

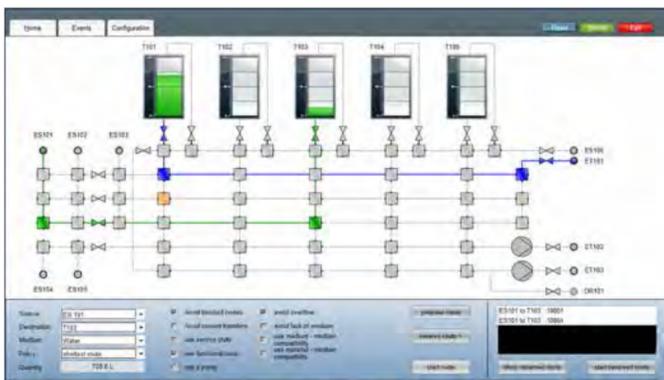
prOnto

Advanced process automation based on Ontology driven agents

Dynamic fluid routing in complex pipe systems

CHALLENGE

The liquid transfer infrastructure represents an important part of the production equipment in the Food & Beverage manufacturing domain. Supported mainly by components such as pipes, valves, pumps or transfer panels, the fluid transfer process between different production units has to strictly fulfill the specific requirements of functionality, safety and hygiene. The utilization of the equipment has to be as efficient as possible, keeping the flexibility at a high level without a negative impact on the process quality. Clearly, automation plays an essential role for controlling complex pipe systems in the Food & Beverage manufacturing domain. However, the classic approach of hard-coding complete transfer functions in the PLC has strong limitations in respect to flexibility or update efforts for equipment modifications.



The Ontology-based technology implemented in zenon supports the safe fluid routing in complex pipe systems.

SOLUTION

The scientific approach based on Ontology-driven agents allows process automation at the next level, introducing semantics into automation systems. The structure of the equipment used for liquid transfers is modeled within the Ontology and this model represents the knowledge base for the application of sophisticated routing algorithms in a functional module called prOnto. During the equipment operation (automatic or manual), the prOnto module is responsible for identifying available transfer routes dynamically by taking various aspects into consideration, such as: current status of the equipment, damaged components, material compatibility or hygiene status.

If the equipment configuration is changed, but also in the case of damaged or blocked components, the Ontology is quickly updated and the routing algorithms continue working properly without the need for complex engineering work.

- ▶ safe processes, high level of hygiene
- ▶ increased speed of operator decisions and process operations
- ▶ high production equipment availability
- ▶ dramatic reduction of system integration and up date costs

PROJECT OVERVIEW

INSTITUTION

Vienna University of Technology,
Automation and Control Institute (ACIN)



TYPE OF PROJECT

Research project in the framework of the BRIDGE program, supported by the Austrian Research Promotion Agency (Österreichische Forschungsförderungsgesellschaft mbH) under contract FFG 829576
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WANT TO KNOW MORE

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