

Structuring of Large Scale Distributed Control Programs with IEC 61499 Subapplications and a Hierarchical Plant Structure Model

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Abstract

The automation of plants and machines is becoming more and more complex due to the extensive usage of intelligent field devices as for instance programmable actuators and sensors. The graphical programming languages used are typically for the automation domain, and control applications tend to become increasingly complex which results in higher engineering costs for establishment and maintenance.

The new IEC 61499 standard for distributed control systems provides an interesting engineering concept called subapplications. This concept has, in principle, the potential to provide a cost-effective solution for industrial automation applications, but is currently only being used in a few instances.

The goal of this paper is to introduce a simpler, more effective, engineering approach to structure large scale distributed control programs based on a hierarchical plant structure model together with IEC 61499 subapplications.