



# COMPOSITE REPAIR SPECIALIST

- **TYPE OF DEFECT :** Dent, Gouges & Leak
- **PIPE SIZE :** 24" OD (API 5L Grade B, t=8.1mm)
- **NOMINAL PRESSURE :** 12.66 bar
- **PIPE TEMPERATURE :** 60°C
- **LOCATION :** Martinique
- **3X PRODUCT :** REINFORCEKIT 4D (R4D)
- **YEAR OF PROJECT :** April 2014

## OVERVIEW

One onshore transfer 24" pipeline was damaged by an excavator which caused both one large dent and a leak. The pipeline reinforcement was performed in April 2014 by 3X ENGINEERING (3X) team.

## SCOPE OF WORK

The whole repair was done according to the proprietary 3X finite elements calculation programme. Twenty (20) layers of composite were found necessary to reinforce the pipeline.

The pipe was fully flooded with water. The leak sealing was done by using arc welding.

F3X8 filler (3X) was applied at the welding area. The dent and its gouges were also filled in with this filler.

As this pipeline operates between ambient and 60°C temperature, the R4D-IC kits were used.

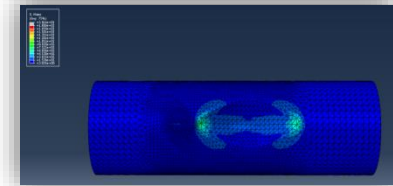
Aramide tape was impregnated with R3X5 resin (3X) and helically wrapped with 50% tape overlap.

Curing time of 72 hours was done prior to hydrotest at 10 bar pressure.

## RESULTS

On this quite special case 3X ENGINEERING has demonstrated once again its efficiency and competency in damaged pipeline repairs and particularly in the particular case of very severe dents with gouges (onshore & offshore).

Our on-site pro-active support allowed a restarting of the pipeline without removing the damaged pipe.



*For more information, please contact us at :*  
**3X Engineering - 9 Avenue Albert II - 98000 Monaco**  
**Phone : +377 92 05 79 81- Fax : +377 92 05 72 71**  
**E-mail: [info@3xeng.com](mailto:info@3xeng.com) - [www.3xengineering.com](http://www.3xengineering.com)**

**3X ENGINEERING**  
Range of Products

