

# Wireless charging infrastructure from PohlCon - the interview series

# TOYOTA

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MATERIAL HANDLING



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## Interview

"Optimal contactless charging infrastructure for efficient material flow."

## Introduction

**Marcus Johansson:** Project Manager & Production Engineering.

**Johannes Gustafsson:** Production Engineering.

Toyota Material Handling Europe is part of Toyota Industries Corporation, the world's number one material handling company since 2001. The production plant in Mjölby, Sweden, manufactures high-quality forklifts of various sizes and is one of the largest production facilities in the world, with 90,000 m<sup>2</sup> and 1500 production employees.

*"The parallelization of the charging process with the robot's core tasks through the WCPS charging infrastructure is a huge advantage for us in terms of saving time and travel, as well as avoiding downtime."*

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The right energy supply strategy as a lever in automation.

## **1. which processes/tasks do AGV's/MR's take over in your company's factory and which solutions have been used so far?**

AGVs are deployed along our manufacturing island and form the backbone of our orchestrated material flow. Before installing PohlCon's WCPS wireless charging infrastructure, we charged our vehicles exclusively via cables or other conductive chargers.

## **2. How should a sustainable material flow be organized?**

We believe in an ecosystem of mixed fleet systems, such as the interaction of automated towing solutions and general cargo carriers, for example for palletized material in combination with autonomous forklifts in a warehouse complex. In the future, more AMR solutions will enable a much higher level of fully harmonized mixed fleet tasks. Collaboration is the key.

## **3. in this context, what are Toyota Material Handling's goals in its own production facilities and in customer projects?**

Our goal is to make the material flow as efficient and safe as possible. In particular, in our recent project at our plant in Mjölby, Sweden, we needed to minimize the forklift transport of working platforms within the assembly area, which had previously been done manually. We also wanted to avoid tripping accidents involving people and material.

## **4. What are the criteria/objectives for an optimal charging infrastructure?**

In general, a crucial factor for an effective charging infrastructure is that the charging process runs unobtrusively in the background and functions automatically. Furthermore, the charging infrastructure should be able to adapt to the given workflow (e.g., naturally planned stops, buffer zones) and staff movements (e.g., trip hazards) and not vice versa.

The above criteria can be realized with a flush floor approach to contactless charging infrastructure. In the near future, interoperability of the charging infrastructure for different vehicle types will also be a criterion.

## **5. Why should an "in-process" wireless charging infrastructure be used as a lever to optimize material flow?**

Charging AGVs/AMRs as part of the work cycle has a positive effect on production stability, as the necessary (re)charging process does not disrupt production in any way.

In-process battery charging increases the availability of the fleet for value-added activities.

## **6 . What are the advantages of the newly installed WCPS wireless floor charging station compared to the existing charging options?**

The WCPS system allows us to safely integrate wireless charging technology into the floor in a process-oriented manner as part of the assembly line, where AMRs and our employees work side-by-side in a dynamic environment. In addition to the process benefits, the WCPS system also protects the technology itself and is maintenance-free.

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## 7. what benefits does the WCPS infrastructure bring to day-to-day operations in production?

The parallelization of the charging process with the core tasks of the robot through the WCPS charging infrastructure is an enormous advantage for us in terms of time and distance savings as well as the avoidance of downtimes 8. How is the charging infrastructure on the ground accepted by the employees?

The employees are satisfied. They feel safe and can move freely around the work zone to perform their tasks.

## 9. How was the higher initial cost of an in-ground wireless charging infrastructure compared to a simple in-ground charging system and/or a cable charging system discussed internally?

Of course, we discussed this internally, and wired charging systems are, at first glance, less expensive than an integrated wireless charging infrastructure. In this context, we also considered possible events around charging itself and with the perspective of employees who might forget, plugging in the charging cable, this can lead to much higher costs due to de-energized AGVs and a production stop. Wear and tear on conductive charging systems in general is also an issue.

## 11. Are there plans for further expansion of wireless charging and the necessary infrastructure?

Yes - after the first successful WCPS installation here, there will be a new project with AMR's to implement wireless charging again later this year.

## Product Info:

PohlCon GmbH develops and sells the WCPS system, a contactless charging infrastructure product, which is integrated decentralized and flush with the floor in logistics and production real estate to enable contactless charging directly in the working area of battery-powered vehicles such as robots. WCPS is the technological counter-design to the previous old wired or plug-in contact-based charging systems to charge robots. The advantages of contactless charging points are in particular the elimination of restricted areas and the conversion into value-added storage space, occupational health and safety, operational safety and installation close to the process, which means optimum utilization of space.

Contact: [wcps@pohlcon.com](mailto:wcps@pohlcon.com)

