

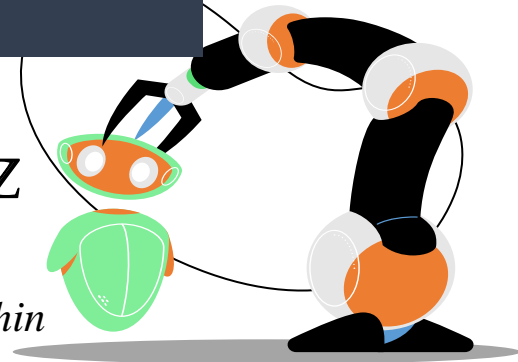
Robotics in Automotive Industry 4.0: A New Era of Manufacturing

CASE STUDY: MERCEDES-BENZ

○ Major Application of Robotics:

Mercedes-Benz's Utilization of Robotics within their Automated guided vehicles(AGVs)

- Mercedes-Benz, a well-established automotive manufacturing company has started to incorporate Autonomous guided vehicles with the involvement of Robotics within their manufacturing units. AGVs are autonomous vehicles that are programmed to transport components and parts within a manufacturing unit without any human interference
- **Applications of robotics in Mercedes-Benz:**
 - Mercedes-Benz employs robotic arms equipped with sensors and cameras to streamline the assembly line process. These robots are capable of performing repetitive tasks with high accuracy and speed, resulting in improved productivity and reduced cycle times.
 - The robots are used to load and unload materials from the AGVs, as well as to transport them within the facility. The robots are embedded with sensors that makes them capable to detect and avoid obstacles, preventing them from damage.
 - Robotics also plays a vital role in inspecting quality of the product throughout the production process. Vision systems that are integrated within robots to perform in depth inspections, also identifies any faults or deviations in real-time use. This automated quality control process enhances product reliability and also reduces the chance of defective vehicles reaching customers.



Conclusion

The involvement of robotics in AGVs has led to enhance the manufacturing processes at Mercedes Benz. The use of robots has increased efficiency, reduced lead time by 30%, reduced labor costs, improved worker safety, and the capability to adapt to changing customer's demands efficiently. In this evolving industry 4.0 Mercedes-Benz's approach will serve as an important aspect in the boom of Robotics in Automotive industry

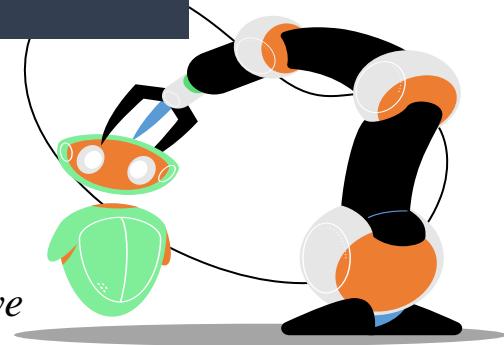
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CASE STUDY: FORD MOTORS

- **Major Application of Robotics:**

Ford Motor's implementation of Collaborative Robots in accordance with Industry 4.0

- Collaborative robots (cobots) are playing an important role in revolutionizing Automotive Industry. Ford Motor, a well-known automotive manufacturer company, has adopted this technology by implementing the use of cobots into its manufacturing operations. This report is based on how Ford Motor utilizes collaborative robots in context of Industry 4.0 principles



Applications of collaborative robots at Ford motors:

- **Assembly Line:** Collaborative robots (cobots) work together with Ford engineers to apply finishing touches to Fiesta vehicles. Ford has for the first time introduced a team of collaborative robots (cobots) that work alongside engineers in Cologne, Germany, to ensure every Ford Fiesta has a perfect finish.
- **Quality Control and Inspection:** Ford Motor employs cobots capable with advanced vision systems and sensors to conduct quality control and inspection processes. They take precise measurements, detect the faults, and compare product against prefixed standards. The merging of cobots in quality control gives consistent product quality and reduces the risk of defective vehicles reaching customers i.e. increases the accuracy

- Logistics: Collaborative robots assists in material handling and logistics in Ford Motor's manufacturing process. They transport parts of vehicles autonomously, enhance the workflow and also reduces human interference. The involvement of cobots in logistics improves efficiency, accuracy, and save time

Conclusion

Incorporation of Collaborative Robots in Ford Motor's manufacturing unit reduced worker fatigue and reduces injuries that may cause while working in hazardous environment, leading to increased productivity