

HYDRAULIC PRESS UPGRADE

FACTORY ACCEPTANCE TEST (FAT)

PRJ-TK-1902-0-098-DOC-04

Rev.	Date	Prepared	Reviewed	Approved

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1. Introduction

1.1 Purpose of this Document

The main objective of FAT (Factory acceptance test) document is to check the system is tested in accordance with Customer requirement test plans of system functionality and specifications to show the system is installed properly and interfaces with other devices and peripherals in its working environment.

1.2 Customer

Customer: A leading forging company

1.3 Abbreviations

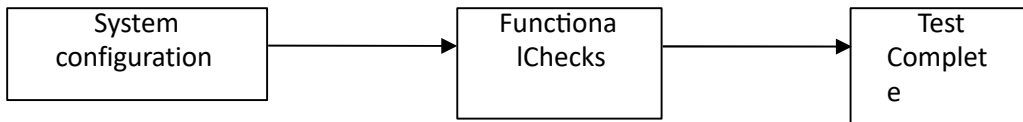
- FAT – Factory Acceptance Test
- IAT – Internal Acceptance Test
- PLC -Programmable Logic controller
- HMI-Human Machine Interface

1.4 References

- FDS- PRJ-TK-1902-0-098 -DOC-002
- IO LIST.
- EXISTING DRAWING

1.5 Test Procedure

To Ensure Quality at all the stages, I-FAT test are carried out at different milestones.



1.6 Test Documentation

All testing shall be fully reproducible. An undocumented test shall be regarded as unfulfilled. The test documentation shall reflect the progress of the test, log punch items as well as cleared punches. During FAT no punches will normally be cleared. This procedure will also ensure that the equipment used for the test is logged, and such enable a reproduction of the test environment.

The following documentation shall be used to log the test results and included in the test dossier for the node:

- Object test
- Function test
- Test sheets for other tested logic (if applicable)
- IAT/FAT/SAT Punch sheets
- IAT/FAT/SAT acceptance certificate

The test documentation shall be collected in a test dossier consisting of this procedure and all printed documentation.

After the FAT is complete, the test dossier shall be scanned and stored electronically.

1.7 Handling of Punches/ Punch Sheets

All punches shall be logged by use of the standard punch sheet during testing and be properly documented.

Paper copies of punch sheets shall be archived for traceability. An entry shall be made whenever a fault is identified. If a fault is confirmed as a punch, the Engineering Manager shall assign the task to qualified personnel. The fault shall then be corrected, retested, and closed in the punch database.

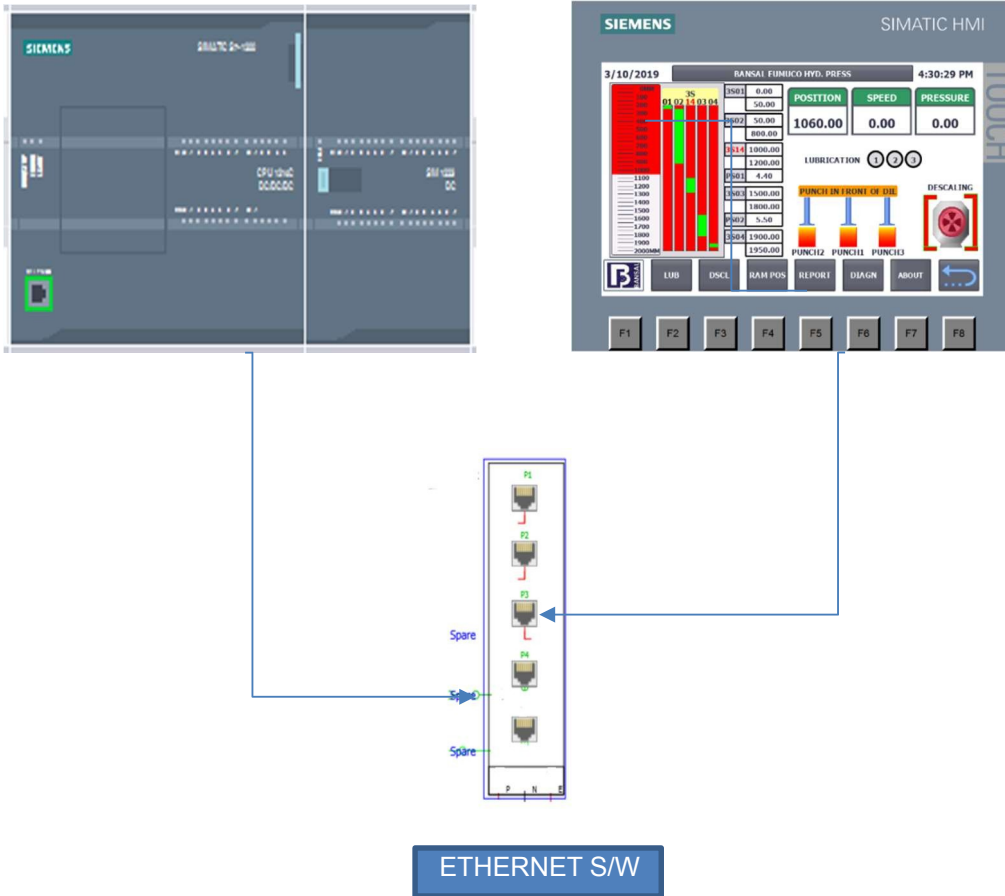
Punches which are common for several signals or objects can be recorded as one general punch if all applicable tags are listed.

1.8 Test Personnel Qualification

Qualification Requirement for persons involved in the test:

Establish Test Setup (HW & SW)	Engineer
Download SW and create a running system	Engineer / Jr. Engineer
Perform Test	Engineer / Jr. Engineer

2. Description of Project



3. Control Panel

3.1 Pre- Commissioning

The below pre-commissioned checks are performed to confirm the Factory acceptance test activity can be started as scheduled.

3.1.1 Visual Check

- Visual verification of control panel to check the General arrangements of components are performed in quality.

3.1.2 BOM Verification

- Bill of materials to confirm that all the materials are Delivered and used.

3.1.3 Continuity Check

- Continuity check of the control panel to be checked using continuity tester.

3.1.4 Power Check

- Before powering up the panel, All Power circuits are cross checked with the wiring diagram.

3.1.5 Safety Check

- Confirm with the Operator that Emergency Stops will work. Ask them to activate and check that it is safe to work.

Comments:

Sign. Customer Representative

Sign. FAT responsible

Date:

Date:

3.2 I/O Check

3.2.1 Digital & Analog Signals

S.NO	INPUT	REMARKS	OUTPUT	REMARKS
1	I0.0		Q0.0	
2	I0.1		Q0.1	
3	I0.2		Q0.2	

4	I0.3		QI0.3	
5	I0.4		Q0.4	
6	I0.5		Q0.5	
7	I0.6		Q0.6	
8	I0.7		Q0.7	
9	I1.0		Q1.0	
10	I1.1		Q1.1	
11	I1.2		Q2.0	
12	I1.3		Q2.1	
13	I1.4		Q2.2	
14	I1.5		Q2.3	
15	I2.0		Q2.4	
16	I2.1		Q2.5	
17	I2.2		Q2.6	
18	I2.3		Q2.7	
19	I2.4		Q3.0	
20	I2.5		Q3.1	
21	I2.6		Q3.2	
22	I2.7		Q3.3	
23	I3.0		Q3.4	
24	I3.1		Q3.5	
26	I3.2		Q3.6	
27	I3.3		Q3.7	
28	I3.4		IW64	
29	I3.5		IW66	
30	I3.6			
31	I3.7			

Perform Input Output check of all Digital inputs and Digital Outputs using the IO list.
 Check the Scaling for Analog Inputs

Comments:

Sign. Customer Representative

Sign. FAT responsible



Date:

Date:

4. Functional Test

4.1 RAM DRO

S. No	Operation	DATE	SIGN	Remarks
1	Navigate to RAM POS screen on HMI, select RECIPE button, enter all the CAM switch values and Pressure Values. Give a name and press SAVE.			
2	Navigate Back to RAM POS and select the saved recipe from the Product Drop down and Press Download to PLC			
3	Navigate to Home Screen by Pressing Customer LOGO, Ask Operator to operate the Press in Auto mode.			
4	Verify all the Operation is working in the Auto mode just how it was before.			
5	Simulate Pressure Value (PS01) before the RAM reaches Punch 1 CAM, this should give the CAM output and the RAM should go back and start the next action			
6	Simulate Pressure Value (PS02) before the RAM reaches Punch 2 CAM, this should give the CAM output and the RAM should go back and start the next action			
7	Simulate Pressure Value (PS03) before the RAM reaches Punch 3 CAM, this should give the CAM output and the RAM should go back and start the next action			

4.2 Lubrications

S. No	Operation	DATE	SIGN	Remarks
1	Operate Lubrication 1 using the Selector switch mounted on the control panel. Verify the Relay is on and check the continuity at the terminal.			
2	Operate Lubrication 2 using the Selector switch mounted on the control panel. Verify the Relay is on and check the continuity at the terminal.			
3	Operate Lubrication 3 using the Selector switch mounted on the control panel. Verify the Relay is on and check the continuity at the terminal.			
4	Operate – Lubrication1 by pressing the Pushbutton on HMI.			
5	Operate – Lubrication2 by pressing the Pushbutton on HMI.			
6	Operate – Lubrication3 by pressing the Pushbutton on HMI.			

4.3 Lubrications Auto Mode

S. No	Operation	DATE	SIGN	Remarks
1	Check during the Auto operation Lubrication 1 Relay is switching on When Punch 1 is present			
2	Check during the Auto operation Lubrication 2 Relay is switching on When Punch 2 is present			
3	Check during the Auto operation Lubrication 3 Relay is switching on When Punch 3 is present			

4.4 Descaling

S. No	Operation	DATE	SIGN	Remarks
1	Operate Descaling motor from HMI, Verify the PLC Relay is ON and corresponding Hydraulic Press Relay is ON			
2	Operate Descaling motor from Panel Selector Switch, Verify the PLC Relay is ON and corresponding Hydraulic Press Relay is ON			

3	Simulate the Descaling Billet detecting sensor by shorting at the Terminals, Descaling motor Relay and Brake Relay should be ON, and this should Switch on the Descaling Motor. When Descaling Completed CAM switch signal is simulated from the Terminal, Descaling motor should turn off.			
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Comments:

Sign. Customer Representative

Date:

Sign. FAT responsible

Date:

4.5 HMI Screen Validation:

Each Screen to be navigated and purpose of each screen to be explained to the Customer.

S. No	Name of the Screen	Remarks
1	HOME SCREEN	
2	LUBRICATION SCREEN	
3	DESCALING SCREEN	
4	RAM DRO POSITION	
5	RECIPE SCREEN	
6	REPORT SCREEN	
7	DIAGNOSTICS	
8	ABOUT	

Comments:**Sign. Customer Representative**

Date:

Sign. FAT responsible

Date:

Annexure A: FAT CERTIFICATE**FAT**

ACCEPTED



- 1. Comments on test procedure :
- 2. Comments on test Personnel :
- 3. Comments on I-FAT :
- 4. General comments :

Total No of Punch: _____

Clear Punch: _____ Pending Punch: _____ Rejected Punch: _____

The function of Lubrication, Descaling, RAM position in both auto and manual are visually inspected and the functionality tests were verified. Dispatch the panel on or before dated: _____

Participants Names:

Sign. Customer Representative

Date:

Sign. FAT responsible

Date:

Annexure B: PUNCH LIST

CPU:	Punch no:	Concerns:				Category:	
			Application SW		Documentation		Punch
			HMI				Observation
			System SW				Global
Title:							
Punch description:							
Initiated by:					Initiated date:		
Modification:							
Done by:					Date:		
Handling /status: (e.g., punch cleared, not relevant etc. If it can be unclear how punch was retested, describe how)							
Retested and accepted by:					Accepted date:		