



Automation and Industrial Software Systems Inspection

Verifying Logic, Interface Integrity, and System Reliability

Innovio e.U. offers specialized inspection services for industrial automation platforms, including PLC, SCADA, HMI, and DCS systems. Our inspections go beyond hardware verification to include logic validation, communication integrity, and control response testing.

We support clients in ensuring their automated systems are programmed correctly, function safely, and operate in accordance with the intended control philosophy. Our approach includes full FAT witnessing, input simulation, and inspection of both hardware and software configurations.



1. PLC Panel and Hardware Inspection

- Visual inspection of PLC enclosures, ventilation, and mounting
- Power supply layout, redundancy setup, and internal cabling checks
- I/O module type and quantity verification based on system design
- Terminal identification and wiring arrangement review
- Grounding and shielding integrity inspection
- Cross-check of installed hardware against BOM and panel drawings



2. I/O Simulation and Signal Testing

- Simulation of all analog and digital input signals from field to controller
- Output signal verification to actuators, relays, and indicators
- Fault signal response and interlock testing
- Testing of analog scaling, sensor calibration, and raw signal handling
- Verification of fail-safe state transitions for power loss or signal drop
- Dry run simulation of startup and shutdown sequences



3. Control Logic and Programming Validation

- Review of implemented PLC logic against approved control philosophy
 - Alarm and event handling structure verification
 - PID loop configuration checks and tuning parameter validation
 - Sequence logic and step-by-step transition inspection
 - Program version tracking and revision history check
 - Functional block diagram and ladder logic structure review
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4. HMI and SCADA Interface Testing

- Layout review of operator screens, process flow, and navigation
 - Display accuracy of process values, alarms, and statuses
 - Button and control response timing tests
 - Alarm hierarchy testing with audible and visual output confirmation
 - Screen security levels and user access validation
 - Trending, historical data logging, and reporting function verification
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5. Communication and Networking Checks

- Verification of communication protocols (Modbus, Profibus, Ethernet/IP, etc.)
 - Signal latency and transmission loss checks under load
 - IP addressing conformity and device-to-device routing integrity
 - Switch and router setup validation for networked automation
 - Redundant communication path test (hot standby or dual-redundant)
 - Firewall or VLAN inspection if used within industrial networks
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6. Documentation and Final Review



- FAT documentation package validation (I/O lists, test logs, ladder logic printouts)
- Backup of logic programs and HMI screen sets
- Cross-checking PLC tags with loop sheets and field devices
- Punch list creation for incomplete or incorrect logic functions
- System readiness report and support for client sign-off process