



Customer
Success
Story

AICA Smart Assembly

A ground-breaking robotics approach for complex assembly processes

In the fast-paced manufacturing industry, time is crucial. AICA's flexible robotic solutions help Schaeffler adapt to manufacturing's fast changing demands. Their approach has transformed Schaeffler's assembly operations, speeding up production and reducing disruptions. With AICA's support, Schaeffler can prioritize time efficiency while ensuring exceptional product quality at every step of the process.

Key Features & Benefits:

- Seamless integration with existing systems
- Real-time adaptation to changes in the environment
- Autonomous learning from force feedback
- Improved productivity and efficiency
- Enhanced precision and accuracy
- Reduced reliance on manual labor

SCHAEFFLER



Gearbox Assembly Challenges

Schaeffler sought to increase its capacity to meet the high demands for precision and speed, by enhancing assembly efficiency and accuracy. This led them to approach AICA, the Swiss-based company.

AICA developed a Smart Assembly module that leverages the power of reinforcement learning (AI) for assembly tasks. The robotic system autonomously undertakes trial and error assembly processes, to define the best approach to assemble the workpiece. This allowed Schaeffler's robot to adapt its motion between batches in 1 hour only.

AI

Reinforcement Learning

Closed-loop Force Control

Dynamic Motion

Intuitive Interface

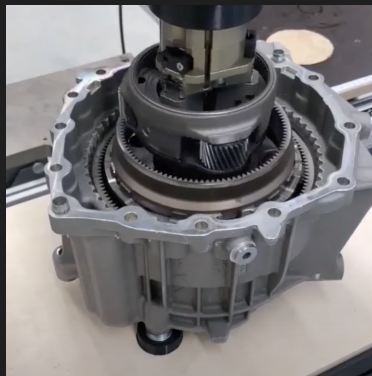
Robot Agnostic

Learning from Demonstration

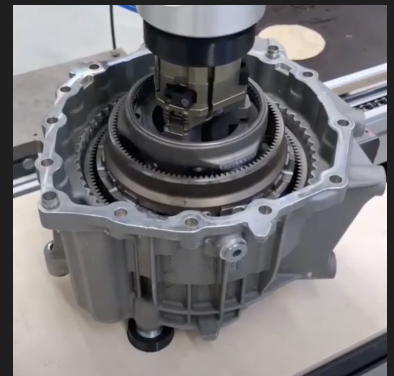
Smart assembly process



Motion
demonstration



AI based process
optimization

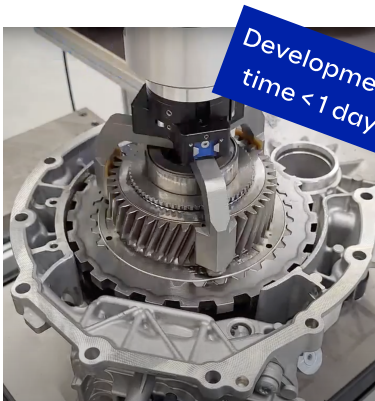


AI based process
execution

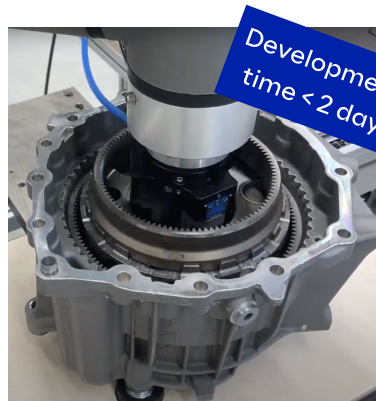
AICA's Cutting-Edge Solution

AICA tailored its state-of-the-art robotics software to Schaeffler's unique requirements. Our Smart Assembly module uses real-time adaptation, force feedback, and autonomous learning capabilities to streamline the assembly process.

Gear assembly operation



Gearbox 1



Gearbox 2



Gearbox 3

Advantages of the Implementation

This feasibility project led to significant improvements for Schaeffler, including:

1. **Up to 40%** cost savings.
2. **More than 50%** reduction of the development time.
3. **More than 98%** success rate during the assembly process.
4. **More than 75%** decrease in process down time.
5. **No specialist required** for adaptation in case of process changes.
6. **Easy deployment** of the solution no matter the robot brand used.
7. **Decreased reliance on manual** labor for 3D tasks.

Successful Implementation & Positive Outcomes

The success of this partnership shows that many industrial challenges can be solved using adaptive force control and learning. AICA's modular software blocks allowed the teams to iterate and refine robot applications at a fast pace.

Since this collaboration, the two companies have implemented the solution on collaborative and industrial robots, evaluated and optimized the program. A series production is planned in 2023.

Contact us and stay at the forefront of a new generation of automation solutions.

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