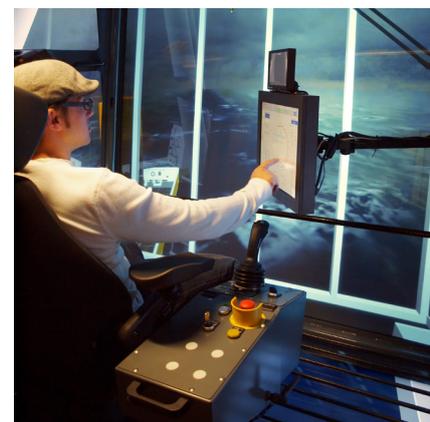


Offshore, Advanced Load Handling

# C-How offshore simulation platform



TECHNICAL INFORMATION

# C-How

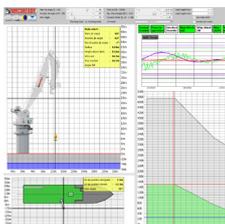
# C-How - better information earlier in a project can benefit your systems, operations and crew, wherever they are.

Simulation technologies are becoming standard in the offshore industry. At MacGregor, we rewrite the standards to take into account operators' needs and to offer a range of simulation packages that can optimise equipment effectiveness, while enhancing safety and operational efficiency.

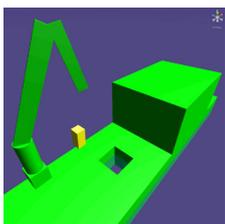
**C-How** is MacGregor's new simulation platform that allows users to run equipment through various simulated conditions and operations. The software is extremely flexible and simulation detail can be varied and upgraded depending on the level of functionality required. Its multi-purpose applications offer numerous benefits at every stage in a project; from concept studies, design and operational planning to crew training, and for modifications and upgrades.

C-How is modular and scalable, so additional equipment and new operational scenarios can be added or removed. It is not limited for use with MacGregor equipment and can be tailored for use with products from other manufacturers.

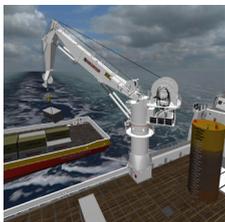
## C-How - system design, visualisation & experience



Once the vessel, systems, component interactions and their control systems are defined, real-world physics can then be applied. Boundaries and logic are established and variables are defined for implementing the development of numerous operational scenarios. MacGregor's mathematics, physics, and mechanical, hydraulic and electrical engineering libraries enable it to assemble scenarios that accurately reflect the interactions of the 'real' system.

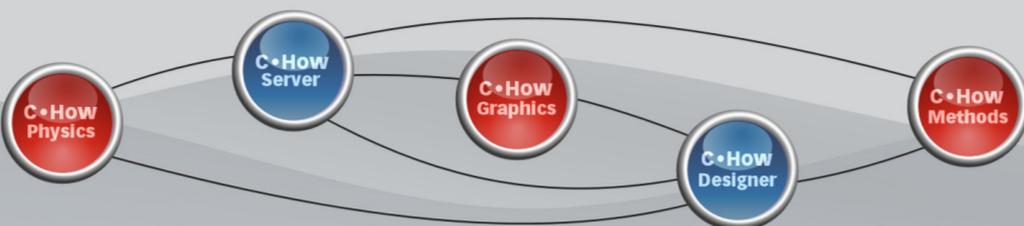


The environment and all system components are visualised using simple shapes and volumes. Movements and interactions between all visual elements, which are calculated at the starting phase, are visualised with virtually fluid motion. The model's parts can be realistically moved and manipulated to illustrate all equipment in operation.



Accurate vessel, equipment and load models are added to the simulator environment. Sea surface, seabed and other parameters can also be included to accurately illustrate the system in a 'real-world' environment. This level can be expanded with additional views including administrator controls for trainers, diagnostics and log reports.

# Greater than the sum of its parts



## Scale your C-How simulator package to suit **your** needs

C-How is a flexible simulation platform that can be tailored to specific customer requirements. All C-How packages are configured for further vessel layout and scenario development. The simulator platform can be installed to run on different hardware setups. C-How software is designed for easy upgrade packages that offer the user possibilities ranging from a basic planning and testing tool to a full-scale operational training experience.

### Planning & Testing tool

As a **basic** package, C-How can be used as an interactive calculation tool, fed with parameters such as loads, lifting radii, and wave accelerations. These generate the required data for planning and testing equipment performance and operation, along with planning special lifts and designing various operating scenarios.

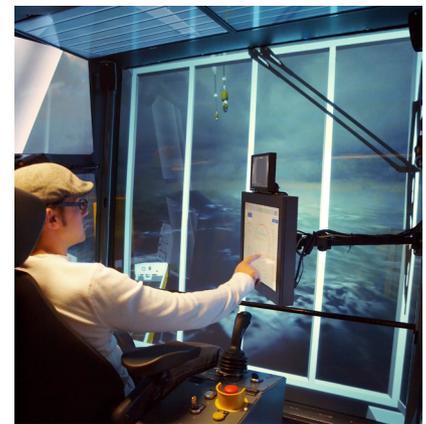
The complete simulator software, including an integrated control system, is delivered on a high-end workstation and is configured for use with a touch screen and a wireless gamepad.



### Training experience

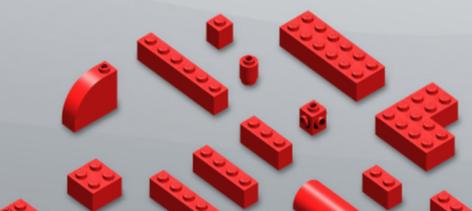
As an **intermediate** package, a complete simulation platform, developed from the basic set, is integrated with additional hardware to offer the user a much more realistic experience. This package is delivered with two high-end workstations, a wireless gamepad, two touch-screens and a standard operator's chair.

As a **full-scale** package, the entire simulation platform is incorporated in an advanced simulator to offer the user immersive operator training. To ensure a real-world experience, this package is delivered with a standard operator cabin, chair and associated features, 16 LCD screens, a PC and touch-screens and a wireless gamepad.



The simulator can be built and delivered as a fixed station at client's facility or as a mobile unit, contained in a 20-ft container with a full crane cabin environment, trainer station, cooling system and a viewing area.

- **Physics** - Calculates the more complex mechanical aspects of the physical world – including motions, collision-risks and forces – in a 3D environment.
- **Methods** - Physical, mechanical, hydraulic and electrical system simulations can be combined so that all data can be used for advanced calculations and play-back in real-time.
- **Graphics** - Loading and display of 3D/2D graphics, manipulation of the scene in real-time, multiple screens or PCs.
- **Designer** - Used to create 2D user interfaces to help visualise what is happening in the previous simulator blocks.
- **Server** - A common pool of data for different parts of the system; this enables distributed solutions across multiple computers.



# Benefits on all fronts

C-How provides relevant data for a wide range of conditions or design setups when physical systems cannot. MacGregor's simulation platform gives owners and operators better information earlier in a project, along with the ability to explore numerous possibilities from any location and without risk.



## Design, safety & risk

- Quicker concept testing and design layout, along with limitless scenario testing
- Relevant performance testing of component combinations
- Immediate availability of strength calculations, accelerations and forces
- Live-mode and real-time operational data
- Define safe operational envelopes: push equipment beyond its design limits to pinpoint potential failures
- Quicker verification processes and collision testing
- 'Black box' analysis
- Contingency planning
- Quality control management

## Operational management

- No impact on equipment, vessels, operational plans, ongoing work or equipment maintenance
- Improved performance and safety for crew, equipment and the vessel
- Multi-function availability
- Simulation toolbox can be modified to keep pace with equipment throughout its lifetime

## Training

- Simulations and scenarios designed for specific training needs
- Save and review operational sequences
- Reduced training time and self-paced learning
- Easily-accessible widespread crew training

## Sales & marketing

- Presentation tool that allows ship owners and operators to demonstrate a vessel's operational functionality and capabilities



Lloyd's Register Quality Assurance certifies that the Quality Management System for Cargotec Marine is ISO 9001:2008 compliant.

MacGregor is the world's leading brand of engineering solutions and services for handling marine cargoes and offshore loads. MacGregor products serve the maritime transportation, offshore and naval logistics markets, in ports and terminals as well as on board ships.

Our cargo flow solutions integrate cargo access, stowage, care and handling functions to suit a particular ship's cargo profile. This benefits its productivity, environmental impact and profitable service lifetime. [www.macgregor-group.com](http://www.macgregor-group.com)

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