

Offshore Repair with Composites

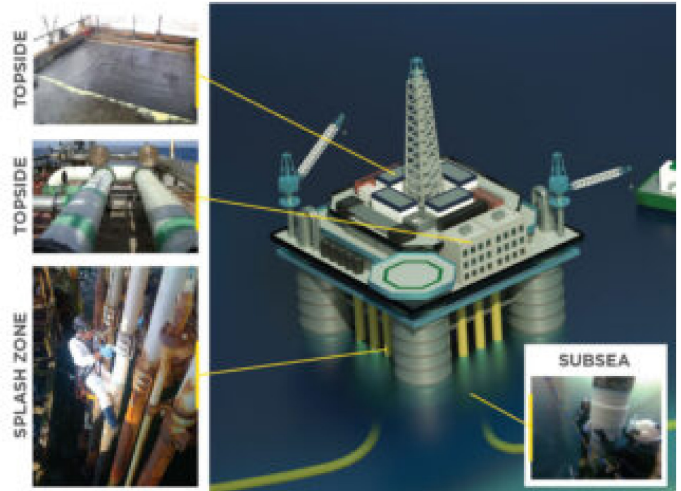
In the demanding environment of offshore platforms and rigs, having a rapid repair option for corroded or damaged piping is critical for safe and successful operation. Composite repair systems have been thoroughly tested by numerous organizations and programs over the years and are proven to be a robust, reliable, and effective method to repair, reinforce, and protect piping systems and pipelines. These offshore industry composite repair testing programs validate composites can be used for Topside, Splash Zone and Subsea applications. CSNRI has continued to work closely with the offshore industry to test and validate the use of composite repairs in the harsh and corrosive offshore environment.



Composites are the perfect solution for offshore repair

As with other oil and gas industry usage, composite repair systems can be successfully used for a variety of defect repair and structural strengthening, as well as for leak containment in through-wall situations.

While composite repairs can be used in **Topside, Splash Zone, and Subsea** areas, they can require variations in design requirements based on specific regulations, usage and/or client requirements. While Topside operates more like process piping systems or refineries, the Splash Zone and Subsea pipelines tend to operate more like onshore transmission pipelines from a requirements perspective. Implementation of a composite repair system in each of these locations requires further engineering design considerations.



Common uses for composites offshore

Composites are an ideal solution for many of the demanding offshore applications because they provide a lightweight, safe, easy to install, and cost effective to deploy solution.

In many instances, the installation team is dealing with hard to access areas which may require rope access or minimal scaffolding, making composites a perfect option. Typical defects range anywhere from mechanical damage (such as anchor drops on subsea lines), to general corrosion issues, to through-wall defects in Topside piping.

Composites as Pipe Protection

While composite systems provide efficient repair options, they are also ideally suited for protection of subsea pipe. A composite system applied for protective maintenance to new or existing lines can help guard against erosion and friction damage that can occur at points where pipe crosses over pipe on the sea bed. They can also provide protection for structural steel work on offshore platforms to prevent collision damage or damage from anchor strikes, thereby eliminating the need for repairs and possible downtime.

Common Repairs:

- Side hull
- Vessel repairs
- GRE lines
- Glycol Heater mediums
- Hypochlorite Dosing systems

- Flare lines
- GRE Lines
- Caisson repairs
- Riser repairs
- Flare lines repairs
- CuNiFe line repairs
- Clamp locations
- Deck penetration
- Closed Drains
- Open Drains
- Calorifiers
- Water injection lines
- Produced water lines
- Produced Oil lines
- Deluge systems
- Cooling and fire water systems
- Deck repair
- Well heads
- Plugging & Abandoning a well
- Helideck net supports
- Splash zone reinforcement
- Subsea repairs

Validated in testing, proven in the field

Extensive programs have been completed on composite repair systems, putting them through rigorous tests to simulate the offshore environment and its demanding requirements. CSNRI has worked to lead those efforts on many fronts, whether it is by participating in JIPs (Joint Industry Projects) or conducting testing for specific needs and clients. Below are some of the various testing programs and studies CSNRI has participated in over the years. Click on the projects below for more information on them or [contact us](#) to discuss in more detail.

- [PRCI MATR-3-6 "Evaluation of Composite Systems for Subsea Pipeline Repairs" \(tested at Stress Engineering Services \[SES\]\)](#)
- [Offshore Pipelines and Risers Test Program by SES](#)
- [Deep Sea Simulation Testing](#)
- [Underwater tests w/ DNV witness ADMA \(UAE\)](#)
- [Underwater tests by clients with PTTEP \(Thailand\)](#)

In addition to extensive testing, CSNRI has been successfully designing composite repairs for the offshore industry for decades and provides support through a rigorous training program designed to ensure the successful installation of the repair system. Combining our composite knowledge with decades of experience allows for a robust support system through training, field support, and consultation services. We have trained rope access technicians, divers, and leak sealing experts over the years, and for even more confidence in your repair, we have technicians and trainers fully qualified for offshore work who can be onsite to answer questions or assist with your repair needs. Visit our [Training & Field Support](#) page to learn more about getting trained and certified on CSNRI repair systems.

Offshore composite repair system learning opportunities

In addition to offering repair design and consultation, CSNRI also provides numerous opportunities and methods for increasing your knowledge about composite repair materials. Whether in-person meetings, industry publications, or online learning events, we are here to make sure your questions are answered. If you would like to learn more, please visit our [TEC talks On-Demand](#) page to see our library of webinars, or contact us to set up your technical meeting or learning event.



On-demand	On-demand	On-demand	On-demand
Offshore Composite Repair Solutions	Deck & Structural Repair with Composites	Addressing Axial and Bending Loads with Composites	Composites and Leak Repair Needs