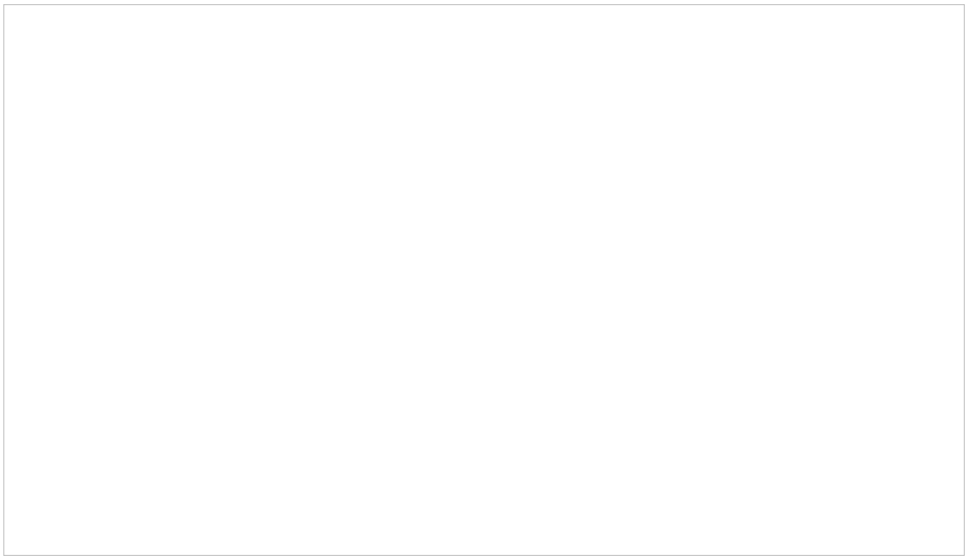
Industrie 4.0 cyber-physical systems and automation design (RAMI4.0, ISA-88, Delta-Nodes)

Poids:
5

The fundamental principles of ISA-88 are more relevant today than ever



As early as 1995, the ISA-88 standard adopted the concept of cyber-physical system that is being promoted today by Industry 4.0 and the internet of industrial objects (IIOT) : an informational artifact integrates with the physical object that collaborates with others while participating in a deterministic orchestration.
This standard results from the experience of a large multinational automation community going well beyond recipe sequencers and batch processes.
DeltaNodes developed by Rhône Poulenc and Jean-Michel Rayon at the same era adds the formal modeling of physical flows that allows a strong coherence between the actual facility, its sensors, its actuators, the product and the processes. The set provides a solid foundation for cyber-physical and systemic automation.
Regardless these modern incentives, automation design is still poorly handled, thanks to easy, no-cost coding compared to expensive, hard wired electromechanical relays and pneumatic controllers of the past. Any automation engineers may benefit of thes principles.

Topics of interest

- Object-oriented design, equipment entity, cyber-physical system
- Physical model, procedural model, process model
- Equipment control
- Physical process control
- Specification of product development requirements
- Physical flows modelling
- Integration of physical processes with management processes
- Interoperability: SQL, XML, OPC data structures
- Procedural Function Chart (PFC): specification language and supervision of executable procedures, recipes
- Process Procedure Chart (PPC): specification language for physicochemical transformation processes
- Process Industrialization, PLM, from R & D to execution
- Historization of production information, audit trail and electronic signature
- TR88.00.02 / PackML: application to packaging machines
- Management of corporate knowledge
- Projects methoology
- Specification forms
- Process controllers and PLCs
- Batch managers,
- Design tools

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