



## Vallourec 3D-Printed Lifting Plug Deployed in Timor Sea

# SUCCESS STORY VALLOUREC

### Overview

Vallourec has recently produced 2 lifting plugs using Wire Arc Additive Manufacturing (WAAM) meeting Weatherford's urgent operational demands. The 3D-printed safety-critical components weighed 175kg each with a tailor-made diameter of 50cm and were designed for load carrying applications of around 100 metric tons.

### Challenge - Long lead times and standard sizes

Lifting plugs are safety-critical components designed to act as the junction between the rig elevator and the pipes allowing operators to handle and move long tubular products in a safe and secure manner. Lifting plugs are traditionally made from forged thick-wall bars. Being a safety-critical component used on the surface, these parts require non-standard material with unique mechanical properties which result in

long lead times. As lifting plugs connect with existing equipment, production of customized dimensions is sometimes needed to ensure the compatibility between all components which further extends lead times. In addition, keeping inventory of raw material in non-standard sizes is not cost effective and may generate waste if they end up never being used. All of this leads to urgent deadlines not being able to be met.

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**Shane Ferguson**  
Project Manager for Weatherford

## Solution - A 3D-printed lifting plug designed by Vallourec

When Weatherford approached Vallourec with an urgent request for a VAM® TTR HW Riser Lifting Plug capable of 100T for a customer's workover scope off the coast of Australia, Vallourec proposed a more economical and faster solution using Additive Manufacturing (AM) in order to meet the deadline.

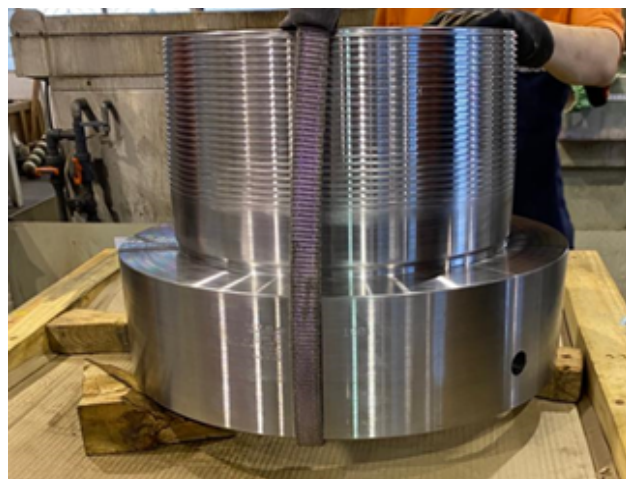
The lifting plugs were re-designed with WAAM to include tailor-made non-standard diameters that were compatible with Weatherford's existing equipment. The lifting plugs' outside diameter (OD) was therefore increased by 15% as per the customer's request. Leveraging WAAM's flexibility, Vallourec was able to mitigate any weight increase by re-designing the component without impacting lifting performances.

These new lifting plugs were 3D-printed with the Vallourec WAAM robot located in Singapore, only a 6-hour flight away from the end-customer. The safety-critical components were delivered in just under 2 months instead of the usual 3 to 4 months.

"We approached Vallourec with an urgent request for a lifting plug for a customer of ours operating in the Timor Sea. Their solution was to use WAAM, a more economical and quicker option to the traditional route", explains Shane Ferguson, Project Manager for Weatherford. "They executed this on time and delivery was made well before operations commenced. We were extremely happy with the finished product and will look to Vallourec and this method for future requirements."

## Benefits/ Results - An overall better-performing component

- Parts can be created to the exact size and specifications of each customer.
- Reduced lead times.
- Concerns related to the unpredictability of material sourcing eliminated.
- No minimum order quantity requirements.



### FIND OUT MORE

To find out more about our Additive Manufacturing processes visit our [website](https://www.vallourec.com).

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[solutions.vallourec.com](https://solutions.vallourec.com)