FUNDAMENTALS OF THE ROBOTICS NET PLATFORM ARCHITECTURE

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Abstract: *Based on different enterprise sizes and a certain economic regulatory environment for the use of industrial automation solutions, their scalability is looming up large. Particularly in robotics automation, business solutions are required, which – with a preceding increase of the number of robots in a factory – do not demand a paradigm change of established solutions or rather implemented concepts for the same kind of problem scenarios. Considering that industrial robots became standard machines in automation industry in the last few years – especially because of their easy programmable features, different ranges of manipulators sizes and end effectors, advanced sensors and control units technology – industrial robots may massively exalt the flexibility of production systems. Today these robots are doing not only handling of parts as several years ago, but they are performing mechanical tasks, like milling, finishing, welding etc. As these tasks are very complex for different calculations and optimizations, automatically it appears a need of communication between control units of robots and other intelligent network devices.*

The RoboticsNET architecture solves these circumstances for networked robots by introducing a highly scalable robot interconnection design based on a fully switched network layout. An increasing number of robots within the robot network do not affect the corresponding technical parameters respectively the principal system behaviour. This paper describes the RoboticsNET fundamental interconnection concept with the focus on scalability regarding rising robot counts in the network and having in mind the use of it within a manufacturing execution system environment. Additionally a short practical outline out of the plastics industry for a prototype application of RoboticsNET will be described.

Key words: *open robot interface architecture, industrial software standards, robot real time interconnection, scalable network concept, robotics net*

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