



Instrumentation and Control Systems Inspection

Verifying Precision, Integration, and Process Control Integrity

Innovio e.U. provides detailed inspection services for field instrumentation and control systems used in industrial automation, process plants, energy systems, and smart facilities. Our inspection process ensures that every instrument, signal path, and control response is accurate, properly integrated, and aligned with operational design.

Drawing from extensive experience in electrical, instrumentation, and automation systems, we support clients through FAT, pre-commissioning, and final system validation with technical accuracy and traceable documentation.

1. Field Instrumentation Inspection

- Visual and tagging inspection of transmitters (pressure, temperature, flow, level)
- Model number and range verification against datasheets and design specifications
- Installation quality check (orientation, accessibility, protection covers)
- Mounting bracket and impulse line inspection for correct alignment and support
- Gland sealing and cabling conformity at junction boxes or marshalling cabinets
- Verification of instrument signal output (4–20 mA or digital protocols)
- Review of calibration certificates and traceability records
- Functional checks using simulation tools or test pumps

2. Control Valve and Actuator Inspection

- Inspection of valve body, actuator mounting, and orientation
- Pneumatic or electric actuator performance check
- Signal response validation (open-close cycle, feedback, fail-safe position)
- Positioner alignment and stroke calibration
- Solenoid valve signal testing and operation under simulated input
- Air supply tubing layout and leak detection inspection



- Conformity to control philosophy and P&ID specification
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3. Loop and Wiring Verification

- Loop continuity and polarity checks between field and control room
 - Shielding, grounding, and segregation of signal cables
 - Labeling and tagging conformity at both ends (instrument and DCS/PLC)
 - Terminal torque confirmation and insulation checks
 - Multicore cable breakout inspection and marshalling rack arrangement
 - Review of loop diagrams and field installation against documentation
 - Simulated input testing for loop validation (dry run or wet run)
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4. Instrument Cabinets and Junction Boxes

- Visual and internal inspection of instrument enclosures and field junction boxes
 - Cable entry and gland tightening check
 - Review of terminal arrangement, labeling, and tag number consistency
 - Inspection of internal wiring routes, jumper links, and earthing bus
 - Cross-check with termination schedules and system architecture diagrams
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5. Integration with DCS, PLC, and Control Systems

- I/O signal verification with SCADA, HMI, or DCS platforms
- Alarm and interlock response testing for each loop or system
- Functional validation of logic sequences based on cause-and-effect charts
- Signal simulation and fault condition test scenarios
- Verification of fail-safe and fallback modes
- I/O list verification and system architecture review



6. Documentation Review and Finalization

- Loop folder check (instrument index, loop diagrams, calibration reports)
- Verification of P&ID vs as-installed configuration
- Marking and labelling review across loop sheets and control drawings
- Punch list generation for incomplete, incorrect, or missing items
- Support for client FAT witnessing and third-party verification