COGNIMAN

Precision machining for large metal parts
GOIMEK, Spain

The challenge

GOIMEK is a cooperative dedicated to delivering precision machining services to meet the market's diverse needs. Deburring is an essential step to guarantee that the machined components remain devoid of unwanted material, known as burrs, which have the potential to create issues during assembly or utilisation. Conventional deburring techniques, such as manual or machine-based removal, are rarely efficient. Existing robotic deburring solutions face restrictions in their capacity to address substantial or intricate components and their inherent inflexibility.

Pilot description

This pilot focuses on developing robotic alternatives for the deburring process at GOIMEK. There is presently no available collaborative robotic technology suitable for implementation in the workshop. The tasks at hand are intricate, the motion patterns for diverse components are highly variable and the integration of a robot into the shopfloor environment is notably challenging.

Desired outcome

GOIMEK requires an intelligent, responsive and secure robotic system designed for the deburring of sizable metal components in limited production runs. They need a solution that would alleviate the physical strain on human workers, enhance the quality of the final products and boost overall operational efficiency.

Envisaged solution

The primary objective of COGNIMAN is to create a deburring robot capable of safely, efficiently and flexibly handling large and intricate components. This robotic system will leverage machine learning techniques and a range of sensory inputs to comprehend the deburring process and its surrounding environment. Furthermore, it will be integrated with a digital twin for artificial intelligence training and optimisation. The robot will be equipped with mapping, navigation and guidance functionalities, all of which will undergo testing using components from the wind-power, naval and machine-tool sectors at GOIMEK's facility in Spain. Ultimately, the project aims to yield a cognitive deburring robot that can confidently and safely collaborate with human operators.

Facts and figures

Process challenges

- Lack of communication
- Ergonomic concerns
- Customised production making automation difficult

Integration challenges

- Must work with every customised product
- Seamless collaboration with humans

Personnel involved in the process

- Operator
- Supervisor
- Process Engineer
- Quality Manager

GOIMEK

POLIGONO INDUSTRIAL GOITONDO, BEKOA N-4,
48269 Malabia, Spain
Website: www.goimek.com
Contact: a.aranburu@goimek.com

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