

EFFECT OF ENVIRONMENTAL FORCES ON OFFSHORE STRUCTURE DECOMMISSIONING OPERATION

OIL, GAS AND MINING TECHNICAL DIVISION

reported by



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An analysis carried out by IHS Markit in 2016 (1) revealed that the annual expenditure of global offshore decommissioning works will increase from US\$2.4 billion in 2015 to US\$13 billion by 2040. This will definitely be a lucrative market that Malaysian companies can tap into. However, decommissioning works are relatively new to the Malaysian oil and gas (O&G) industry. The industry must catch up with the technical know-how in order to tap into decommissioning works.

Realising this, the IEM Oil, Gas & Mining Technical Division (OGMTD) organised a technical talk on Effect of Environmental Forces on Offshore Structure Decommissioning Operation. The aim was to provide an overview of engineering analyses and offshore activities involved in offshore decommissioning work, including relevant codes and standards that must be considered.

The talk on 22 June 2019 at Wisma IEM in Petaling Jaya, Selangor, was attended by 30 engineers. The invited speaker was Ir. Mohd Fakhruddin who has almost a decade of experience working in the offshore industry, including decommissioning work.

Ir. Fakhruddin started his lecture with the background of offshore decommissioning work. In Malaysia, a significant number of offshore platforms were constructed in the 1970s and 1980s; these had passed their design life-cycle and had to be decommissioned.

There are some options in decommissioning offshore platforms. The first is to remove the structure and bring it back to land for material recycling and disposition. A second option is to remove the topsides structure and to place it on the seabed as an artificial reef. For small platforms, the second option is more economical and beneficial to the environment and the talk focused on this second option.

Ir. Fakhruddin then talked about the processes involved to place the topside structure on the seabed. These were:

1. Preparing the topsides: All relevant equipment are removed from the topside structure. A key section of the topside will be cut to prepare it for the next stage, lifting.
2. Lifting the structure in air: A crane vessel is used to lift the structure from its jacket.

3. Lowering to the structure through the splash zone (i.e. sea surface): This is the most critical stage in decommissioning work as the hydrodynamic effect from the sea will come into the picture. Strict control when lowering the topside structure is required to ensure the hydrodynamic effect is within the capacity of the crane.
4. Lowering below sea level: Once the structure is fully submerged, it will be lowered to the seabed.

Ir. Fakhruddin discussed the engineering analyses and the associated design codes that must be considered. In the past, he used mostly DNV design codes. He also explained the design parameters that need to be considered, such as wave height, wave period and wave speed as well as key health and safety aspects that must be considered during the decommissioning operation.

To end the talk, Ir. Shazlan Rahman presented a gift and a certificate to Ir. Fakhruddin as a token of appreciation. Due to high interest from engineers during the talk, IEM OGMTD will be organising a 1-day course on offshore structural decommissioning. ■

REFERENCES

- [1] IHS Markit (29 Nov 2016). Decommissioning of Ageing Offshore Oil and Gas Facilities Increasing Significantly, with Annual Spending Rising to \$13 Billion by 2040. Retrieved 29 Sep 2019, from <https://news.ihsmarkit.com/>



1. Ir. Fakhruddin giving his presentation.
2. Ir. Shazlan presenting a token of appreciation to Ir. Fakhruddin.
3. Engineers who attended the talk.