



# REINFORCEKIT® 4D

## COMPOSITE REPAIR FOR PIPE REINFORCEMENT

According to ISO 24.817 & ASME PCC-2



All diameters



-50°C to +150°C



Oil



Gas



Water



Onshore/Offshore/Subsea



Elbow repair

**EXTERNAL DAMAGE**

Sabotage repair

Leak repair

**INTERNAL DAMAGE**

Dent repair

Pinhole repair

Weld repair

Tee repair



PIPE REPAIR & REINFORCEMENT



COMPOSITE WRAPPING



ONSHORE-OFFSHORE-SUBSEA



Composite Repair Specialist



**REINFORCEKIT® 4D (R4D)** is a wet lay-up system, wrapped helicoidally around the pipe in order to bring the mechanical resistance to the damaged pipe section suffering from a defect. This long-term composite technology is made of Kevlar® tape and specific bi-component epoxy resin.

**R4D** is the solution for a lasting pipe reinforcement.

3X ENGINEERING has developed its own software called R.E.A (Reinforcekit Engineering Analysis) to design the composite repair and define the material requirements in accordance with ISO 24.817 & ASME PCC-2.

## REINFORCEKIT® 4D RANGE



EXTERNAL DAMAGE			EXTERNAL & INTERNAL DAMAGE		
<b>R4D-EC</b>	<b>R4D-ECHT</b>	<b>R4D-ECHT</b>	<b>R4D-IC</b>	<b>R4D-HT+</b>	<b>R4D-S</b>
External Corrosion Max. pipe temperature <b>+55°C (+131°F)</b>	External Corrosion Max. pipe temperature <b>+110°C (+230°F)</b>	External Corrosion Max. pipe temperature <b>+130°C (+266°F)</b>	External & Internal Corrosion Max. pipe temperature <b>+60°C (+140°F)</b>	External & Internal Corrosion - High Temp. Max. pipe temperature <b>+150°C (+302°F)</b>	External & Internal Corrosion - Subsea Max. pipe temperature <b>+50°C (+122°F)</b>



### USES

- Reinforce pipe suffering from:
  - internal and external corrosion
  - pinhole, leakage, crack, dent
  - mechanical damage
  - severe abrasion, erosion
  - sabotage ...



### APPLICATIONS

- Onshore, Offshore and Subsea
- All pipe geometries including welds, elbows and tees
- All pipe sizes (no limitation)
- High pressure pipeline
- Pipe operating from negative up to high temperature
- Pipe transporting most common fluid and gas



### BENEFITS

- Online repair (no shutdown required except in case of leakage)
- Non-conductive repair
- No hot work
- Long-term performance

## REINFORCEKIT® 4D IMPLEMENTATION STEPS

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
Designed as per ISO 24.817 & ASME PCC-2	Surface preparation Sa2½ / St3 and roughness Rz > 60 µm	Filler application	Bi-component epoxy resin preparation	R4D wrapping	Coating protection & traceability tag



**IMPLEMENTATION BY TRAINED AND CERTIFIED APPLICATORS ONLY**