PRESS RELEASE

Improved flexibility for handling heavy loads

- **New power concept for rail-bound travel carriages**
- **Power supply not tied to electric cable**
- **On-board charging unit for enhanced flexibility**
- **Proven Demag drive components form the basis**

Wetter, Germany, 14 November 2016.
The new Demag components that utilise battery systems can be used to transport heavy loads without the need for an external powerfeed or supply line. This creates the basis for the flexible handling of heavy loads.

It all started with a customer requirement for a travel carriage for loads weighing up to 40 tons, which mainly travels on rails in a workshop, but which can also be driven out of the workshop to cross the rails of the factory goods siding. This application required a new concept for the power supply: the electric power had to be “on board”. The Demag engineers have experience of battery-powered material handling and lifting equipment and developed the components for the battery-driven industrial carriage which has now been launched.

Drive solution from the modular system
The basic design of the self-sufficient travel carriage is well known and has proven its success. The trolley consists of four travel units from the Demag modular system with DRS wheel blocks and an integrated drive unit as well as the associated control system. These matching components are integrated into the steel superstructure of a compact, but extremely strong base unit. It supports the load and transports it to its destination.

This concept not only makes it possible to cross rails, but also offers greater overall flexibility, since fixed cables do not have to be considered when planning the travel paths. The investment costs are low, because the batteries are standard industrial components and the cable

cross-sections can remain small, since the cables of the power unit only need to be rated for alternating current.

Innovative concept with proven components

The on-board charging unit ensures that the battery is charged in the supply zone. In combination with a Dedrive Compact STO frequency inverter, the power unit converts the battery's direct current into alternating current and supplies the drives via the Demag Dedrive Compact STO frequency inverter with the necessary power. Depending on requirements, it also provides for smooth and dynamic acceleration as well as variable speeds.

The Demag engineers used the CalDrive specification tool to rate the drives. In this case, the scope of engineering work also involved the design and specification of the power module including rating of the battery on the basis of the planned travel cycle, the possible charging zones as well as the concept for the fallback solutions for emergency operation or the event of a flat battery.

Customer-specific project – added to standard product range

Other possible applications for travel carriages such as this with batteries include areas that have high levels of dirt accumulation, such as painting and blasting booths, in which any type of power cables can be quickly damaged. Since battery-powered vehicles are being used more and more in other material handling applications, such as container handling, the battery solutions have been added to the standard range of Demag components for ground-level and rail-bound transport of heavy loads. The drives for these trolleys are specified for each individual project and configured using the Demag modular system. This not only applies to the dimensions and load capacity, but also to the battery capacity and the safety concept, which for example also includes laser safety scanners, bumpers and a distance detection system, depending on the application.

Additional information

Demag drive solutions for ground-level handling of heavy loads

Components and equipment from the Demag modular system not only drive all types of cranes all over the world, but also material handling systems that operate at ground level. Examples of applications include heavy-duty turntables in automotive production, rail-bound travel carriages and transverse conveyors for in-house material flow requirements as well as

mobile architectural applications, such as for retractable roof structures at football stadiums and multi-purpose event arenas.

Core components: Demag travel units

The Demag modular drive system consists of standardised components which can be used to configure offset geared motors, angular geared motors and helical geared motors that deliver output torques [Nm] of up to 11,500 Nm**.**

The traction needed by battery-powered carriages is provided by the Demag DRS wheel block system, which is available in eight finely graded sizes with load capacities of up to 40 t per wheel. Many standard travel wheel treads ensure precise configuration to meet the relevant application needs. Every size is produced in four variants to guarantee optimum connection to the customer's superstructure.

Battery type and output

The charging unit works with both rugged lead-acid batteries as well as with high-performance lithium-ion batteries and ensures a good service life at normal temperatures.

Drive outputs greater than 6 kW can also be easily achieved by means of parallel connections or configuration for three-phase operation of the power units.

Safety concept tailored to specific application needs

Since the complete drive arrangement including the control system comes from a single source, safety functions can be integrated into the concept with little effort. In this area, too, the Demag engineers can draw on a wealth of experience in crane engineering. To protect personnel, the battery-powered carriages can be equipped with bumpers, limit switches and/or opto-electronic safety systems, such as laser safety scanners. Among other functions, a distance detection system and tandem operation of several battery-powered carriages for transporting long materials can be implemented as control system features.

41596: Demag components that utilise battery systems can be used to transport heavy loads without the need for an external powerfeed or supply line

41583-13: Demag control with batteries

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About Terex Material Handling

Terex Corporation is one of the world's leading suppliers of crane technology with Demag industrial cranes and crane components. The core competence of the Terex Material Handling business group lies in the development, design and production of technically sophisticated cranes, hoists and components and the provision of services for these products. The business group manufactures in 15 countries and is present in more than 60 countries, reaching customers in more than 100 countries.