Industrial Stepping Motors Integration in UNICOS

J. Fernadez Cortes, E. Blanco Vinuela, L. Gonzalez Gomez, CERN, Geneva, Switzerland

THPHA144

**UNICOS-CPC FRAMEWORK INTEGRATION**

**STEPPING MOTOR DEVICE TYPE DESIGN**

**CONTROL SYSTEM DESIGN**

**HARDWARE SCHEME**

- **SIEMENS Stepper Motor Module**
  - 1STEP with the Reference Switch input
  - Standard decentralized digital Inputs to acquire the switches (2)
  - External power module dimensioned according the size of the motor.
  - Allows diverse configurations and encoders

**USE CASES**

- **CTF3**
  - Hardware: eight motors running in the CTF3 Complex.
  - Operated with “Knobs” with the experiment control system (through FESA based application)
  - Different installations with diverse wiring, controllers and encoders.

- **ANKA**
  - Hardware: six stepping motors running in the ANKA experiment.
  - Operated directly using the WinCC OA SCADA provided by UNICOS
  - Integrated with the vacuum control system using the UNICOS-CPC Vacuum package.

**OUTCOME**

- Extended the functionality of the UNICOS-CPC framework: motion with stepping motors.
- Reduced the time of developing and deploying motion projects.
- Flexibility with different architectures and configurations.
- Optimized support to installations using standard solutions with already existing diagnostic tools.

**MOTIVATION**

- Legacy installations running non-standardized control applications.
- Support needed high level of expertise.
- Reduced functionalities and flexibility.
- Creation of new projects was a laborious process.

**OBJECTIVES**

- Projects standardization
- Flexibility to support distinct configurations and architectures
- Ease diagnostics and maintenance
- Reduce engineering time and domain expertise

**MODEL-BASED DESIGN**

- Program code designed based on state machines
- Models help to have a clear program structure

**STANDARDIZATION**

- Extended the functionality of the UNICOS-CPC framework: motion with stepping motors.

**SUPPORT**

- Optimized support to installations using standard solutions with already existing diagnostic tools.

**DEVELOPMENT**

- Reduced the time of developing and deploying motion projects.
- Flexibility with different architectures and configurations.