SIMAC a machine simulator

The product...

Plan

1. Presentation of the simulation
2. Simulation, why?
3. What: SIMAC product
SIMAC objectives

Different from others simulation software:

SIMAC gives a perfect virtual machine

- Structural description based on the design plans of equipment
- Model is 100% objective
- No programming knowledge
- Total abstraction of the control part.

Representation of an automated installation

Principle

Control Part

- Electrical elements
- Physical elements (mechanical, valve, level, flow, …)

Operative Part

Handling Panel (switches, buttons...)
**SIMAC replaces the «Operative Part»**

SIMAC simulation platform replaces completely the Operative Part of the installation.

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SIMAC:  
a machine simulator for better quality of control applications

Adjustment and tests of automatisms applications in design department (Integrators, OEM, End Users) with safety, masked time, costs reduced,

Complete acceptance of P.L.C programs and Man Machine Interfaces (SCADA applications),

Production and maintenance staff training on simulation platform (driving and repair « license »).

Simulation of mechanical, hydraulic, electrical equipments and peripheral inputs/outputs connected to P.L.C

Simulation, why? ... Needs

- The process and/or the plant are not already built or they are far away from the development place.

- Tests in the engineering shop (BE):
  - Minimum material architecture,
  - Better work conditions for automation,
  - The virtual machine is 100% available,
  - More time for tests and modifications,
  - Destructive tests.

- Dangerous process (acids, explosives, toxic products, etc.).

- Improvement of the PLC application quality.

- Reduction of start-up time on the site and during the travels to the site.

- Workshop conditions (noisy, production disturbances, possible breakdowns on site).

- Earlier validation of the order.
Simulation, why? ... Consequently

- It improves **communication** between the different working teams:
  - mechanic team - electric team - control team - customers

- Simulation can show inaccurate terms in the customers requirements list (CdC):
  - occurrence of unexpected events,
  - different interpretations of the specifications list depending on the team,
  - some technical characteristics, not considered initially.

⇒ It brings to the fore **anomalies in the design dossiers**.

- Operators and maintenance teams can be trained earlier

⇒ production at the earliest, better competences of the operators.
Robots: example of mimic and panel

Reactor: example of mimic and panel
**Plan**

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**SIMAC software offer = 2 products**

**one DEVELOPMENT environment =**

- An environment of description for all PLC brands and control systems
  - Include numeric system simulation
  - Include analogical evolution simulation
  - Include I/O configurations of all PLC

**several RUNTIME for PLC =**

- Simulation drivers specific for every PLC
  - Generically simulation environment
  - With specific functioning by PLC

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**Simulation cycle / PLC program**

- **Inputs transmission**
  - Events calculation and simulation evolution
  - Outputs receiving

- **Outputs updating**
  - Program processing
  - Drivers
  - Functional block
  - Internal processing
  - Acquisition of inputs

**SIMAC product**

**Hardware - software architecture**

**PC configuration:**
- PC or compatible
- PIV 2 Go (or similar), 256Mo
- Windows 98, NT, 2000
- 17' screen

**Network configuration:**
- Schneider Electric: Unitelway, FIP, TCP/IP with Xway driver
- MODICON: Modbus, modbus+, TCP/IP with drivers SA85
- SIEMENS: MPI – CP5412, 5611, 5511, 5613 with SOFTNET S7 (v5.2 05/2000)
- ROCKWELL: DF1, DH+, DH485 with RSLink OEM, or TCP/IP
  - ...
It is time to see the SIMAC product...