Asset Integrity Management at a Glance

ASSET integrity is the ability of the asset to perform its required function effectively and efficiently whilst safeguarding life and the environment. Asset integrity management, on the other hand, ensures that the people, systems, processes and resources which deliver the integrity are in place, in use and fit for purpose over the whole lifecycle of the asset.

To grasp a better understanding of its importance, Jurutera met up with En. Sofiyan bin Yahya, President of the Malaysian Oil and Gas Services Council (MOGSC); En. Mohamed Hussain bin Md. Kamil, who heads the Asset Integrity Management Working Group at MOGSC; and Ir. Rozali bin Ahmad, president of the Association of Malaysian Oil and Gas Engineering Consultants (MOGEC).

Sofiyan began by explaining that, unlike other industries in Malaysia, the oil and gas industry is homogenous. As such, every player from the industry subscribes to the same global standard. He said, "This makes the workers in the oil and gas industry very exportable. That is why they are in high demand from oil producing countries such as Qatar and other countries in the Middle East."

As far as the industry players are concerned, Mohamed Hussain pointed out that, "The main focus of oil and gas production companies is to maximise the returns of their assets, especially the platforms. The best way to do that is by coming up with a system to ensure the maximum lifecycle of their platform."

For example, he explained that multinational companies such as Petroliam Nasional Bhd (Petronas) focus on minimising downtime to maintain its production schedule. This is crucial as Malaysia produces about 600,000 barrels of crude oil per day. Having an asset integrity management system in place can help avoid any shutdown or equipment failure and maintain the level of production.

Ir. Rozali bin Ahmad

This is in line with the objectives of the Asset Integrity Management Working Group at MOGSC, which are to collaborate and promote the development of asset integrity management in the Malaysian oil and gas industry towards maximising return on facilities or assets while maintaining stakeholder value.

Sofiyan stressed that asset integrity management is very important as the nation relies on the oil and gas industry players to boost the current production level. He said, "Under the Economic Transformation Programme, the level of crude oil production has been targeted to an increase of 700,000 barrels a day. This means that not only must the asset be in tip top condition, the industry players must also create new ways of extracting more oil."

In order to do so, Ir. Rozali said, "These asset owners have to ensure that their assets are well maintained for the entire lifecycle of the assets, which is about 20 to 30 years. This can only be achieved by having a maintenance system in place to maintain the assets."

He added that, "As part of the standard maintenance practice, local oil and gas platforms conduct a scheduled yearly maintenance check and audit. The platforms are shutdown for about two weeks for inspection and rectification work. If any problem arise, it has to be rectified within this timeframe."

Mohamed Hussain concurred, saying that, "When a proper asset integrity management system is in place, asset owners can maintain their assets in accordance to the system. This helps them to plan the right time for a scheduled shutdown. With such a plan in place, they can maximise the productivity of their platform." In addition, by optimising the inspections activity using the risk approach, this will allow asset owners to eventually extend the remaining life of their facilities.

Mohamed Hussain, who is also the Business Development Manager – INY (Oil and Gas) at Bureau Veritas (M) Sdn Bhd, pointed out that companies such as Bureau Veritas, which has significant experience in asset integrity management for leading international oil and gas companies globally, assists the latter in developing their asset integrity management program. These programs include:

- Asset care and corrosion control strategy
- Structural inspection strategy (Structural Integrity Management - SIM)
- Subsea pipelines, topside equipment (static) integrity strategy (RBI)
- Rotating equipement integrity
- Safety Integrity levels (SIL)
- Lifting appliances and safety system integrity

He said, "From the audit, we will collect data which will be keyed into the software. This software will then predict with good accuracy the occurrence of the next failure, and when an asset owner should maintain their equipment before it fails. It is important to note that the accuracy rate depends on the data, so the accuracy will improve when more accurate and reliable data is available for analysis."

Mohamed Hussain explained that the consultants look at different types of assets including the physical structure element such as the jackets, topside, walkway, ladder and well. He stated that such audits are very detailed as asset integrity management is multi dimensional.

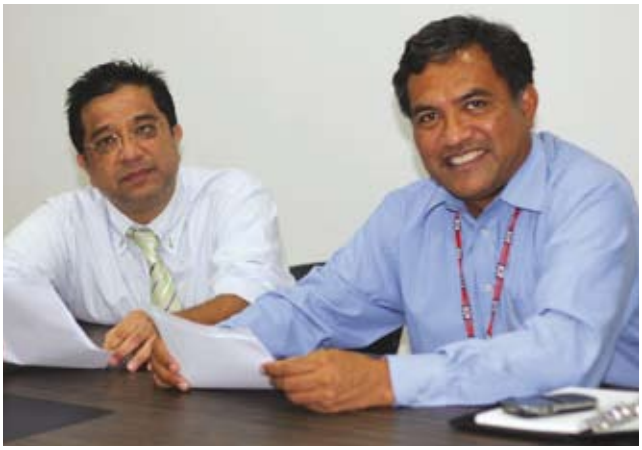
Ir. Rozali pointed out that, "Failure in maintenance can cause a disaster or even a big loss to the asset owner. If the system is not well maintained, the platform may have to halt production. This creates a big impact as every platform is capable of producing millions of barrels."

He added that a shutdown is very costly as it interrupts the production and supply of oil and gas to the domestic or international market. The consequences will have a cascading effect on the consumers as they may suffer supply shortage.

Sofiyan stressed that when a breakdown occurs on an oil platform, the situation can become very dangerous. For example, in December 2010, six offshore oil rig workers were injured when a fire broke out at a platform that was undergoing a scheduled shutdown for maintenance. He said, "Besides affecting productivity, asset or equipment can also cause injuries or even fatalities. As such, asset integrity also has a direct relation to human safety."

He added, "The disaster at Deepwater Horizon is another example of the consequences of not looking after your assets. Because of that incident, the global oil and gas industry is currently reviewing and upgrading the standard to ensure that such a disaster will not repeat itself in the future. The fact is, Malaysia has also been affected by the incident at Deepwater Horizon. However, few outside the industry realise this."

According to Ir. Rozali, there have been several disasters in the past. For example, a worker was injured when a fire broke out on an oil platform off Argentina's South Atlantic coast last year. In another incident, a fire and an explosion on an oil rig in the Gulf of Mexico off the state of Louisiana in the United States in April 2010 killed 11 people and caused massive ecological disaster as oil spilled into the water for months.



En. Mohamad Hussain bin Md. Kamil (left) and En. Sofiyan bin Yahya

Fortunately, according to Mohamed Hussain, asset integrity management is widely practiced among oil and gas companies in Malaysia as well as around the world. He added that, although each oil and gas company have their own methodology and approach, the end result is always the same as most of these companies refer to the guidelines provided by the American Petroleum Institute, the American Society of Mechanical Engineers or other applicable internationally acceptable standards widely used in the oil and gas industry.

Ir. Rozali also pointed out that the oil and gas industry in Malaysia has been established since 1974. With almost 40 years of experience, the industry has spent a lot of effort to learn from industrial experience and adopt good asset integrity management practices.

Sofiyan said, "So far, Malaysia has been able to maintain a good track record in terms of maintenance. In spite of that, accidents can and do happen. This goes to show just how important asset integrity management is and the fact that there can never be enough of it." ■