

Building a Platform for Safe Landings

Ensuring Safe Offshore Helideck Operations with Weather-Monitoring and Motion-Measurement Technologies



Summary

- Weather conditions have a critical impact on offshore operations
- Helicopter flights are one of the biggest risks for offshore workers
- Global standards as the CAP437 for helideck landing areas are regularly updated to incorporate new recommendations
- Helideck monitoring system provides real-time data on prevailing weather

Weather conditions have a critical impact on all offshore operations, and on helicopter traffic and helideck operations in particular. Hundreds of take-offs in severe weather conditions happen all the time as most operating companies rely on helicopters to transport their crews sometimes hundreds of kilometers out to sea. Installations in the North Sea or Brazilian deep waters, for example, run over 100,000 flights a year, often in difficult flying conditions like fog or darkness, at an average cost of \$1,500 a passenger. Because these flights are one of the biggest risk factors facing offshore workers, accurate and reliable environmental monitoring is a vital tool for ensuring safety and efficiency – especially as helicopter fleets and flying hours have doubled in the last six years alone.

Hundreds of Take-Offs in Severe Weather Conditions

Encompassing a range of different meteorological and motion parameters, a good helideck monitoring system (HMS) is essential for providing real-time data on prevailing weather conditions, as well as reporting tools, data storage, and critical alarms. Reliable monitoring systems enable operational decision-making based on hard data rather than intuition alone. The highly changeable conditions at sea make helicopter operations particularly challenging.

Keeping Pilots Fully Informed

As pilots prepare for the flight, they receive a report from a helideck landing officer (HLO) on the platform an hour before take-off. Data gathered from networks of automated weather stations provides information on parameters such as cloud height, visibility, weather, and wave conditions. The same parameters are also measured in the immediate vicinity of the helideck using a variety of specialist sensors. Up-to-the-minute weather data is a critical input to the flight-planning process.

Although pilots are trained to fly in fog and darkness, flying conditions are more difficult in a reduced visual-clue environment. This type of data is important pre-flight information, giving pilots an accurate picture of conditions and helping them prepare mentally for flying in reduced-visibility conditions.

The combination of wind and motion experienced on helidecks is potentially hazardous, and in extreme conditions there is a significant risk of a helicopter being tipped overboard. As they land, helicopter pilots must navigate very close to installations affected by wind turbulence, turbine exhaust, and gas vents. Monitoring wind speed and direction is therefore crucial. To support safer flight operations, helideck monitoring systems also offer optional helideck motion measuring equipment with the capability to calculate the helideck acceleration, inclination, and heave. Sensors are mounted directly under the helideck center or below the helideck. As the helicopter approaches, the pilot checks the landing conditions from the HLO or



automatic voice radio provided by the HMS.

Rapid changes in temperature, humidity, and dew point affect different types of helicopters in different ways, and pilots also use this data when assessing the safety of their approach and landing. For example, as water vapor condenses, the air changes density and affects the helicopter's rotor lift.

Classified Helicopter Landing Area is Your Best Safeguard

A comprehensive review of offshore helicopter operations, undertaken by the UK's CAA, Norwegian regulators, and the European Aviation Safety Agency, was prompted by the Super Puma incident in August 2013, in which four people lost their lives on a flight to Sumburgh from the Borgsten Dolphin rig in the North Sea. Although the direct impact of weather has so far not been concluded in the investigations, the stricter safety controls proposed will include a ban on flying in the most severe weather conditions, changes to the way pilots are trained, and

a requirement for the regulator to approve each helideck for safe operation.

The globally recognized standards for classifying helicopter landing areas, the CAP 437 Standards for Offshore Helicopter Landing, are maintained by the CAA and are regularly updated to incorporate new recommendations based on evolving technologies and the latest research.

Safer Flights and Less Costly Delays

Helideck monitoring systems provide accurate weather and helideck motion data to help operators avoid costly and frustrating delays and support safer flight operations. They provide real-time information on parameters such as barometric pressure, cloud height and coverage, wind speed and direction, air temperature, dew point, relative humidity, horizontal visibility, and motion. The best examples are also fully compliant with the UK Civil Aviation Authority's CAP 437 guidance for helideck classification, relevant ICAO regulations, and World Meteorological Organization recommendations.

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