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FAT – Factory Acceptance Test

Description

Pre-shipment validation to ensure the system meets all contractual specifications.

Includes

- Documentation review (drawings, BOM, manuals)
- Mechanical inspection
- Functional testing
- Automation validation (PLC, HMI)
- Safety validation
- Performance testing (if applicable)

FAT Protocol

- Test list
- Acceptance criteria (OK/NOK)
- Traceability
- Evidence (photos, data)
- Signed acceptance report

Purpose of FAT

- Detect deviations early
- Reduce risks during commissioning (SAT)
- Ensure quality of delivered product
- Validate system readiness

Scope of Application

- Complete machines
- Automated lines
- Critical sub-assemblies
- Control software (PLC, HMI, MES)

Performed with equipment assembled and under operational conditions as close as possible to real production.

FAT Modalities

- Internal FAT (manufacturer pre-FAT)
- FAT with customer (on-site or remote)
- FAT with third parties (e.g., Dekra, Bureau Veritas, TÜV)

FAT Content Documentation Verification

- Mechanical and electrical drawings
- Bill of Materials (BOM)
- Preliminary manuals
- Validated electrical diagrams
- Functional specifications
- Risk assessment (UL, CE, etc.)

Visual and Mechanical Inspection

- General assembly
- Manufacturing quality
- Wiring and labeling
- Pneumatics / hydraulics
- Safety protections

Functional Testing

- Automatic sequences
- Manual / automatic modes
- Interlocks
- Alarms and error handling
- Full production cycles (if possible)

Electrical & Automation Testing

- I/O checks
- Communication between equipment
- PLC program verification
- HMI functionality
- Industrial networks

Safety

- Emergency stops
- Safety doors and interlocks
- Safety circuits validation
- Compliance with applicable regulations

Performance (if applicable)

- Cycle time
- Production capacity
- Repeatability
- Stress / endurance tests

FAT Protocol

The FAT must be supported by a structured protocol including:

- Detailed test list
- Clear acceptance criteria (OK / NOK)
- Execution responsibilities
- Required evidence (photos, data, records)
- Traceability with project requirements

👉 The protocol must be approved before FAT by all parties

Roles & Responsibilities

- Manufacturer: preparation, execution, documentation
- Customer: validation and acceptance
- Engineering / Project Manager: coordination
- Quality: documentation control and closure

Deviation Management

During FAT:

- Minor observations → non-blocking
- Non-conformities (NC) → may block acceptance

Each deviation must:

- Be documented
- Be classified (critical / major / minor)
- Have an action plan and deadline

Acceptance Criteria

FAT is considered accepted when:

- All critical tests are OK
- Critical deviations are resolved
- Formal agreement is reached
- FAT report is signed

Deliverables

- Completed FAT protocol
- Deviation list
- Signed acceptance report
- Evidence (photos, videos, records)
- Final software backup (PLC/HMI)

⚠️ The customer must:

- Define and submit the FAT protocol within a maximum of 2 weeks after purchase order
- Provide materials and tooling for real testing within the same timeline

⚠️ Limitation:

- Simulation vs real conditions