# SIKA AT WORK

# GOODWYN-A PLATFORM FLARE TOWER LEGS GROUTING

OFFSHORE & MARINE CONSTRUCTION
CONVENTIONAL ENERGY

BUILDING TRUST

# GOODWYN-A PLATFORM FLARE TOWER LEGS GROUTING

**PROJECT DESCRIPTION**
In October 2016, Sika completed offshore grouting works for the flare tower legs of the Goodwyn-A (GWA) Platform, located northwest of Karratha, Australia. The project formed part of the structural strengthening works for Platform 4 of the offshore facility operated by Woodside Energy Ltd.

The scope involved the infill grouting of the four flare tower legs using ultra-high-performance cementitious grout pumped internally from the base of the structure to elevations of approximately EL +127 m. The works were executed using conventional bottom-to-top grouting methodology from the platform deck area following extensive engineering studies, finite element analysis (FEA), and trial model testing.

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| Project name: | Goodwyn-A Platform Flare Tower Legs Grouting |
| Location: | Northwest of Karratha, Australia |
| Year: | 2016 |
| Customer: | Woodside Energy Ltd |
| Application: | Jacket installation |
| Product: | UHPC |

**PROJECT REQUIREMENTS**
The project required the structural strengthening of the Goodwyn-A flare tower legs using infill grouting methodology under challenging offshore operating conditions. The grouting works were associated with subsea installation activities at water depths between approximately 77 and 82 meters.

A key technical requirement involved pumping ultra-high-performance grout vertically through the flare tower leg structure to a height of approximately 85 meters while maintaining consistent material flowability and performance. In addition, grout hose routing had to be coordinated from Module E to the flare tower leg inlet nozzles, with ROV-installed inlet ports positioned at approximately EL -28.6 m.

The offshore works also required contingency planning for potential platform emergency scenarios. In the event of a General Purpose Alarm (GPA) triggered by flooding or emergency conditions, the grouting operation needed to safely suspend pumping activities for extended periods before resuming without compromising grout performance, even under ambient temperatures approaching 50°C.

**SIKA SOLUTIONS**
Sika delivered a complete offshore UHPC grouting solution including engineering support, offshore grouting equipment, project management, QA/QC procedures, and execution services.

UHPC was selected for the project due to its high flowability, cohesiveness, anti-washout properties, and suitability for pumping into confined and difficult-to-access structural sections. Prior to offshore execution, full-scale pretesting was conducted at the Sika UHPC materials facility to verify material temperature stability and extended standby performance under simulated site conditions. The testing program was witnessed and validated by the client.

The offshore grouting spread was mobilized aboard the Main Work Barge LTS3000 using a compact equipment configuration suitable for the constrained offshore workspace. First-generation ROV connectors developed by Sika were utilized to install grout inlet ports subsea and connect the grout hoses to the jacket leg system.

The strengthening methodology consisted of internal infill grouting of each flare tower leg using bottom-to-top grout placement. All four flare tower legs were successfully completed within the planned four-day execution schedule. Sika also provided support for equipment demobilization together with full project management, reporting, QA/QC, and HSE coordination throughout the campaign.

**CUSTOMER BENEFITS**
The selected UHPC grout system enabled reliable pumping and placement within narrow and difficult-to-access structural sections while maintaining excellent flowability and anti-washout performance under demanding offshore conditions.

The grout's dense nanostructure delivered exceptionally high compressive and flexural strength together with an elastic modulus exceeding 50 GPa, providing a durable long-term strengthening solution for the flare tower structure. The material also demonstrated the ability to tolerate extended pumping interruptions and restart conditions during potential emergency shutdown scenarios, significantly reducing offshore execution risk.



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