



# Inline Active Heave Compensators and Shock Absorbers

**Mastering Dynamics in Offshore Wind installations:**  
Boosting Safety and Efficiency in Heavy Lift Operations

Increase uptime – Increase safety – Reduce emissions – Reduce costs

**SAFELINK**

[safelink.no](https://safelink.no)



# IAHC removes dynamics

## Features of the inline active heave compensator

The Inline Active Heave Compensator (IAHC) is a hook-based, self-contained, mobile system offering a high degree of flexibility without requiring permanent installation on a vessel. It operates autonomously but can be set up, controlled, or overridden via a handheld tablet with wireless communication redundancy.

- **Controlled quick lift**
  - Feeder vessel operations have a significant risk of re-hit between payload and vessel. The solution is our controlled quick lift system.
  - Controlled quick-lift with both manual or automatic trigger.
  - Fastest possible lift with "S-curve" motion within the acceptable dynamic load (DAF) criteria.
- **Constant tension**
  - Constant tension which keeps load fluctuations at a minimum while connected between vessels to avoid accidental lift-offs and large dynamic forces on the crane, rigging and payload.
- **Active Heave Compensation**
  - Ensures smooth lifting and landing by actively countering vessel motions.

The IAHC solution provides active motion compensation for all types of structures, regardless of geometry

or mass. The system is scalable and capable of handling lifts for any Safe Working Load (SWL). Additionally, motion can be synchronized between two moving objects, enabling floating-to-floating operations.

All Passive Heave Compensator (PHC) functionalities are available.

## Safelink's hook-based inline active heave compensators increase uptime, increase safety, reduce emissions and reduce costs:

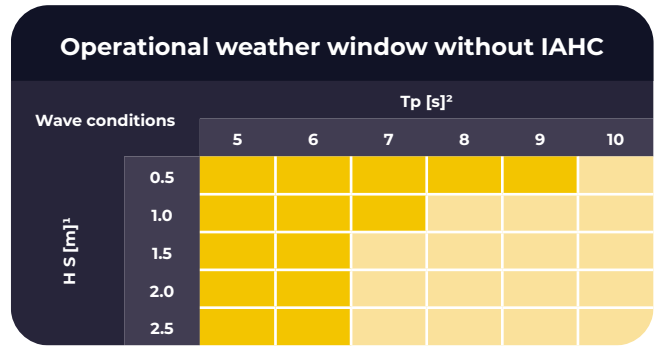
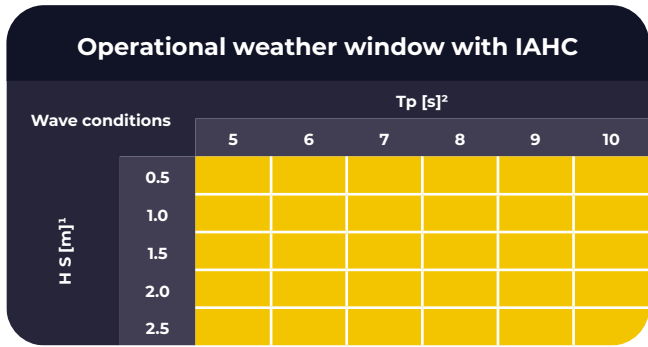
- Providing position and velocity compensation with input from MRUs.
- 95% motion and velocity reduction.
- Extends operational weather window by more than 50%.
- Allows floating-to-floating, floating to fixed and fixed-to-floating operations.
- Capacity to handle all lifting operations, including next-generation mega turbines for offshore wind.
- Integration with Internal Lifting Tool controls can optionally be supplied.

## Proven technology

- Two IAHC-units is built and fully operational.
- World's largest IAHC 1250 t in full operation.
- More than 100 IAHC lifts done with success.



Case study: Dynamic analysis, wind installation vessel with 2 300t IAHC

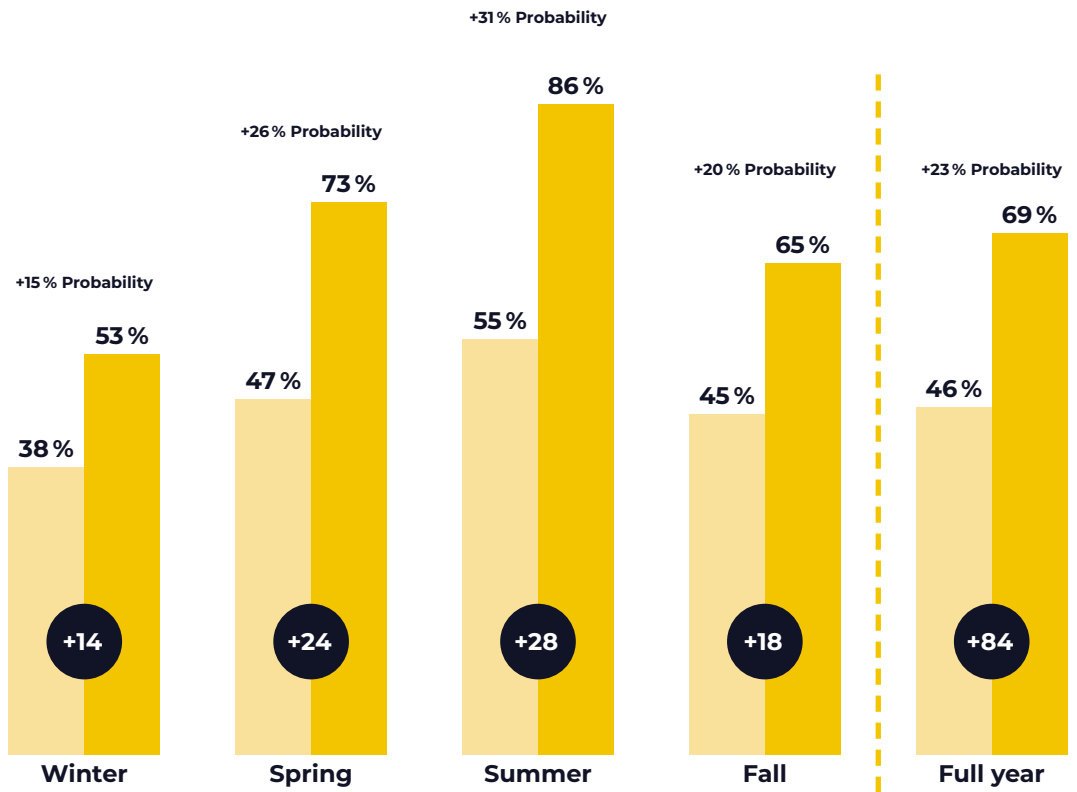


<sup>1</sup> Significant wave height

<sup>2</sup> Wave period (spectral peak period)

### Significant increase in installation probability with IAHC

Installation probability (%)



Annual gain in uptime: **84 days** × Average WTIV day rate: **USD 180-200,000** = Annual cost saving for project owner: **USD ~15-24M**



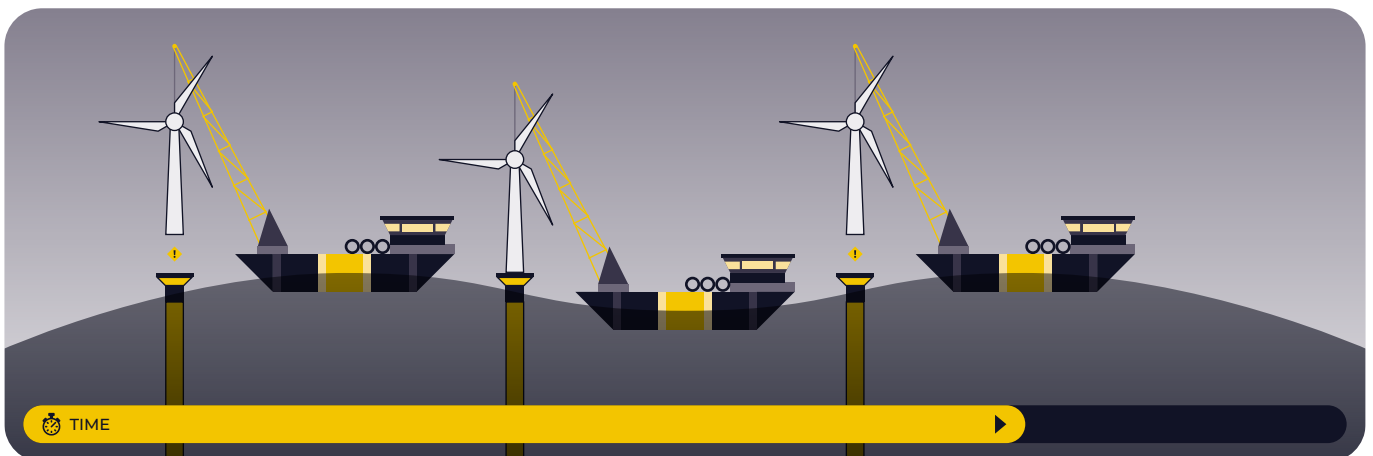
### The challenge

Offshore wind installation is 20 % more expensive than onshore wind installation per GW installed<sup>1</sup>

The average downtime for offshore wind installation vessels is estimated to be 20-30 % of the installation period's duration<sup>2</sup>

<sup>1</sup> [Renewable power generation costs in 2022](#)

<sup>2</sup> [Offshore wind projects delays during construction](#)



**!** Offshore wind farms are built in areas with strong wind, creating wave forces

**!** Strong forces endanger people, crane, lifting objects and vessels

**!** When forces are too strong, the vessel goes into downtime

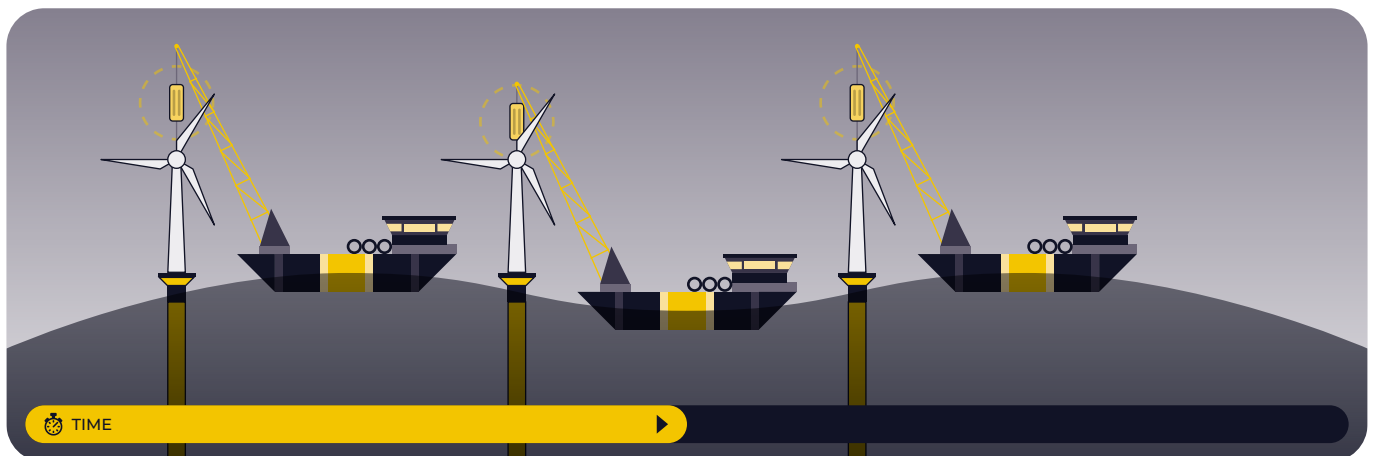
**!** Downtime increases the project costs, and affects the vessel availability



### The solution with inline active heave compensation

With an inline active heave compensator, the weather window can be extended by up to 50 %

Active heave compensators are the solution to one of the most pressing operational challenges in offshore wind installation



- ✓ >95 % motion and velocity reduction
- ✓ Can extend the operational weather window by 50 %, yielding cost and emission savings
- ✓ Ensures safety of the workforce, equipment and vessels
- ✓ Increases vessel availability



# Sustainability

Safelink contributes strongly to the global green shift and provides high-quality, certified products. Sustainability policy well aligned with [UN Sustainable Development Goals](#).

## Safelink's IAHC is a perfect match for the energy transition

The green energy transition is the leading global priority.

Offshore wind is an important contributor to green energy, and large-scale development of offshore wind energy is therefore underway all over the globe.

Ambitions are high, and installation speed and cost efficiency are crucial when developing offshore wind fields. Safelink's inline active heave compensator (IAHC) is a perfect match for these ambitions.

Read more about why in the Industry White Paper ([Feeding the Beast - Optimising the Supply Chain for Offshore Wind Installation](#)) by Hans Simons.

## Certifications



## 7 AFFORDABLE AND CLEAN ENERGY

Safelink is committed to powering a sustainable energy transition through our projects, by substantially increasing the share of renewable energy in the energy mix.

## 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Safelink shall push the development of technological solutions to recognize and decrease environmental impacts from the offshore wind industry.

## 12 RESPONSIBLE PRODUCTION AND CONSUMPTION

Safelink shall contribute to sustainable use of the ocean by reducing our impact on the environment and nature. Safelink shall work systematically for health, safety and well-being, strive for zero harm and continuous improvement throughout the value chain.

## 13 CLIMATE ACTION

Safelink aims to drive the development and implementation of technological solutions to reduce environmental effects from the offshore wind industry. Safelink shall systematically work to reduce its climate risk exposure.

## 17 PARTNERSHIPS FOR THE GOALS

Safelink bases its decisions on best-available science and knowledge, by being part of partnerships that share knowledge and expertise.

# Shock Absorbers

Safelink's line of shock absorbers with innovative valve technology is designed to enhance pile hammering safety while maintaining a small footprint and weight. These shock absorbers are the most efficient and cost-effective solutions available, featuring a user-friendly interface for setup, maintenance, and post-processing of data. The units can be used continuously without any downtime for charging and restocking the fluids.

The new line of shock absorbers is built for the next generation of hammers!

## **Unmatched Shock Absorption Performance**

Thanks to advanced valve technology, these shock absorbers achieve very high efficiency compared with standard models. This significantly reduces the required stroke length, improving overall performance.

## **No Manual Adjustments**

Unlike conventional shock absorbers, Safelink's design eliminates the need for manual gas pressure or valve setting adjustments, streamlining operations.

## **Touchpad User Interface**

Setting up, maintaining, and retrieving data has never been easier. The operator gets clear feedback and indications on system status and checklists without manual work.

## **Built-in Piston Rod Locking**

For operations with reduced lifting height available, piston rod locking is included as a standard feature, allowing the stroke to remain fully retracted during critical steps of the operations.

# Quick-Lift Units

All our units can be equipped with quick-lifting functionality. This is very useful in cases where additional lifting speed is needed, such as heavy lifts from a barge. The quick-lift system can provide an extra boost to lifting speed.

Lifting a payload from a barge or other floating object can cause a sudden tightening of the rigging due to speed differences between the payload and the crane hook. This sudden tightening can cause a large dynamic shock that might harm the crane, the rigging, or the payload. Using a PHC or IAHC will reduce the dynamic load to a much lower and safer level by safely increasing the tension level.

## **Highest Performing Lifting**

The fastest possible lift with "S-curve" motion remains within the acceptable dynamic load criteria. The onboard control system allows for an optimal time for lifting and lifting as quickly as possible within the criteria provided.

## **Versatile Quick-Lift Functionality**

The quick-lift system operates seamlessly with any payload within its range, with adjustable retraction speeds controlled via software. This eliminates the manual adjustments often required by competing products.

## **Improves Deck Safety and Efficiency**

The quick-lift function enables safe retrieval of payloads, even in challenging conditions where slow crane lifting speeds might otherwise result in contact with a heaving barge deck. Its ease of use and high operational capacity contribute to smoother workflows and a more productive day for the deck crew.





# Service engineers and user interface

## Onshore and Offshore Service Support

Our highly qualified service personnel are ready to assist both onshore and offshore.

At Safelink, all of our solutions – both hardware and software – are designed with a strong focus on usability. While our solutions are delivered with comprehensive instructions and typically do not require offshore support, we understand that some operations may benefit from additional assistance.

Upon request, our highly skilled and trained service personnel are available to accompany our equipment offshore, providing setup support and operational assistance as needed.

## Services Offered:

Our service personnel are equipped to handle a wide range of tasks, including:

- Mobilization and demobilization activities
- Providing training and instructions for personnel
- Equipment setup
- Offering assistance during operations
- Conducting installation analyses
- Performing maintenance

## User interface

The user interface can be adapted according to the operator's specifications and requirements.

The handheld operator tablet computer may be used for the following actions:

- Lift setup
- Preparation
- Quick-lift control
- AHC control
- Compensator characteristic changes
- Process overview of all system parameters
- Other items
  - Retrieve data logs
  - Trend monitoring



# About Safelink

Safelink is an innovative engineering company with an established footprint and track record within the global offshore industry

We supply hardware, software and engineering solutions for offshore lifting operations. Our solutions target dynamic challenges throughout the entire lift – from topside to subsea installation.

We remove dynamics and specialize in delivering state of the art active and passive heave compensation solutions and shock absorbers for sales or rental.

Whether your challenge is standard or complex - our range of units will cover it. We like to say that our possibilities within active and passive heave compensation are limited only by one's imagination.

Our self-contained, hook-based inline active heave compensator (IAHC) and passive heave compensator (PHC) solutions are applicable to all marine lifting operations – from oil & gas, offshore wind, to salvage operations.

Our team of highly skilled engineers enjoy new challenges and take pride in delivering nothing but excellent performance.

Our head office is in Telemark, Norway with a global presence across key offshore regions. Our team has more than 12 years of experience in the design, manufacturing, testing and analysis of heave compensation solutions.

- Highly experienced and specialized engineering team
- More than 100 units built
- More than 2000 lifts completed without LTI
- World's largest IAHC 1250t in full operation
- Two of the world's largest shock absorbers, built in 2024
- 18 patent families across 15 countries

## **Our hook-based inline units are ready for different dynamic challenges**

Since 2012, Safelinks' mission has been to develop effective technological solutions to the challenges posed by lifting operations in harsh, dynamic offshore environments.

With more than 100 units built, we have gained unique insights into how our equipment can improve efficiency, enhance profitability, increase safety, and reduce emissions during heavy lifts in rough seas. Our IAHC units will increase the operational weather window.

Our extensive expertise and years of experience have led to the development of active heave technology specifically designed for offshore wind installations, as well as the adaptation of shock absorption technology for use in pile hammering.

Today, we offer solutions for a wide range of offshore lifting operations, including heave compensation and shock absorption, with lifting capacities of up to 3500 tons.

**SAFELINK**



# Get in touch

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