# Table of Contents

|  |  |
| --- | --- |
| **Section** | **Page** |
| 1 Purpose | 1 |
| 2 Scope | 1 |
| 3 Definitions | 2 |
| 4 Graphic | 2 |
| 5 Responsibilities by Function | 2 |
| 6 Procedure | 3 |
| 7 Associated Quality Records | 6 |
| 8 Forms / Templates | 6 |
| 9 Revision Training Requirements | 6 |
| 10 Revision History & Approval | 7 |

# Purpose

## A high level overview of how we use documentation and material to produce controller systems and products under controlled conditions.

# Scope

## Applies to work orders and work requests that are routed to the following work centers.

|  |  |
| --- | --- |
| E4001 | Std. Controller Config and Test per BOM |
| E5250 | Custom Electronic Mfg. per BOM |
| E5270 | Custom Cable Mfg. per BOM |
| E5280 | Custom Rack Mfg. per BOM |
| E5225 |  Cust. Elect. 2 Day Glue Cure per BOM |
| E5240 |  Custom Elect. Mfg. for Frame per BOM |

# Definitions and Acronyms

Build to print – Manufacturing steps and methods are directed by the information placed on the design drawing and the bill of material.

Mark-up -- Using a red pen to make engineer directed changes to a BOM or drawing. Once marked-up, the document must have a properly filled out “Check Change Pending” stamp applied to it.

# Graphic (if needed)

# Responsibilities

### Manufacturing Staff – Follows the guidance in this document as they perform manufacturing tasks.

Manufacturing Engineer – Creates and maintains processes and procedures.

Manufacturing Supervisor/Manager – Administers training and verifies its effectiveness. Insures manufacturing steps are carried out as defined by processes and procedures.

Manufacturing Planner – Schedules and releases work orders as directed by the MRP system. Responds to material shortages as required.

# Procedure

## **Training and Record Keeping**

All manufacturing staff receives training until they’re proficient. Training topics and records are kept by the Supervisor.

All work orders are under the control of a Production Planner. Control of work orders is accomplished through:

* SAP transaction records
* Status Log spreadsheet
* Work Order Record form
* Test Plan for Electronic Systems and Products
* Mark-up changes and “Check Change Pending” stamp

These logs and records provide the verification of conformance and a quality record for all manufacturing work performed by the group.

## **Control of Manufacturing Methods and Materials**

All manufacturing work is “build to print” using:

* MTS design documentation
* MTS product specifications
* Vendor supplied specifications
* Manufacturing procedures
* Material that is under inventory control.

**As-built Changes**

All “as-built” changes require engineering approval. The change (mark-up) and the engineering approval (Check/Change Pending stamp) must be documented on the appropriate drawing and BOM before production can continue.

The stamped and approved marked-up documentation is used to initiate a QN and an ECN.

Procedures for carrying out as-built changes are located at the following QMS pages.

[Nonconforming Product Home Page](http://groups.mts.com/ProjectSystem/ProcessHome.asp?mnuSys=Qual&mnuShortName=Nonconforming)

[Production](http://groups.mts.com/ProjectSystem/PhaseHome.asp?mnuSys=Mfg&mnuPhaseId=20)

**Reference information**

When necessary, reference information is used during the manufacturing process. Two examples of reference information are IPC-A-610 and IPC-A-620 acceptability manuals.

**Control of Material**

All material is kept organized and identified as it moves from the warehouse to the shop floor. All material is protected from damage as it is handled and moved from one area to the next.

**ITAR**

All controlled documentation and material (ITAR) is protected from the view of unauthorized personnel.

**ESD**

ESD sensitive devices are protected using methods described in the ESD Control Procedure.

**Material shortages**

All material shortages are documented on the Work Order Record form. Production staff shall alert the Planner to any newly discovered shortages that are not previously documented in the Work Order packet.

The Work Order Record is updated as the shortages are cleared. If necessary, the Work Order Planner can authorize a work order to be completed with missing material. The Planner makes the necessary MRP changes and coordinates the issuing of the missing material when it does arrive.

**QN**

All problems or issues that cause a slowdown or stoppage in work progress are documented on a QN and the Work Order Record Form.

**Non-conforming Material**

All non-conforming material and products are identified with a tag or other suitable label and segregated from conforming material. Defective material is processed using the Nonconformity Process Procedure.

**Work Order Completion Requirements**

There are five required tasks to complete when finishing a work order.

* Enter all required information into the Excel Status Log. Shading the employee assignment box red signifies that the order is complete.
* All information fields on the Work Order Record form must be completed. Filling in the confirm date and your employee # signify that the order is complete.
* Enter your employee # and date the work order route sheet.
* Complete the SAP operation confirmation screen.
* Complete the SAP Good’s Receipt screen.

Upon completion the finished work order is moved to the next location listed on the work order route.

# Associated Quality Records – as stated in the Quality Records List

|  |
| --- |
| **Required Record** |
| <file://mspdata1/manufacturing/Masters/Custom_Electrical/Documents/Qualityrecords/Electronic_Manf_Quality_Records_List.xlsx> |
|  |
|  |

# Reference Forms / Templates / Documents

|  |  |
| --- | --- |
| **Form / Template / Document Title** | **Location** |
| See Custom Electrical QMS Page | [Custom Electrical Home Page](http://groups.mts.com/ProjectSystem/ProcessHome.asp?mnuSys=Mfg&mnuShortName=CustElec) |
|  |  |
|  |  |

# Current Revision’s Training Requirements

Training requirements are determined by the document owner – either awareness or formal.

|  |  |  |
| --- | --- | --- |
| **Select One** **(mark X)** | **Training Type** | **Training Definition** |
|  | Awareness | Awareness training is conducted by communication, which is sent/delivered by the approver/author/owner of the document to the affected employees/groups.  |
|  XSee Sect. 5 | Formal | Formal training requires the approver/author/owner to collect/store evidence that the affected employees/groups were trained.  |

# Revision History & Approval

|  |
| --- |
| **REVISION HISTORY** |
| **Rev** | **Description of Change** | **Author** | **Effective Date** |
| E | Changed Process Training Requirement to Formal | R. Kant | 8/15/2014 |
| D | Added detail to as-built change section 6.2.  | R. Kant | 08/5/2013 |
| C | Changes made that bring alignment to level 1 Production Control Document | R. Kant | 02/25/2011 |
| B | Changed 6.2 to include reference to ITAR documents | R. Kant | 10/28/10 |
| A | Transitioned to new Format |  | 08/27/10 |

|  |
| --- |
| **APPROVAL OF CURRENT REVISION** |
| **Name / Function** | **Signature** | **Date** |
| Mfg. Eng. | Ralph Kant | 08/15/2014 |
|  |  |  |
|  |  |  |