WALK TO WORK TECHNOLOGIES

By Dr. Wei Huang

Traditional safety technology designed to help personnel transfer between vessels and offshore facilities is finding new applications as demand for more renewable forms of energy and aquaculture products gathers pace.

Euphemistically known as 'walk-to-work' technology, the equipment and systems were originally designed to help workers and service technicians safely transfer onto and off of offshore assets, which were increasingly moving into deeper water and harsher environments.

With demand for lower-carbon forms of energy increasing demand for renewable power, the booming offshore windfarm market presents a new opportunity for a safe, flexible, and proven system for transferring service personnel.

Although the offshore wind sector is still comparatively small – it provided about 0.3% of global power generation in 2018 – development is booming.

A recent study by the International Energy Agency (IEA) predicted that the 150 new offshore wind projects currently being developed globally would see the sector's power generation grow 15-fold in the next 20 years, becoming a $1-trillion industry.

Construction and operation of these projects will require the delivery of specialist experts on a variety of support vessels, including jack-up construction units, survey vessels, service operation vessels, cable-laying ships and crew transporters.

Once in operation, regular maintenance work will require even more industry personnel to be safely transferred between a variety of marine assets, and potentially in inclement weather conditions.

Modified versions of today's walk-to-work technology are also being applied in the territorial waters of countries such as Norway, Scotland, Chile, and China, where expanding offshore fish farms are creating a new market for mobile gangways. To serve these assets and systems, worker access may be required in multiple locations, and in challenging marine conditions. Walk-to-work technology – which generally takes the form of a telescoping gangway system – started on offshore production platforms. It was created to improve the safety performance and cost-effectiveness of transferring personnel by basket, ladder or helicopter, methods that may be unsuitable when space is limited, or when the weather becomes more severe.

The modern gangway system, which often utilizes a motion-compensation arrangement to fix its position relative to the wind turbine, allows it to operate safely in almost any weather conditions within the operational profile.

These relatively complex systems require specific safety measures, which need to be accounted for when applying for class approval. A Register for Offshore Access Gangways needs to be maintained on-board the transfer vessel, where the technical data for its design, maintenance history and certification documents need to be kept to support these activities.

Items that need to be reviewed can include: the landing mechanism; the landing device and its supporting structures; the emergency release; lashings and shock-absorption systems, any protection for the landing area; and any motion-sensing apparatuses.

Reviews are also required for emergency systems such as those that support: the recovery of the gangway system, if it loses power; redundancy of hydraulic systems and rotating machinery; and the provision of alarms, monitoring and fire protection.

Compliance appraisals of the motion-compensation system cover both passive and active motion units. For an active-motion compensation system, safety requirements focus on the adequacy of redundancy design, motion sensing and monitoring, and assessments of structural strength.

A risk assessment of the gangway operation needs to be submitted for approval. This process can include the use of Failure Mode Effects and Criticality Analyses to assess the complexity of the gangway systems (especially those that compensate for active motion) in each phase of operation. This is to verify that enough consideration has been given to the potential failure of critical components and that sufficient redundancy is available

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when those components are found not to be failsafe.

ABS has carried out several recent approvals for gangway installations from the three main original equipment manufacturers. The systems were assessed in accordance with the ABS Guide for Building and Classing Offshore Access Gangway.

As more types of marine assets move into deeper water, and greater distances from shore, personnel transfer systems are evolving to suit changing safety requirements. Today's advanced offshore access systems no longer need to be permanently attached to an offshore platform. When the conditions at sea change rapidly, the system can be shut down and stowed, and the vessel can move off station, away from potential problems.

As more companies discover the benefits of using walk-to-work technology, classification societies have the responsibility to create and adapt guidance to help the offshore industry maintain safe operations.

Ampelmann's E1000 a system for lifting heavy loads offshore safely and efficiently. **Source: Ampelmann**

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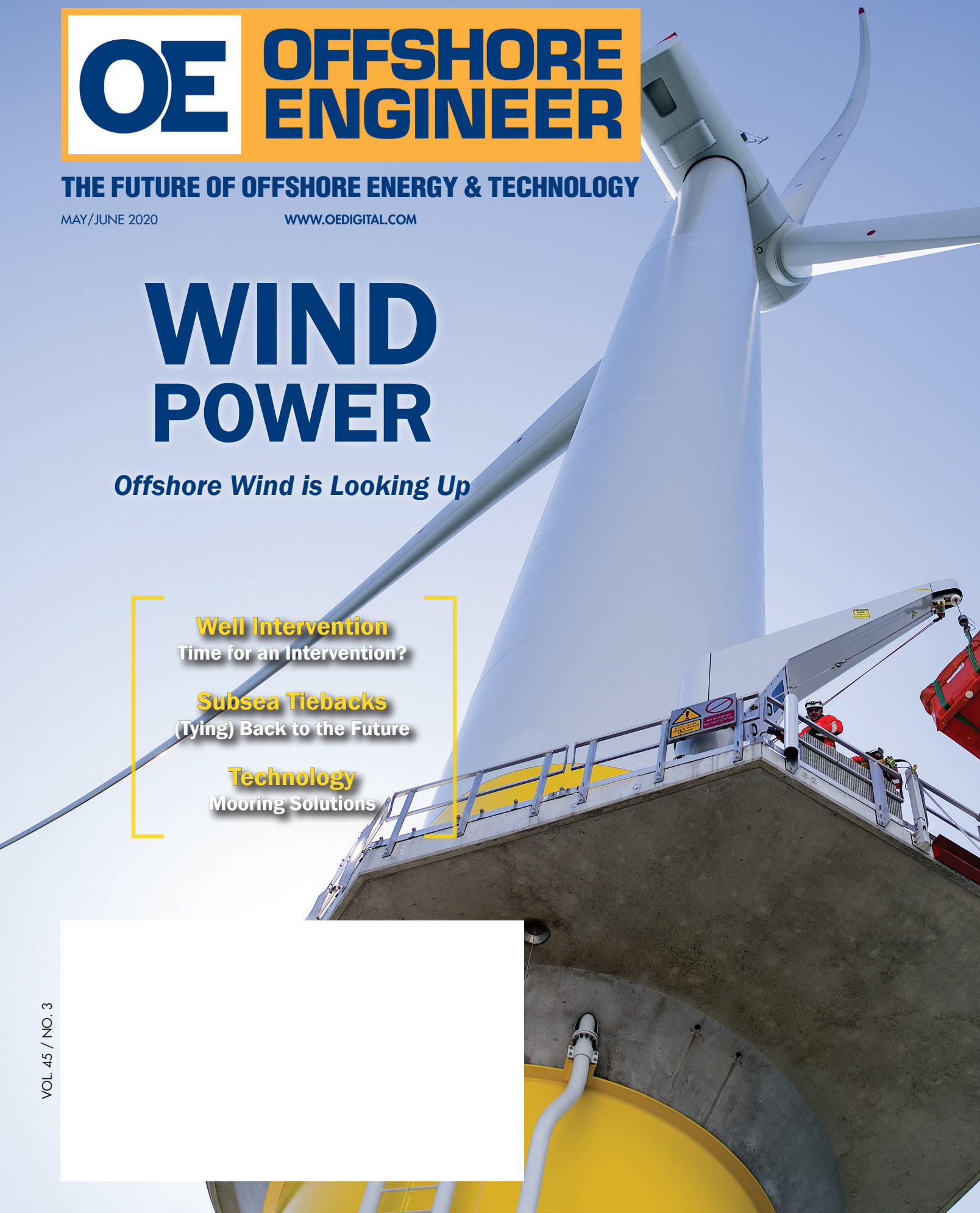

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