CLOUD-BASED PRODUCTION PLANNING AND CONTROL IN QUASI REAL-TIME

Application for the manufacturing industry - Worldwide real-time control based on AI with cloud-based PPS and machine/robot connectivity

SUMMARY

If machines, plant assets and entire production systems are to become more intelligent and adaptable, local intelligence must be networked. This is done by internetworking them via central IIoT platforms. This is implemented in an industrial 24/7 make-to-order production process at a spectacle lens manufacturer.

CURRENT SITUATION

In conventional machinery, plant and also automation cells, intelligence today is still usually implemented in a PLC or a local control computer. This means that retrofitting and upgrading with new algorithms, AI, etc. is not possible from outside the system. Industry 4.0 requires this capability, however.

PROJECT DESCRIPTION

• Design and implementation of a robot cell as well as production planning and further automation
• Use of lightweight robots and controllers for cell management with OPC UA client/server technologies. Integration with software4production factory software in the cloud
• Design and implementation of 24/7 operation with public DSL between Lab and cloud for high availability
• Rollout and training support for practical implementation

REFERENCES

www.software4production.de
www.moving-production.de
www.satisloh.com

INDUSTRY 4.0 FEATURES

Further development of conventional control concepts thanks to new platform-based proactive digital services in machine manufacturing. Real-time control together with intelligent networking enables predictive maintenance and AI to be implemented in-service, with process integrity maintained.

SOLUTION

Machinery, plant assets and logistics systems are connected the IIoT platform from software4production which is operated in an AWS private cloud. High availability is achieved by online mirroring of database and application. With OPC UA communication with the cell management system of the robot cell, cycle times of <80ms from scanning of a QR code to execution can be guaranteed in practice. This is necessary if intelligence is to be moved to the cloud, for AI for instance.

CONTACT

Prof. Dr.-Ing. Joachim Berlak
software4production GmbH
joachim.berlak@software4production.de

STANDARDIZATION APPROACHES

Machine and robot connectivity that is standardized and maintains process integrity, in a global context, is a prerequisite if local intelligence is to be moved to the cloud. The administration shell, standardized semantic descriptions and unified, highly available infrastructures are necessary for this.