

## Energy Efficient and Compact Traction and Steer Drive Units

### New Bevel Gearbox Drives for Electrical Vehicles

**ABM Greiffenberger introduces two new platforms of Bevel Gearbox Drives developed as integrated traction and steer drives from the ground up for use in mobile machines. Key features include high efficiency, compact design and long life. A modular design provides OEM's with maximum flexibility for easy adaptation to the requirements of their vehicles.**

What are users of electrical pallet trucks or sweeper/scrubbers expect from drive units? They expect high output with minimum power consumption. Of equal importance are minimal maintenance needs and long life without failure. Additionally, vehicle OEMs require a compact design, easy integration into their vehicle and favorable cost even for special versions and unique options.

#### Output Range from 1.2 to 3.2 kW



*ABM Bevel Gearbox Drives TDB 230 / 254:  
energy efficient & compact*

All these requirements were considered from the beginning when ABM Greiffenberger designed the new Bevel Gearbox Drives. They were conceived as integrated traction and steer units for mobile applications. The impressive result is now introduced to vehicle OEMs and the press.

The new electrically steered Drive Platforms TBD 230 and TBD 254 differ from each other by the wheel diameters of 230 and 254 mm.

Both incorporate powerful induction motors, manufactured for a specific vehicle battery voltage, an integrated holding brake and a modular design.

On the TBD 230 the output ranges from 1.2 to 2.5 kW, and on the TDB 254 from 1.5 to 3.2 kW.

### **Adaptable to OEM Requirements**

Modular designs create the foundation to manufacture customer specific drive units even in small and medium volumes. It also provides the OEM the possibility to offer different drive options to end users. For example fixed motors can be used for traction as well as steer function. Motors are available with sensor bearings or coils and even the integration of customer supplied sensors is possible. Due to the modular design individual custom execution can be realized at reasonable cost.

On both platforms the complete Motor-Brake-Gearbox-Unit requires minimal space allowing for compact vehicle designs. This also provides for high static wheel loads assuring outstanding traction attributes.

Gearboxes excel with outstanding efficiency and minimal torsional backlash. This is not only critical for high efficiency but also low noise operation.

### **High Vertical Integration**

Typical for all ABM drives is the high vertical integration: Gearing, available on each platform in three different ratios, are manufactured completely in house, likewise aluminum die cast parts are produced in our own foundry.

Development and manufacturing of high value electrical motors is also part of the core competencies of a systems supplier that operates with the motto „The Single Source for all Your Drive Needs“ and „Made in Germany“. This is the foundation for the high quality and reliability of ABM Drive Systems.

### **Developed with the Latest CAD- and Simulation-Tools**

For the development of the gearboxes the latest CAD programs and simulation tools, e.g. Ansys 12 for FEM analyses and KissSoft as well as FVA Work Bench for gearing calculations, were used. For final inspections of complete drive units, high-

precision measuring machines and a brand new test bench – installed in 2010 – are available allowing 100 % inspection of the most complex drive units.



*100% Inspections, Life Testing or Laser Measurements:  
A Tight Net guarantees the Reliability of ABM Greiffenberger Products*

In Marktredwitz a new assembly and manufacturing line for the bevel gear sets is currently being set up that will guarantee a continuous high quality level. To optimize assembly flexibility, assembly processes have been adapted to the modular design of the ABM drive units.

### **Decades of Know-How as Systems Supplier for the Material Handling Industry**

The new bevel gearbox drives fully exploit the possibilities offered by new drive technologies - they excel with a high quality level that will satisfy even the most demanding OEMs and end users. As a systems supplier ABM Greiffenberger could draw from comprehensive industry know-how for these designs.

When it comes to long life and availability experiences made in other industries such as hoist technologies and wind turbines influenced the development. ABM also supplies complete drive systems to these very demanding industries.

### **Advantages of Cooperating with a Systems Supplier**

Besides technical benefits of the drive units ABM Greiffenberger also offers with the new platforms economic advantages: For vehicle OEM's purchasing complete

traction and steer units with matched components signifies reduced engineering, interface work as well as significantly reduced assembly – optimum conditions for smooth engineering and manufacturing.

Marktredwitz, March 17, 2011 Autor: Mayk Krueger,  
Sales & Application Manager (Mobile Applications)  
at ABM Greiffenberger Antriebstechnik GmbH

Contact Marketing: Dagmar Koziel  
Phone: (+49) 9231/67-387  
Fax: (+49) 9231/67-5387  
Mail: dagmar.koziel@abm-drives.com

Contact Engineering: Mayk Krueger  
Phone: (+49) 9231/67-283  
Fax: (+49) 9231/67-145  
Mail: mayk.krueger@ abm-drives.com