

FAT Survival Guide



**How to make the most of the Factory Acceptance Test
Before, During, and After**



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How to make the most of the FAT—Before, During, and After

Introduction

If this is your first Factory Acceptance Test (FAT), you’re probably wondering what to expect. What will happen at the FAT? What will be expected of me? This guide provides information that will help you not only survive, but make the most of, your first and every other FAT.

What is the FAT?

A major project milestone, during which the Original Equipment Manufacturer (OEM) demonstrates that the machine’s design and manufacturing meets specifications agreed upon in the contract with the client.

- Pre-planned activities are conducted during the FAT to verify OEM compliance with client specifications, conduct performance tests, validate machine safety, and minimize unknowns before installation.
- The FAT allows first-hand observation and testing of machine operation in the client-specified operating environment.
- It also proves the opportunity to capture machine technical and operating info for use by Operations and Maintenance personnel back at the client site.

WHAT WILL HAPPEN...?

Before the FAT	During the FAT	After the FAT
<p>The Project Team:</p> <ul style="list-style-type: none"> - Obtains client, machine standards - Creates a test plan, sends to OEM before the FAT - Ships products/SKUs, materials for testing; ensures machine is ready - Plans for travel <p>The OEM:</p> <ul style="list-style-type: none"> - Prepares the machine according to client specifications for testing <p>Your Role:</p> <ul style="list-style-type: none"> - Prepare tools to assist the team with testing - Prepare tools to capture technical info about the machine from OEM experts 	<p>The Project Team:</p> <ul style="list-style-type: none"> - Follows a Test Plan, records results and identifies issues for discussion - Discusses issues; updates punch list <p>The OEM:</p> <ul style="list-style-type: none"> - Performs tests - Provides technical info about the machine’s installation, functions, operation and maintenance <p>Your Role:</p> <ul style="list-style-type: none"> - Record observations, note questions or potential problems - Capture technical info associated with activities in the FAT Test Plan 	<p>The Project Team:</p> <ul style="list-style-type: none"> - Agrees on, prioritizes, punch list items for OEM to complete - Provides technical info for training/operational support <p>The OEM:</p> <ul style="list-style-type: none"> - Makes agreed-upon changes machine changes - Updates the documentation <p>Your Role:</p> <ul style="list-style-type: none"> - Identify key operations, maintenance tasks to perform after startup - Provide feedback on how new equipment may impact current resources, operation, or safety

1. WHAT to Do BEFORE the FAT

Do Your Homework	Prepare for the Onsite
<ul style="list-style-type: none"> <input type="checkbox"/> Review the FAT Agenda <input type="checkbox"/> Review product, machine specifications, and test criteria <input type="checkbox"/> Obtain/review OEM machine documentation <input type="checkbox"/> Be familiar with the machine’s functions, optional features, and generational differences <input type="checkbox"/> Prepare questions to ask OEM experts during the FAT (See Equipment Discovery – Q/A Sample below) 	<ul style="list-style-type: none"> <input type="checkbox"/> Arrange travel with Project Team <input type="checkbox"/> Get a video/still camera to capture machine features and operation <input type="checkbox"/> Get a notebook to record notes <input type="checkbox"/> Pack all PPE, testing tools <input type="checkbox"/> Prepare tools to capture as much technical info about the machine from OEM experts

Equipment Discovery – Q/A Sample

Overview	<ul style="list-style-type: none"> - What are the machine sections? - What is the theory of operation?
Machine Components	<ul style="list-style-type: none"> - What are critical components and what do they do?
Safety	<ul style="list-style-type: none"> - What are the hazard points and major safety mechanisms?
HMI	<ul style="list-style-type: none"> - How do we navigate the HMI? - What screens are used to...?
Operation	<ul style="list-style-type: none"> - How do we start/stop/reset faults? - What are the steps to load/unload materials?
Cleaning	<ul style="list-style-type: none"> - What are daily, weekly, monthly requirements?
Troubleshooting	<ul style="list-style-type: none"> - What are the top 5 problems and solutions?
Maintenance	<ul style="list-style-type: none"> - What are key diagnostic screens and machine adjustments?

2. WHAT to Do DURING the FAT

Test Activities	What You Can Do During Test Activities
<p>The OEM provides an appropriate system to allow the equipment to be fully tested in the manufacturer’s facility before shipment. The equipment is tested at varying speeds up to the full rated speed.</p> <p>Following the FAT, approval to ship to the client site is contingent on successful performance of all aspects of the FAT, adherence to specifications, and documentation review.</p>	<p>Record observations, note questions or potential problems for team discussion; also capture technical info during testing activities.</p> <p>Before You Begin:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Note the timelines for activities and roles of attendees <input type="checkbox"/> Meet every attendee to explain your role and to facilitate future communication <input type="checkbox"/> Capture contact info for all attendees

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2. WHAT to Do DURING the FAT (continued)

Test Activities	What You Can Do During Test Activities
Typical Test Plan:	
Static Electrical Checks <ul style="list-style-type: none"> - Main Control Panel – Documentation, Interior/Exterior - Static Electrical Examination of Machine (Conduit, Fittings, Enclosures, Motors, Control Devices, Wiring) 	<input type="checkbox"/> Record software/hardware versions <input type="checkbox"/> Note discrepancies in machine requirements (i.e. Safety, Electrical, Transmission Systems, General Purpose Machine, Settings, etc.) <input type="checkbox"/> Identify HMI navigation and screens use <input type="checkbox"/> Note potential installation issues (suggested format)
Communication and Programming <ul style="list-style-type: none"> - Network Components and Connectivity - Control Interface with Signals to/from Line Control - Information Interface with Addressing, Programming - HMI Screen Layout 	
Static Mechanical Checks <ul style="list-style-type: none"> - Compliance with OSHA, GMPs - Drive System, Conveyor System, Dimensions, Lubrication, Guarding/Safety, Fasteners and Accessibility for Service/Changeover, General Construction, Pneumatic Systems, Vacuum Systems, Finishes - Component compliance with client equipment standards 	<input type="checkbox"/> Take photos/video of machine operation—overall, and section by section
Dynamic Pre-Test <ul style="list-style-type: none"> - E-stops, Run Permissives, Run Modes, Fault/Alarm/Recovery, Speed Control/Settings, HMI Input/Output, Diagnostics/Status Points 	<input type="checkbox"/> Document how the machine performs <input type="checkbox"/> Perform quality tests, capture results <input type="checkbox"/> Take photos of defects, identify causes, document how to resolve <input type="checkbox"/> Capture machine set points, parameters affecting quality <input type="checkbox"/> Take photos of step-by-step procedures <input type="checkbox"/> Identify ergonomic issues and solutions <input type="checkbox"/> Document additional info for Operations, Maintenance use onsite
Dynamic Test <ul style="list-style-type: none"> - Timed Continuous Dry Cycle Test - Demonstration Run, Quantity Run, Speed test - Quality Test - Induced Failure Test (IFT) - Changeover Test 	
Documentation <ul style="list-style-type: none"> - Engineering Drawings, Installation Prints, Utility Consumption, Electrical Drawings, Schematics, PLC Program Code, As-Built Drawings, Operations and Maintenance Manuals, Spare Parts List, Preventative Maintenance Program, Changeover Requirements - Safety Data Sheets (SDS) 	<input type="checkbox"/> Identify key operations, maintenance tasks to perform after startup <input type="checkbox"/> Review OEM documentation to identify gaps in technical info, areas to update <input type="checkbox"/> Document the OEM’s “Complete By” Date for Documentation _____
Shipping/Approval <ul style="list-style-type: none"> - Shipping Requirements/ Tracking - Approval to Ship (Meets successful performance of all aspects of the FAT, adherence to specifications, and documentation review.) 	<input type="checkbox"/> Ensure OEM documentation is shipped with equipment



3. WHAT to Do AFTER the FAT

Keep Up with Issues Being Resolved	Transfer Knowledge Gained from the FAT
<ul style="list-style-type: none"> <input type="checkbox"/> Assist with prioritizing issues and follow-up items <input type="checkbox"/> Note how issues discussed during the FAT will affect Operations and Maintenance tasks on the machine 	<ul style="list-style-type: none"> <input type="checkbox"/> Rename images, video footage for later reference <input type="checkbox"/> Transfer files, including manuals, labeled images/video footage to network/document libraries <input type="checkbox"/> Work with Operations/Maintenance teams to transfer knowledge gained at FAT (via training, SOPs, job aids) <input type="checkbox"/> Identify documentation areas to revise

OEM Documentation	OK	Gaps/Comments
- Overview		
- Machine Components		
- Safety		
- HMI		
- Operation		
- Cleaning		
- Troubleshooting		
- Maintenance		



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