

Memory Jogger For Developing Manufacturing Software

The intention of this memory jogger is to remind the Mechanical Engineer, Programmer, and the Operator of the important items when developing and controlling manufacturing software.

- All Software program(s)
 1. shall be uniquely identified (e.g., base # (123456) and version (Rev A or Rev 1))
 2. changes shall be documented and approved prior to production use
 3. shall be tested to ensure they meet all the requirements (documented evidence of)
 4. shall be archived in a manner that allows retrieval of all versions (e.g., DDM)
 - Not to be stored locally and this includes source code (e.g., C, D or H drive)
 - S/W programs are maintained as long as the part is in service
- Machine must be access protected (e.g., edit key restriction, password protection etc...).
 - ⇒ Wavier must be approved by the QSE organization (Software QA)
 - Documented justification is required from the ME
- Obsolete software shall be removed from machine memory and all systems so that it is no longer available for use (required to be stored in archive).
- Ensure all production software is under configuration control (e.g., DNC)
- Ensure the software is approved prior to production use (e.g., approval form or equivalent).
- Operator needs to verify that it is the latest production software program prior to use.
- Development software programs cannot reside in machine memory during production machining.
 - Responsibility of the ME and the Operator
- Ensure everyone is trained and that they understand the procedure and the requirements in it.
- Software changes that need to be documented are Significant, Insignificant, Dimensional, Typos etc...
 - The Manufacturing personnel is the person responsible for ensuring the correct software version is available for production use
- If you unable to confirm the identity of the software program stored in machine memory, or if the software program is not the latest version then the software program shall be erased and the latest version of the software program will be loaded.
- Changes to part-specific manufacturing software program that affects dimensions or part characteristics requires that the
 - Reason for change must be traceable to the documented requirement
 - Test results are documented by Quality First Piece Inspection and approved
 - Software program is uniquely identified as stated above
 - Software program is backed-up and archived as stated above
- Prior to using a machine with stored special process parameters, the operator is required to verify that all parameters in the machine are the same as the latest approved parameters.
- Approval of a new CMM part specific inspection software program requires that Quality Assurance inspect 100% of finished part characteristics recorded by the CMM.
- When CMM is being used for first-piece-inspection, an alternative method must be used to verify the CMM output measurement data.
- Software programs and the required documentation are retained as quality records for traceability for the life of the production part (e.g., DDM).
- Move the approved software program to the production library in accordance with requirements.
- When a part-specific software program (e.g., 45039321 CH B) is classified as an insignificant change the following is required:
 - A new version will be created and stored in the library with unique identification by incrementing the change letter (e.g., A to B or 1 to 2)
 - Verify the software program by testing it (dry run) on a suitable test piece
 - Document the software change in the program header, e-mail or on a form or equivalent.