PRESS RELEASE

Future trends in material handling

Sustainability and full automation as the future of intralogistics

Güglingen, 11. September 2023. ***The sector of industrial trucks is suited for future concepts such as sustainability and digitalisation or full automation like few others. Material handling has been an integral segment of WEBER-HYDRAULIK since 2016 and is continuously being developed – including in collaboration with customers. As part of this process, the material handling section of the WEBER-HYDRAULIK website has also been redesigned with a particular focus on steering systems, stabilisation modules and hydraulic controls as well as power units.***

Material handling refers to the transport of goods and merchandise within storage areas. This requires highly specialised and sophisticated technology to be built into industrial trucks such as order pickers, counterbalance forklifts, high- and low-lift trucks or very narrow aisle trucks. The hydraulics of vehicles in this field differ in their design and requirements from those in other applications, such as construction or agricultural vehicles. One important factor is that about 80 % of the vehicles are already electrically powered, and that number is growing. Moreover, it can be expected that this share will increase considerably in material handling over the next ten years.

The focus is shifting towards the various energy systems in which lithium-ion batteries have taken up a significant share and are being used more and more. Until now, lead-acid batteries have been widely used, but they are significantly inferior to lithium-ion batteries in terms of their charging time, performance, lifespan, sustainability and compactness. The latter factor is crucial because a compact design is essential in this sector. In industrial trucks, the entire drive technology has to fit into a very small space, with the trend being towards ever more

compact vehicles. At the same time, the compact build must not be at the expense of performance and safety, continually presenting manufacturers and developers with great challenges.

Sustainability through energy recovery

Sustainability is a hot topic – not just in the hydraulics industry – both in terms of the components and technologies used as well as throughout the entire supply chain. In addition to common sustainability measures, the field of material handling can set new standards in energy recovery. The challenge is to recover the maximum amount of energy from movements that only last a few seconds. In high rack stackers, for example, this is accomplished when braking or lowering loads. The action of the hydraulic pump that normally supplies the volume flow for lifting is reversed, causing it to act as a motor. At the same time, the electric motor serves as a generator that recharges the battery. Up to 20 % of the applied energy can be recovered in this way. From a technical point of view, a higher degree of recovery is certainly possible, although this can lead to increased development effort as well as considerable costs. It can be expected that the costs will go down and the recovery rates will also become economically viable as the development work progresses.

The rise of automation

Material handling is also a perfect fit for the future trend of digitalisation and automation. Many vehicle sectors already offer vehicles that are fully robotic or remote controlled, which is also new territory from an engineering point of view. Until now, most vehicles have been designed for manual use by human operators and then converted into AGVs (automated guided vehicles) or AMRs (autonomous mobile robots). The future standard will be to develop cars for driverless or autonomous operation from the outset. Industrial trucks are particularly well-suited for this purpose. The warehouse as a delimited, structured space with clear processes and constant conditions offers an ideal environment for the use of AGV and AMR systems.

This development is also fuelled by the booming online trade: After the coronavirus pandemic, businesses have come to realise that warehousing in Europe provides important buffer capacity to ease the strain on the supply chains. As a direct consequence, a growing number of warehouses and logistics centres are being established across Europe. There is also an increasing awareness that Industry 4.0 needs to be implemented not only in manufacturing, but also in intralogistics. The factor of AI can also play an important role here in the future.

The warehouse of the future will therefore operate on a largely autonomous basis. The development is heading towards a lights-out warehouse, meaning a fully automated, AI-controlled warehouse that operates without any or minimal human intervention. The name stems from the fact that such a warehouse no longer requires lighting because all working steps are performed by machines.

Image: A compact power unit by WEBER-HYDRAULIK, commonly used in industrial trucks
Source: WEBER-HYDRAULIK GMBH

About WEBER-HYDRAULIK GMBH

WEBER-HYDRAULIK GMBH is a leading international specialist for customized and functionally reliable hydraulic solutions. Reliable and powerful, the family-owned company from Güglingen has been developing high-quality cylinders, control blocks, steering and suspension systems, valves and power units for mobile machinery, commercial vehicles and machine tools as well as rescue equipment for over 80 years - an unbeatable portfolio of services covering all aspects of movement, power and dynamics. As an innovative business partner, WEBERHYDRAULIK implements sophisticated, application-specific system solutions according to customer requirements. With almost 1,600 employees at five locations in Germany, Austria and Poland, the hydraulics specialist generates annual sales of approximately 350 million euros.

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