

PRESS RELEASE

Demag Zero Emission V-type crane:

The first self-sufficient overhead travelling crane

- **Power supply using regenerative energy and buffer battery**
- **Light-weight V-type crane design enables charging unit to be installed on the crane bridge**
- **Combination of tried-and-tested components**
- **Demag Status Control also records battery data in real time**
- **Sustainable, CO₂-neutral concept**

Wetter, Germany, 06 February 2017.

The core components of a bridge crane include the crane runway, bridge, hoist unit, drive equipment and the power supply from the central power supply system to the travelling hoist. Until now, that applied to all industrial cranes. However, the new Zero Emission V-type crane does not need an external power supply for handling and transporting loads, since it draws the energy for its long and cross-travel motions and its hoist unit via a lithium-ion rechargeable battery pack, which is installed on the crane bridge.

The battery pack can be recharged via charging connectors at the end of the crane runway or – if there are several cranes on one runway – via pass-through charging stations, which then draw their energy from a buffer battery located on the ground. This battery is fed by CO₂-neutral and eco-friendly solar panels.

Sustainable concept



The Zero Emission V-type crane is self-sufficient in more than one sense: the entire crane installation does not need to be connected to a central power supply. And the conductor line along the crane runway can be omitted, because the power source travels on the crane bridge. Thomas Hacke, product manager for Universal Cranes and Crane Sets at Terex Material Handling: "We have developed real technology for the future, which can help our customers to achieve their sustainability and environmental protection goals. We established the basis for this with our innovative V-type crane: the significantly improved weight of the girder makes it possible to carry the battery on-board without limiting the load capacity in comparison with cranes that have conventional box-section girders."

Innovation on the basis of tried-and-tested components

This self-sufficient bridge crane concept is new and hitherto unmatched. It has been implemented on the basis of tried-and-tested Demag components both for the crane and drive systems as well as for the solar power and energy storage solutions.

The Zero Emission V-type crane is equipped with Demag Status Control, which records and documents all current and relevant crane data in real time. For this type of crane, this also includes the charge level of the batteries and a forecast of the time remaining until the next charging cycle. The data can be centrally recorded or de-centrally transferred, for example, to tablet computers and smartphones. The status messages can be visualised directly on the crane with Demag StatusBoard.

Project engineering for a complete solution

If the customer prefers, Zero Emission V-type cranes can be configured as complete solutions including their power supply. This also includes specification of the solar power system and the buffer battery on the basis of the relevant crane data, such as the load capacity and the number of load cycles. If required, the drive system can be equipped for energy recovery, and the solution can also be connected to wind turbines instead of solar power systems.

Development of the battery crane with a V-type girder was initiated by a European Demag customer, who considered sustainability and energy efficiency in his investment decision and wanted a crane with a CO₂-neutral power supply, as far as possible. A suitable crane concept is now available for this target group. The use of self-sufficient cranes also makes sense in regions that do not have a stable power supply, where an additional diesel generator has to support the grid. Thanks to its independent power supply, it could even be used in future in areas where there is no electric grid at all.

Additional information

Smart and self-sufficient: the power supply

The solar panels feed the energy that they generate via solar rectifiers to a gel cell, which serves as a buffer battery and is installed as a stationary unit. This energy storage device supplies a lithium-ion rechargeable battery pack on the crane bridge via one or more charging connectors in the crane runway. This battery technology was selected to achieve high performance for a low deadweight.

Less is more: the V-type crane.

The special design of the V-shaped girder section provides an average weight saving of 17% in comparison with a conventional box-section girder. The optimised ratio of deadweight and lifting capacity make it possible to gain load capacity – or, as in the case of the Zero Emission V-type crane, for a high-performance rechargeable battery pack to be carried on the crane.

“All inclusive” – with regenerative power generation.

Zero Emission V-type cranes can be supplied complete with solar panels, power inverters and a buffer battery. The scope of the project can also include specification of the solar power

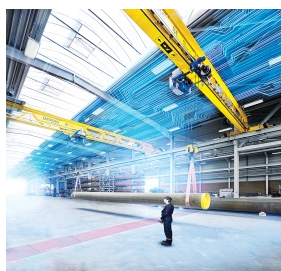
system, allowing for both the direction of sunlight where the crane is located as well as the crane-specific data. Alternatively, the crane can also be connected to existing solar power equipment. Regenerative power supply from wind turbines – in combination with buffer batteries – is also possible.

Modular system with proven elements.

Even though the concept is innovative, the individual components have been tried and tested in industrial applications. The V-type crane is part of the series program range, as are the drive elements, such as motors and gearboxes, which are always manufactured in house for Demag cranes. The system modules for the regenerative power supply are also high-quality, proven components from renowned manufacturers.

Safety first.

The Demag engineers have developed a safety and reliability concept, which also includes continuous monitoring of the charge level. An emergency power supply is not necessary.



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