

Application of Inovance[®] PLC in Accelerator Control System

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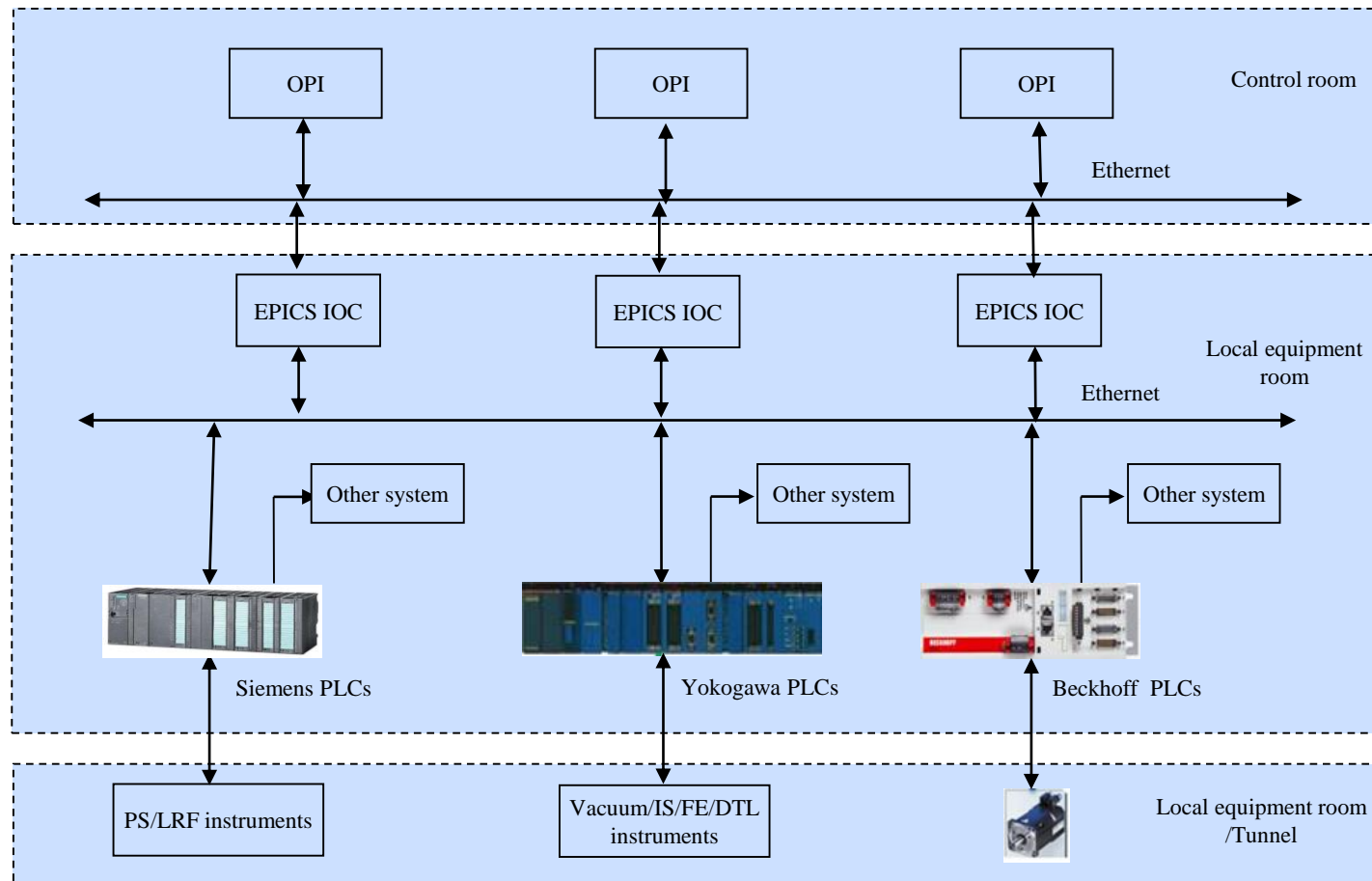
Outline

- **PLC-based control systems architecture**
- **Application of Inovance PLC**

PLC-based control systems architecture

- The CSNS PLC-based control systems were developed under the EPICS(Experimental Physics and Industrial Control System) software framework.
- Previously, no Chinese domestic brand PLC was used in CSNS, the widely used PLCs were from Yokogawa, Siemens, and Beckhoff.

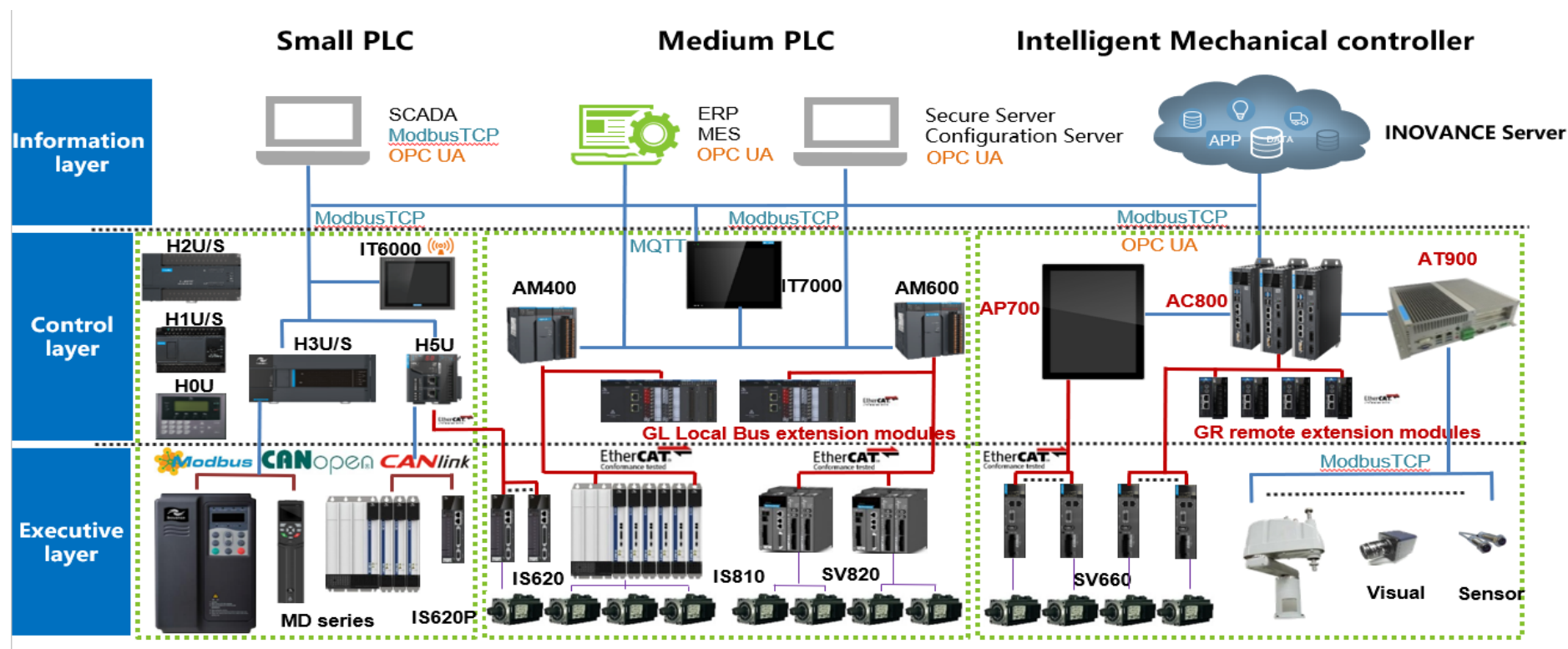
PLC-based control systems architecture



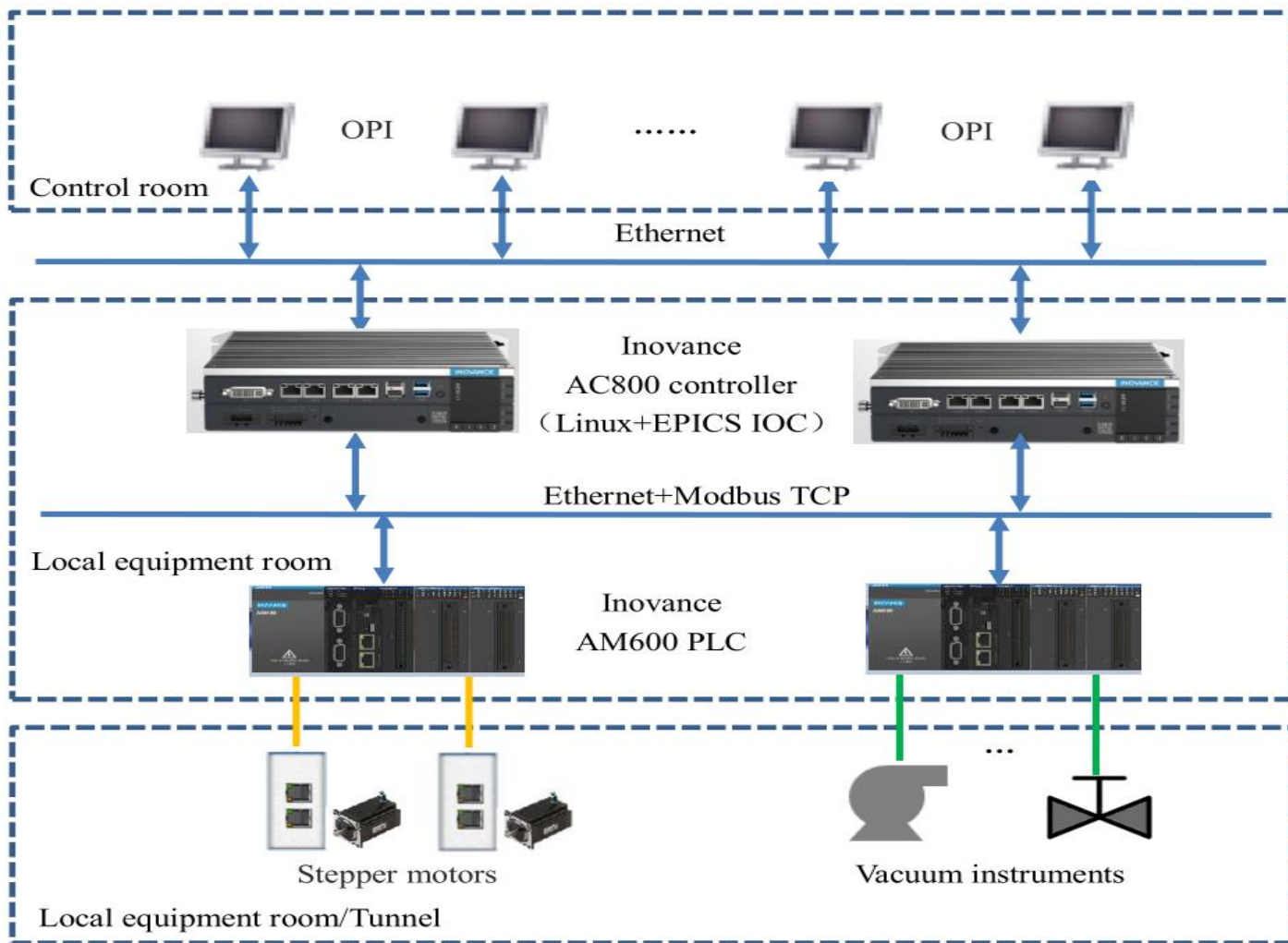
Application of Inovance PLC

About Inovance

- The Inovance Group is a leading provider of industrial automation solutions, founded in 2003 in Shenzhen, China.



Application of Inovance PLC

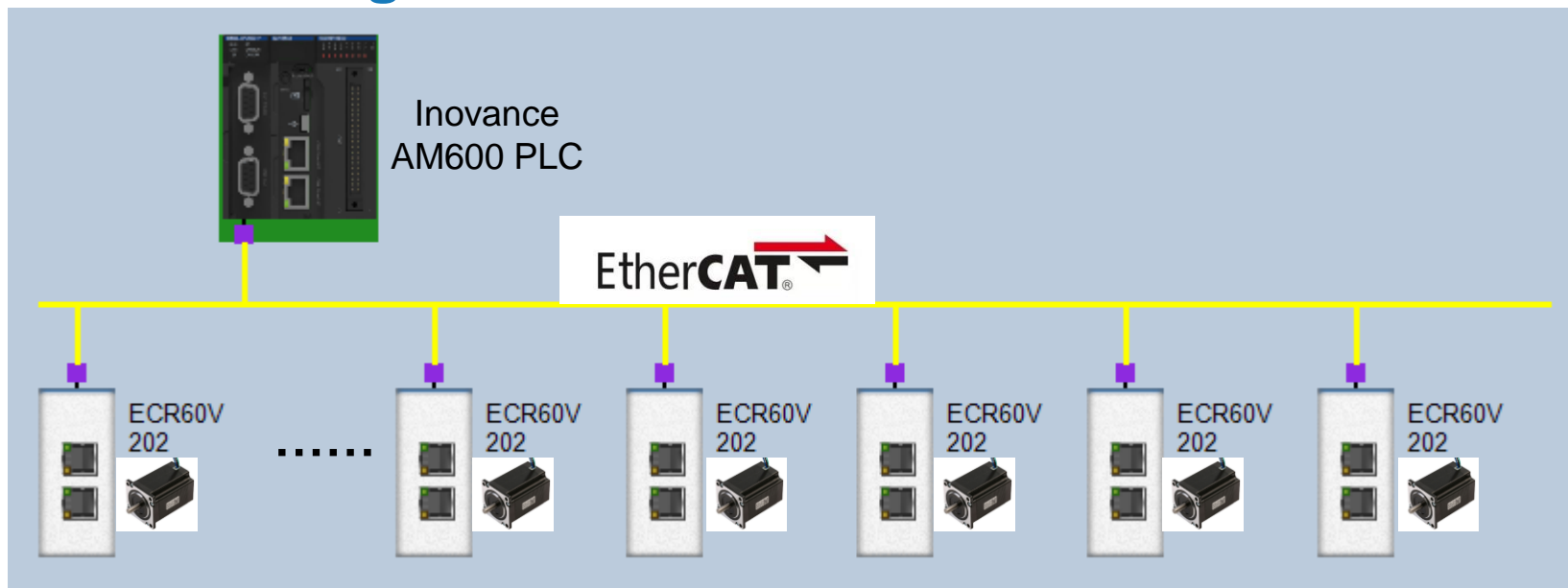


Inovance PLC-based control system architecture

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Motion control

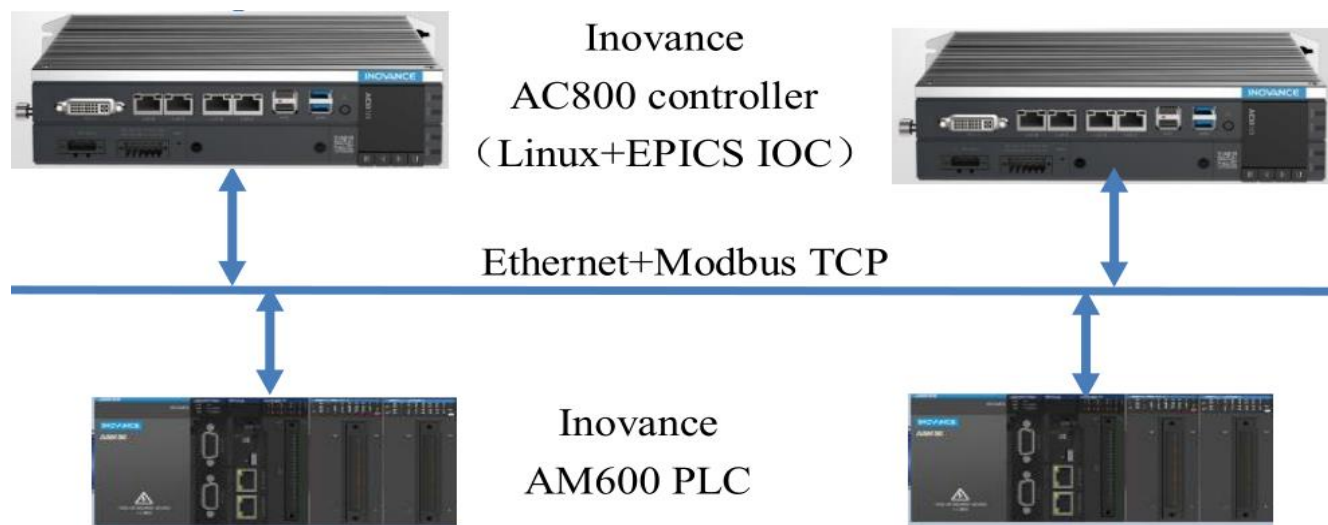
- Using EtherCAT bus stepper driver and two-phase stepper motor to simplify wiring, improve reliability, anti-interference, and enhance fault diagnosis.



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Communication between EPICS IOC and Inovance PLC

- The EPICS IOCs running in the Inovance AC800 controllers(Linux).
- The EPICS IOCs communicate with the Inovance AM600 PLCs through the Modbus protocol using Modbus driver (Mark Rivers: University of Chicago).

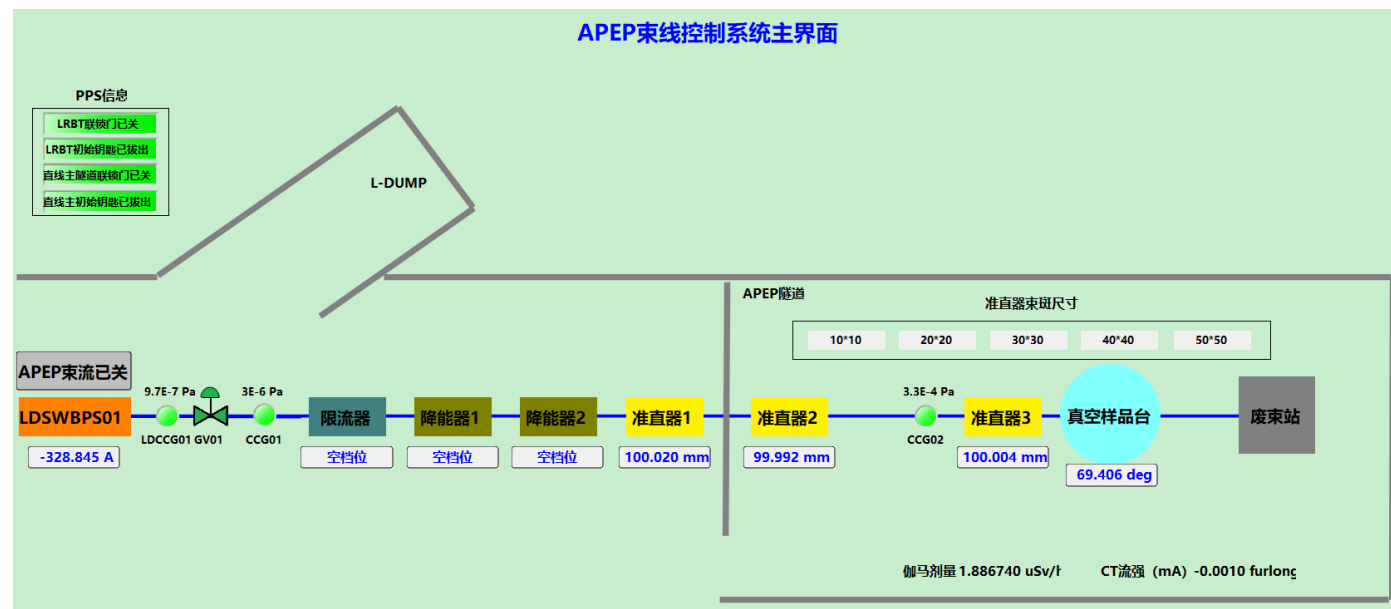


Application of Inovance PLC

- The Inovance PLCs have been deployed in the Associated Proton Experimental Platform (APEP) and the back-streaming white neutron beam line (Back-n) in CSNS.



The control cabinet of APEP



The main OPI of APEP

Thank You!