

Introducing plastic composites as a supplement to steel constructions

Offshore Center Danmark behind development project on plastic composites

FOCUS: Energy Effectiveness

A development project from Offshore Center Danmark that has just been completed and a series of cooperative partners introduce plastic composites as a supplement to steel constructions in the offshore industry. Thus plastic composites can help reduce consumption of materials and use of working hours if for instance used for ladders, railings, walking areas, some kinds of pipe systems and many other things – without compromising safety.

“With our development project we prove that money can be saved by using plastic composites for selected tasks at an offshore installation. Plastic doesn’t have

The development project ‘Plastic Composites as Construction Materials for Offshore Oil and Gas Installations’ has been carried out by the following players:

- Offshore Center Danmark - principal organiser and administrative project coordinator
- Plast Center Danmark - technical project coordinator
- COWI - has performed calculations and construction sketches
- Esbjerg Institute of Technology - has contributed with technical assistance
- Fiberline Composites A/S - has delivered plastic components
- Mærsk Olie & Gas - has installed the final product at a Danish production platform

to be welded, protected against corrosion or painted,” explains project coordinator Morten Holmager, Offshore Center Danmark.

“At a time when the operators in the North Sea are under pressure from politicians to reduce energy consumption and also need to make allowances for the environment, plastic composites can actually be

a politically correct option when choosing construction material,” adds Morten Holmager.

164 saved hours

In the course of the 2-year project period several concrete test tasks have been made – for instance for Maersk Oil & Gas. A planned expansion of a landing on the Dan Field in the North Sea was made in plastic and the result was positive.

“The result was satisfactory. Increasingly, we use plastic, and Offshore Center Danmark’s project has documented that plastic can easily replace steel in some situations. Even though plastic does not have the same strength as steel, it has many other advantages,” explains Michael Erting, Manager of Facilities and Development with Maersk Oil & Gas in Esbjerg. 136 hours were spent mounting the landing on the platform while it would have taken 300 hours to weld a similar steel construction. Moreover, the landing weighed less than half of what it would have weighed had it been made of steel.

Plastic is an option

The aim of the development project has been to come up with some concrete sug-





gestions for the industry how plastic can replace steel and other metals and thereby reduce material costs.

“In the oil and gas industry it’s common to calculate the so-called life cycle costs of a construction; that is, what are the costs if you use for instance plastic instead of other materials, including all processes from the design phase till the day the construction is trashed. In this sense plastic is sometimes better than steel,” says Morten Holmager.

“And today the industry uses costly metals such as copper-nickel alloys and titanium in special constructions. Here you save even more if you use plastic composites,” adds Holmager.

The findings from the project are documented in a report that can be ordered from Offshore Center Danmark.

Experiments indicate that plastic composites often can replace steel. This is an offshore installation in the North Sea where an access platform has been expanded with a plastic construction.

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