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**Press release**

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# MAN CEON TechGuide Introduces First Augmented-Reality Maintenance Platform

## New maintenance app represents new generation of instructional material

MAN Energy Solutions has developed a new generation of instructional material with augmented reality and featuring a mix of different multimedia. MAN CEON is MAN Energy Solutions' umbrella brand for all its digital products.

Augmented reality provides a new way to give intuitive instructions and guidance on-site and on demand. Using mobile devices or head-mounted displays, TechGuide enables engineers to use their preferred learning style on a job, whether through 3D-models, animations, video, to have instructions read aloud or to browse a pdf. MAN Energy Solutions believes MAN CEON TechGuide to be unique within interactive engine documentation in the industry.

Per Hansson, Head of Digital and Strategy at MAN Energy Solutions, said: "We foresee great benefits for our customers in the digital transformation of technical documentation. Thanks to the rapid development of information technology, MAN CEON TechGuide facilitates an intuitive documentation solution aimed at the safe and fast execution of maintenance and troubleshooting, and will further optimise the availability of our customers' vessels."

Hansson added: "Technical documentation needs to be available on the platforms preferred by the modern generation of marine engineers and shipowners. Augmented reality is nowadays a proven and intuitive technology that makes it easy to deal with increasingly complex maintenance-procedures. That is why we at MAN Energy Solutions have embraced digitisation: our clients will benefit from the state-of-the-art support platforms and applications in the form of optimised maintenance procedures. We believe MAN CEON TechGuide will prove to be indispensable for our industry partners."

Currently, MAN CEON TechGuide is being tested aboard a number of bulk carriers owned by Singapore based Berge Bulk, one of the world's leading independent dry bulk owners. MAN CEON TechGuide is connected to the owner's fleet maintenance and management system. When a maintenance job has been completed using the MAN CEON TechGuide, the information is automatically uploaded to the owner's system via Wi-Fi in the engine room, simplifying administrative procedures.

Dr. Lars Gruenitz, Berge Bulk said, "The MAN CEON TechGuide app is transforming the way maintenance and inspection operations are carried out on board. With the app working in tandem with our current fleet-management system, we believe that it will not only significantly reduce our crew's work load, but that it will also further enhance the quality and reliability of our maintenance operations."

## Central components

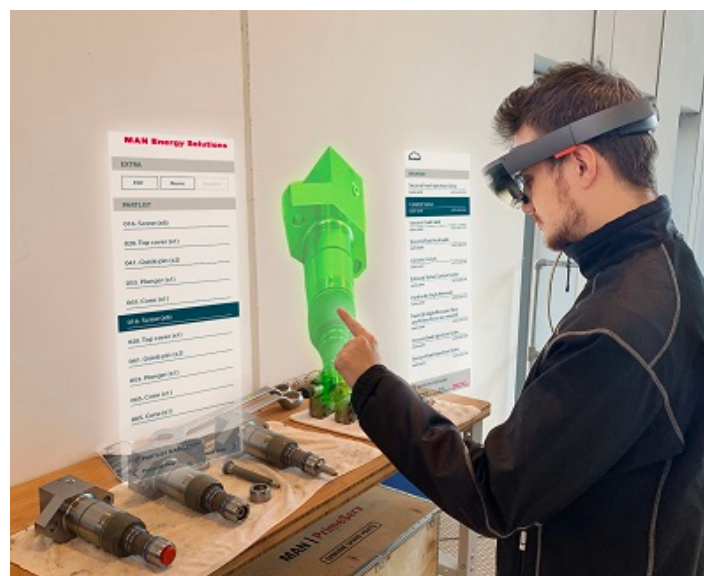
MAN Energy Solutions' goal is for MAN CEON TechGuide to become an integrated part of marine engineers' daily tasks and working routines. In the near future, the implementation of real-time augmented reality support will enable shore-based locations to offer expert guidance to on-site crew. The MAN CEON TechGuide application-programming interface (API) also supports different types of planned maintenance systems (PMSs).

MAN CEON TechGuide's central components are:

- augmented reality view – images and text are layered onto the engine components or an 'x-ray' view of the components
- automatic component recognition – ensures documentation for the specific engine or component is displayed
- two-way interface with planned maintenance systems – seamless communication between the MAN CEON TechGuide and the PMS reduces the administrative burden of the engineer
- multimedia platform – maintenance descriptions can be read aloud, described by animations, seen on video and read as pdf
- audio input/output – instructions read aloud and voice control of the application
- in-situ and table-study modes – modes for in-situ work and pre-planning work with a maintenance team.

## About Berge Bulk

Berge Bulk is one of the world's leading independent dry bulk owners, and has an outstanding reputation for the reliable, safe and efficient delivery of commodities around the world. The company owns, operates and manages a fleet of over 70 safe and efficient vessels - equating to 15 million DWT. The fleet ranges from handy-size, to cape-size. to some of the largest vessels every built --serving the major mines, steel mills and charterers of the world.



*To augment content in the real world, CEON TechGuide employs spatial information and information about surroundings, such as table surfaces, workbenches and walls. Animations are not locked into a specific perspective, rather the user can move their tablet or head-mounted display around to view components from different angles, get exploded views of spare parts, etc.*



*Per Hansson, Head of Digital and Strategy at MAN Energy Solutions*



*Berge Bulk, the leading dry-bulk owner, is currently testing CEON TechGuide aboard a number of its vessels (image courtesy Berge Bulk)*

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MAN Energy Solutions enables its customers to achieve sustainable value creation in the transition towards a carbon neutral future. Addressing tomorrow's challenges within the marine, energy and industrial sectors, we improve efficiency and performance at a systemic level. Leading the way in advanced engineering for more than 250 years, we provide a unique portfolio of technologies. Headquartered in Germany, MAN Energy Solutions employs some 14,000 people at over 120 sites globally. Our after-sales brand, MAN PrimeServ, offers a vast network of service centres to our customers all over the world.