TOPSIDE OF OFFSHORE PLATFORM	
Model	**ROL-28**	**ROL-56**
Diameter Range	4" to 28"	30" to 56''
Size of the PPS pad Length * Width * Thickness (mm)	30*160*8	30*300*12
Length of the roll	3m (86 pads)	3m (86 pads)
Maximum Temperature Use	150°C*	150°C*
PAD PROPERTIES		
Pad nature	PPSGF40	PPSGF40
Density (ISO 1183)	1.65g/cm^3	1.65g/cm^3
Tensile stress at break (ISO 527)	180 MPa	180 MPa
Tensile modulus (ISO 527)	14.5 GPa	14.5 GPa
Flexural modulus (ISO 178)	13.5 GPa	13.5 GPa
Flexural strength (ISO 178)	260 MPa	260 MPa
Compressive strength (ASTM D695)	230 MPa	230 MPa
Coefficient of friction (PPS/Steel)	0.16	0.16
Izod impact 23°C (ISO 180/1U)	45 kJ/m²	45 kJ/m²
Charpy impact 23°C (ISO 179/1eU)	55 kJ/m²	55 kJ/m²
Charpy notched impact (ISO179/1eA)	9 kJ/m²	9 kJ/m²
Hardness Shore D (ISO 868)	85	85
Surface resistivity (DIN IEC 60093)	>1^{e}15 Ohm	>1^{e}15 Ohm
Dielectric Strength (kV/mm) (ASTM D149)	24	24
Flammability (UL 94)	V-0	V-0
FABRIC PROPERTIES		
Support	Glass Fiber	Glass Fiber
Weave	2x2 TWILL	2x2 TWILL
Fabric weight	395 g/m^2	395 g/m^2
PPS powder weight	50 g/m^2	50 g/m^2
RESIN PROPERTIES		
Resin characteristics	**F3X8**	**F3X8**
Density	1,6 g/cc	1,6 g/cc
Compression resistance (ASTM D695)	100 MPa	100 MPa
Compressive modulus (ASTM D695)	2.9 GPa	2.9 GPa
Bending modulus (ASTM D790)	6 GPa	6 GPa
Lap Shear strength Steel / F3X8 / Pad (ASTM D1365)	3.8 MPa	3.8 MPa
Hardness Shore D (ISO 868)	85* Tolerance > 77	85* Tolerance > 77

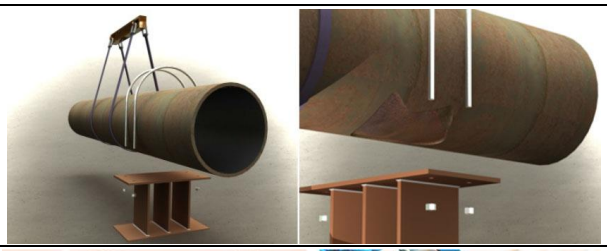
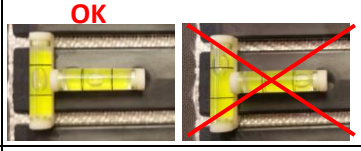
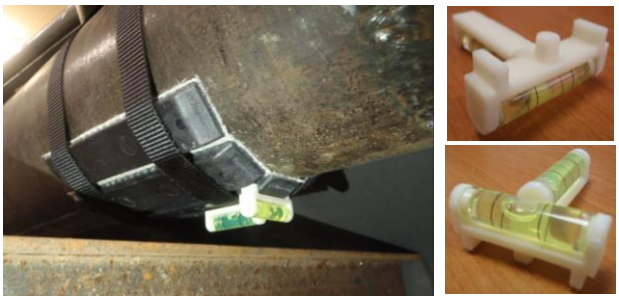
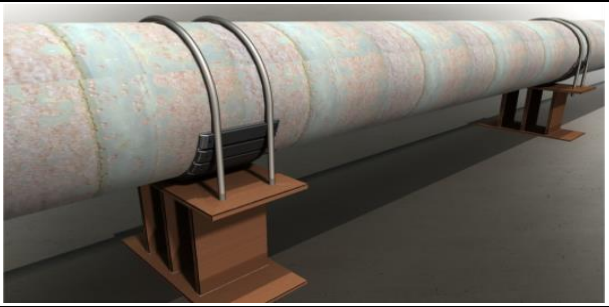
** values are given for indication and may vary depending on the environment*

ROLLERKiT®

PROTECTIVE COMPOSITE SOLUTION FOR CORROSION UNDER PIPE SUPPORT
From -30°C (-22°F) to +150°C (+302°F)

INSTALLATION PROCEDURE

ROLLERKiT® must be installed only by trained and certified applicators. Contact us for training certificate

1- SURFACE PREPARATION • Surface Prep required: SA 2 ½ with roughness Ry5: 60 to 90 microns • Degreasing using acetone and cleaning	**MATERIALS:** • Grit blasting equipment **CONTROLS:** • Roughness • Pictorial standards of cleanliness	
2- ROLLERKiT® PREPARATION • Cut the ROLLERKiT® required length: at least 3 or 5 pads • Mix the bi component filler • To be efficient, a good mixing presents homogeneous color • The quantity of filler is **10 g per pad**. ie 1mm thickness • Apply the filler on the dry tape (over the entire white surface)	**MATERIALS:** • 3 or 5 pads • Scissors • 1 filler Cartridge • 1bi component gun • Spatula • Mixing Plate **CONTROLS:** • No lack of filler • No excess of filler	
3- ROLLERKiT® APPLICATION • Stick the central pad at 6 o'clock in order to lay flat on the support • Clip the bubble level system in the dedicated hole and confirm the perpendicularity of the 2 axis of the lower pad • Tight the ROLLERKiT® using the 2 belts to avoid any move	**MATERIALS:** • 2 belts • 1 bubble level system **CONTROL:** • Pads position **OK** 	
4- ENDING • Let it cure according tothe Curing Table T°C (here follow) • Remove the bubble level system • Remove the belts • Lay down the pipe	**CONTROL:** • Pads position	

CURING TABLE FOR F3X8

Please refer to the following curing table before lifting down the pipe.

16°C / 60°F	25°C / 77°F	32°C / 90°F	43°C / 110°F	50°C / 122°F
7 Hours	4 Hours	3 Hours	2 Hours	1 Hour

STORAGE

The storage temperature may vary from 10°C to 30°C. A peak temperature is acceptable during transport. The storage lifetime is 2 years in original packaging.

APPLICATION NOTES

KIT COMPOSITION

ROLLERKiT® **28** / 56 is made of:

- ROLLERKiT® **300 x 16 x 0,8 (cm)** / 300 x 30 x 1.2 (cm)
- Epoxy Filler F3X8 – **1.44 kg (4 cartridges of 360g)** / 2.52 kg (7 cartridges of 360g)
- Ratchet Strap – **2 ratchet straps** / 3 ratchet straps
- 2 bubble level systems
- 1 spatula
- 1 mixing Plate

INSTRUCTION

ROLLERKiT® must be used only by trained and certified applicators. Contact us for training certificate.

SURFACE PREPARATION

Proper surface preparation is critical to the long-term performance of the composite. All rust, mill scale, corrosion products and foreign matter must be removed from the surface by a combination of solvent washing and Bristle Blasting or abrasive blasting. After surface preparation, roughness should achieve a minimum of 60µm and surface cleaning according to SA 2 ½ or ST3 standards. The surface must be cleaned using an adequate solvent which evaporates leaving no film residue.

SAFETY

Each applicator should read and understand the Material Safety Data Sheets (MSDS) and the installation procedure before using 3X products.

WARRANTY DISCLAIMER

Every reasonable effort is made to ensure the technical information and recommendations of this data sheet are true and accurate to the best of our knowledge at the date of issuance. However, improvements being continuously implemented to 3X products, this information is subject to change without notice. Please contact your 3X Distributor for the last updated product specifications. This 3X technical datasheet warrants the quality of this product when used according to directions. User shall determine suitability of the product for use and assumes all risks.

3. PRODUCT APPLICATIONS

ROLLERKiT®

INSTALLATION ON PIPE OR ON SUPPORT

➲ **ANY PIPE SUPPORT DESIGNS**

➲ **OIL AND NEW INSTALLATIONS**

➲ **ENVIRONMENT**

ONSHORE – OFFSHORE

➲ **PIPE DIAMETER**

FROM 4’’ TO 56’’

➲ **PIPE TEMPERATURE**

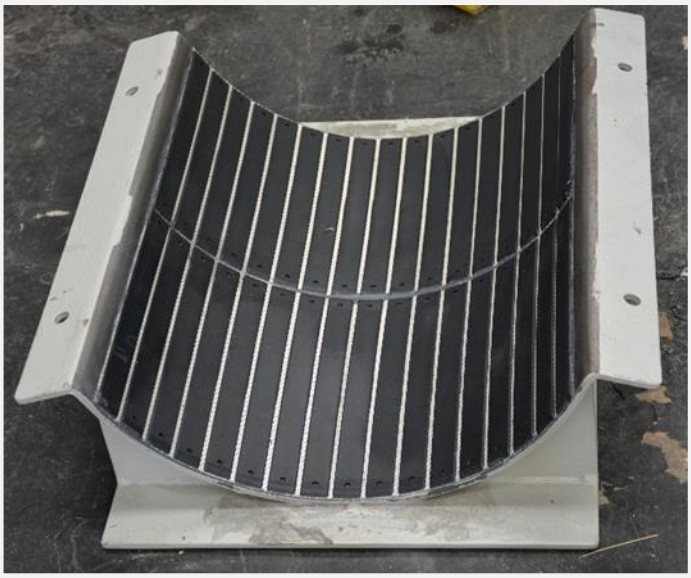
FROM -30°C TO +150°C (-22°F TO +302°F)

➲ **FLUID TRANSPORTATION**

OIL – GAS – WATER

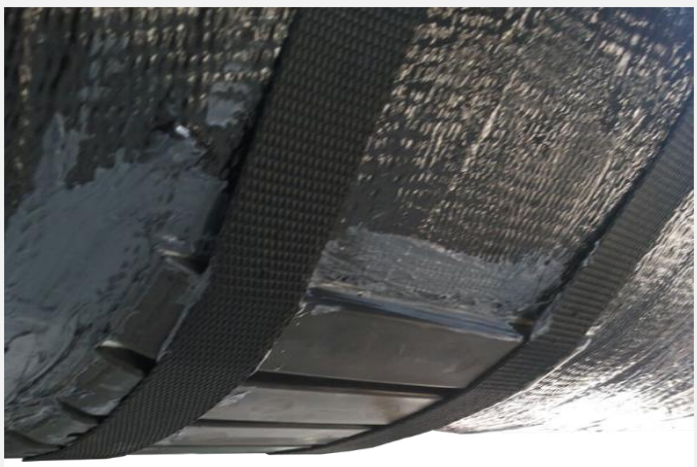
OIL & GAS
ONSHORE /OFFSHORE

ROLLERKiT® ON PIPE



ROLLERKiT® ON SUPPORT

(CIRCULAR OR STRAIGHT)



ROLLERKiT® ON COMPOSITE REINFORCEMENT

4. CASE STUDIES

3X ENGINEERING

INNOVATIVE REPAIR SOLUTION FOR YOUR INSTALLATIONS

OIL & GAS
ONSHORE /OFFSHORE

PROTECTIVE COMPOSITE SOLUTION FOR CORROSION UNDER PIPE SUPPORT

DEFECT TYPES	**External corrosion on pipe supports**
DETAILS	**18" oil pipeline - pressure 20 bar - design temp. 45°C**
LOCATION	**France**
3X SOLUTION	**ROLLERKiT® with REINFORCEKiT® 4D**

Fig. 1: Pipes to be reinforced

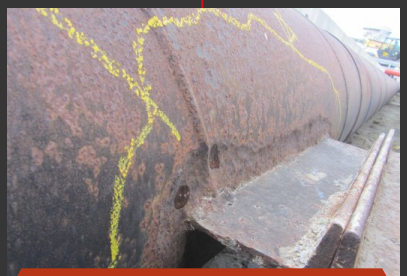


Fig. 2 : Corrosion between pipe and support

Fig. 3: Composite wrapping completed + ID plate

Fig. 4: ROLLERKiT installed

Fig. 5 : Final result with support installed

OVERVIEW

Problems of corrosion between the pipe and the support were identified by the client.

The objective of the repair, performed in December 2021 by **3X ENGINEERING (3X)** specialists was to reinforce and protect 2 corroded pipe supports. To reinforce pipe supports and prevent further corrosion it was decided to apply **a combination of ROLLERKiT® and REINFORCEKiT® 4D (R4D) solutions.**

SCOPE OF WORK

According to ISO 24.817 standard and 3X calculations, it was decided to apply first 4 layers of **R4D** using **R3X95 resin** to restore pipe integrity. Then it was decided to **install ROLLERKiT®** on the supports to protect them from further deterioration.

First of all, surface preparation was completed with gritblasting on the defected areas of the pipe and on the supports. This important step allows to get a good surface cleanliness roughness (superior to 60µm Rz) before composite wrapping and **ROLLERKiT®** installation. Hygrometric conditions were checked and the prepared areas were cleaned with acetone.

Both repairs were then completed following below stages:

1/ **F3X8 filler** applied on the defected area to reshape the pipe.

2/ **R4D** wrapping reinforcement of the defected areas were performed using **Kevlar® tape** and **R3X95 epoxy resin** to reinforce the pipe. Four layers of **R4D**, for a total repair length of 1000m, were applied on both pipes and identification plate was installed for traceability purpose.

3/ **ROLLERKiT®** (pads welded on glass fiber) were installed all around the surface wrapped in contact with the support using **F3X8 filler.**

4/ Hardness measurements were performed to confirm the good polymerization of the products and **ROLLERKiT®** installation.

Final step ==> supports installation over **3X solution (= R4D composite wrapping + ROLLERKiT®) managed by the client.**

RESULTS

Two pipes with external corrosion at pipe supports were repaired and protected using this combined solution made of R4D composite wrapping and ROLLERKiT®.

The design life for these repairs is 20 years.

Both pipes are now protected from corrosion under supports.

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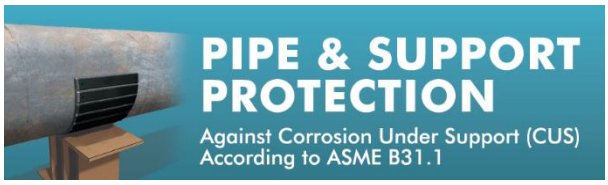


REPAIR TYPE	**Corroded pipe supports**
PIPE DETAILS	**8" pipeline – oil – pressure: 12 bars**
	14" pipeline – gas – pressure: 66 bars
LOCATION	**IVORY COAST**
3X SOLUTION	**ROLLERKiT® with REINFORCEKiT 4D (R4D)**

Fig. 1: View of the defected area

Fig. 2 & 3: Cutting the required quantity of ROLLERKiT pads and F3X8 filler application **(illustrating pictures only)**

Fig. 4: ROLLERKiT installed on the supports

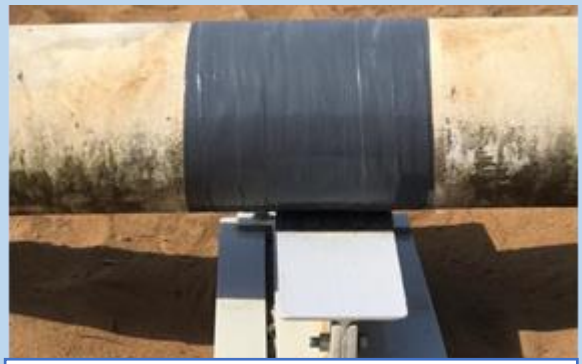


Fig. 5: View of R4D wrapping reinforcement in contact with ROLLERKiT product

Fig. 6: General overview of the installation repaired with R4D and ROLLERKiT

OVERVIEW

The client had some problems of corrosion between the pipe and its supports. The objective of the job, performed in February 2021 by local 3X ENGINEERING (3X) distributor PROMETRIC was to reinforce and protect the area between the pipe and the support ➔ **a combination of ROLLERKiT® and R4D solutions** was selected.

SCOPE OF WORK

As the corrosion was minor, 2 layers of **R4D** composite wrapping were proposed to restore pipe integrity and stop corrosion process. For this configuration, it was decided to apply **ROLLERKiT®** on the support for convenience.

The repairs were performed following the same stages:

❶ **PIPE SURFACE PREPARATION.** Corroded areas of the pipe in contact with the support were grit blasted to get a good surface cleanliness and roughness (Rz > 60µm) before composite wrapping.

❷ **PIPE COMPOSITE WRAPPING WITH R4D**. Wrapping reinforcement of the prepared surfaces were performed using Kevlar® tape and epoxy resin to reinforce the pipe. Two layers of R4D were applied before **ROLLERKiT®** installation on the supports.

❸ **SUPPORT SURFACE PREPARATION.** Supports were also grit blasted to get a good surface cleanliness and roughness (Rz > 60µm) before receiving **ROLLERKiT®** pads. Degreasing and cleaning using acetone were then performed to ensure that the prepared surface was completely free from residue.

❹ **ROLLERKiT® PREPARATION.** Cutting of the necessary number of pads to be installed. Eight pads were necessary to protect 8" pipeline and 12 pads for 14" pipeline. F3X8 filler was mixed and applicated on the support and on the **ROLLERKiT®** (fiber glass side).

❺ **ROLLERKiT® APPLICATION ON THE SUPPORT. ROLLERKiT®** was then fixed on the support to protect the area between the pipe and the support. The pads were positioned perpendicularly to pipe axis to let the pipe slide freely.

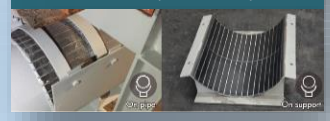
❻ **REPAIR FINALIZATION AND VALIDATION.** When curing time was over hardness measurements were performed to confirm the good polymerization of the filler and the pipe was laid down on the support.

RESULTS

In total, 30 supports were protected with **ROLLERKiT®** product (15 supports for both 8'' and 14'' pipelines). Both pipes can now slide freely on the supports avoiding coating degradation and potential galvanic contact. Pipes and supports are now protected from corrosion under supports.

Pipe & support protection

ROLLERKiT®



REPAIR TYPE	**PIPE SUPPORTS PROTECTION (DN500 & DN300)**
LOCATION	**FRANCE**
3X SOLUTION	**ROLLERKiT®**

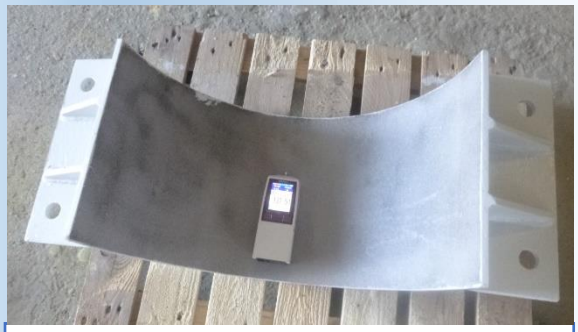


Figure 1: Roughness measurement on support sandblasted

Figure 2: Filler application on support
Figure 3: Filler application on ROLLERKiT®

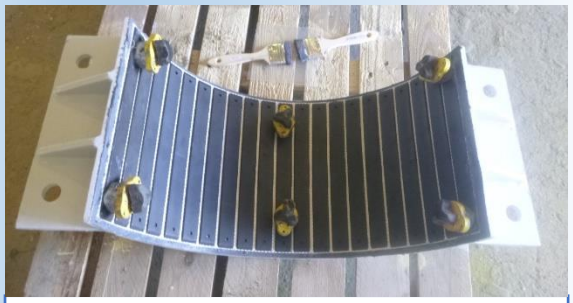


Figure 4: ROLLERKiT® fixing on support using magnets

Figure 5: General view of the 6 supports protected with ROLLERKiT®

OVERVIEW

The objective of the job performed in February 2019 by two 3X specialists was to protect 6 pipe supports (DN500 and DN300 models) using our ROLLERKiT®, product specifically dedicated to protect the area between the pipe and the support.

SCOPE OF WORK

After calculations, 2 ROLLERKiT® were necessary to protect the 6 supports. One ROLLERKiT® is made of 86 pads and can protect several supports depending on support model and size.

The repair was performed following 4 main stages:

❶ **SURFACE PREPARATION OF THE SUPPORTS** using sandblasting in order to get a surface roughness Rz > 60µm. Hygrometric and roughness measurements to make sure that all satisfactory conditions are fulfilled. Degreasing and cleaning using acetone to ensure that the surface is completely free from residue.

❷ **ROLLERKiT® INSTALLATION.** Cutting of the necessary pads number to be installed. Mixing and application of F3X8 filler on the overall surface of the support previously prepared. Impregnation of the ROLLERKiT® (on fiber glass side) with F3X8 filler.

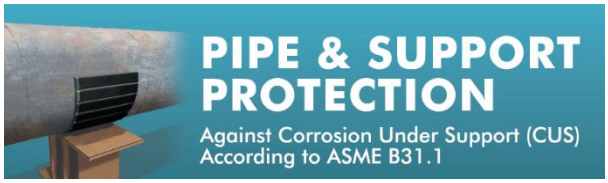
❸ **ROLLERKiT® FIXING.** ROLLERKiT® was then fixed on the supports using magnets to ensure it is not moving during F3X8 filler polymerization.

❹ **REPAIR CHECKING.** Hardness measurements were performed 4 days after the implementation to confirm the good polymerization of the filler.

RESULTS

The job has been successfully managed by 3X specialists. All the ROLLERKiT® were installed on the supports and F3X8 hardness values were in accordance with 3X requirements.

The supports have been then positioned on site by the client. Pipes and supports are now protected from corrosion under support.



REPAIR TYPE	**PIPE & SUPPORTS PROTECTION**
PIPE DETAILS	**6" straight flowline – crude oil – design press. 110 bars**
LOCATION	**QATAR**
3X SOLUTION	**ROLLERKIT®**

OVERVIEW

The client had some problems of deterioration between the pipe and its supports. The objective of the test required in December 2017 was to evaluate 3X solution to solve this problem. The test performed by 3X specialists, in collaboration with PEC (3X Distributor in Qatar), was to install our **ROLLERKIT®** (product specifically dedicated to protect the area between the pipe and the support) on the line in 5 different configurations to test the effectiveness and reliability of this solution.

SCOPE OF WORK

ROLLERKIT® can be installed both on pipe or on support without shutdown.

According to client's requirements and after calculations, see below the 5 various configurations performed for the test.

* Location #1 ➔ 9 pads were installed on the pipe + 3 pads on the support (both pipe and support were blasted)
* Location #2 ➔ 15 pads were installed on the pipe to protect the whole outside surface of the pipe (pipe was blasted)
* Location #3 ➔ 15 pads were installed on the pipe + 3 pads on the support (application without blasting).
* Location #4 ➔ 6 pads were installed on the support (application without blasting).
* Location #5 ➔ 3x9 pads were installed on the pipe (application without blasting).

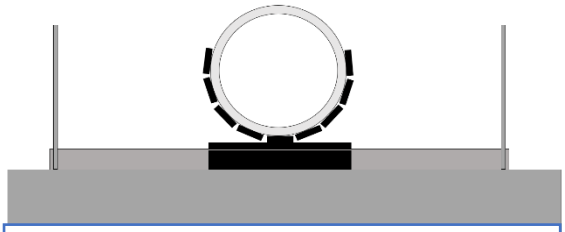


Figure 1: **ROLLERKIT®** installation on location #1

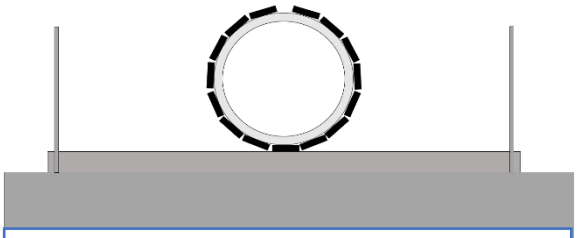


Figure 2: **ROLLERKIT®** installation on location #2

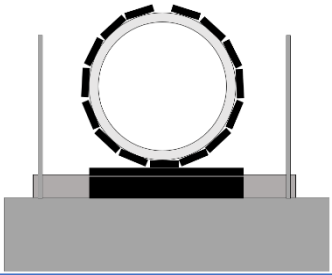


Figure 3: **ROLLERKIT®** installation on location #3

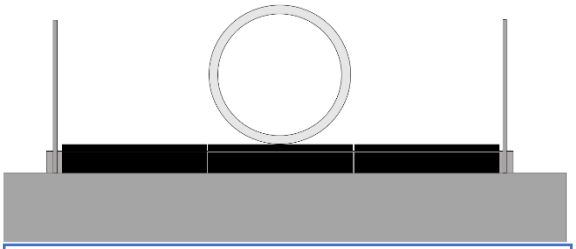


Figure 4: **ROLLERKIT®** installation on location #4

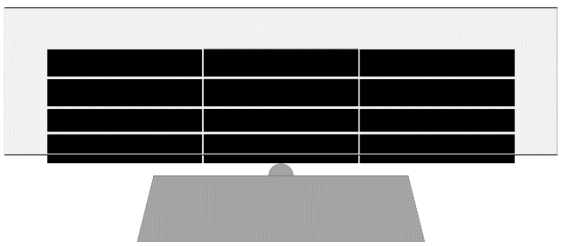


Figure 5: **ROLLERKIT®** installation on location #5

The 5 repairs were performed following the same stages:

❶ **PIPE OR SUPPORT SURFACE PREPARATION** (depending on the configuration and where the pads were applied) using sandblasting in order to get a surface roughness Rz > 60µm. Degreasing and cleaning using acetone to ensure that the prepared surface is completely free from residue.

❷ **ROLLERKIT® PREPARATION.** Cutting of the necessary number of pads to be installed. Mixing and application of F3X8 filler on the pipe/support previously prepared and on the **ROLLERKIT®** (fiber glass side).

❸ **ROLLERKIT® APPLICATION.** **ROLLERKIT®** was then fixed on the pipe/support. For the configurations with pads installed on the pipe, ratchets belts and air bubble system were used to control the positioning.

❹ **REPAIR FINALIZATION AND VALIDATION.** When curing time was over, ratchet belts were removed and hardness measurements were performed to confirm the good polymerization of the filler.

Figure 6: Overview of the line and pipe support model

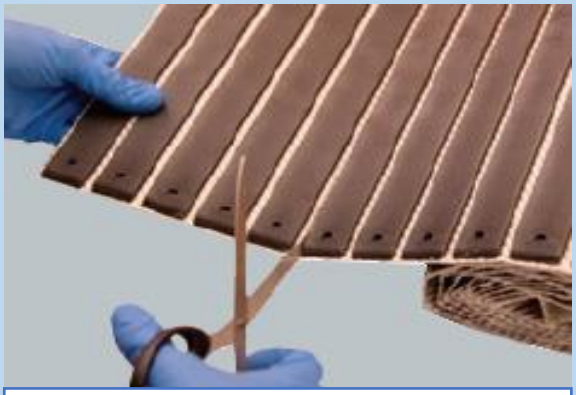


Figure 7: Cutting the required quantity of pads **(illustrating picture only)**

Figure 8: F3X8 filler application on **ROLLERKIT®** **(illustrating picture only)**

Figure 9: **ROLLERKIT®** installed on pipe and on support (configuration #1)

RESULTS

The test was successfully managed by 3X specialists. **ROLLERKIT®** was installed in 5 various configurations as required by the client (with/without blasting, on pipe only, on support only, both on pipe and support).

In June 2020 (more than 2 years and half after installation), Inspection was carried out and concluded the big success of the test and the efficiency of the **ROLLERKIT®**. Conclusion was transmitted by the client:

- **ROLLERKIT®** application on flowline support contact area found intact
- No wear and tear observed on **ROLLERKIT®**
- Flowline is protected at support contact point efficiently

5. REFERENCES LIST

References List

ROLLERKiT®

Pipe and support protection

This references list includes all the products sold by 3X ENGINEERING Monaco but not the exhaustive list of the products sold by our Worldwide Distributors

LC - 12/2021

Year	Country	Client	Description
2021			
2021	France	**GEOSTOCK**	ROLLERKiT on support
2021	France	**SPAC**	ROLLERKiT with R4D (external corrosion on pipe supports)
2021	Barhein	**TATWEER**	ROLLERKiT
2021	Ivory Coast	**PETROCI**	ROLLERKiT with R4D (51 differents points, external corrosion + prevention)
2021	Nigeria	**TOTAL**	ROLLERKiT
2020			
2020	France	**GEOSTOCK**	ROLLERKiT on support
2020	Nigeria	**TOTAL**	ROLLERKiT
2019			
2019	France	**GEOSTOCK**	ROLLERKiT on support (pipe supports protection - DN500 & DN300)
2017			
2017	Nigeria	**TOTAL**	ROLLERKiT - AKPO
2017	France	**GEOGAZ**	ROLLERKiT - 16"
2017	France	**SPAC**	ROLLERKiT on supports
2017	Angola	**TOTAL**	ROLLERKiT
2017	France	**GEOSTOCK**	ROLLERKiT (Tunnel du Ranquet) + R4D - 16"
2016			
2016	Nigeria	**TOTAL**	ROLLERKiT - OML 100
2016	Angola	**TOTAL**	ROLLERKiT - Dalia/Girassol
2015			
2015	France	**GEOSTOCK**	ROLLERKiT (Tunnel du Ranquet)
2014			
2014	Malaysia	**SHELL**	ROLLERKiT + R4D on pipe