Long-term storage: a solution for dealing with obsolescence

When obsolescence monitoring signals the impending discontinuation of a component, one solution is to purchase end-of-life stock. That's the easiest solution from a technical point of view, and only financiers will have a problem with it. However, a few months after receipt of the components, the manufacturer will terminate their support. It will, therefore, be necessary to previously establish the component's suitability for long-term storage and the quality of the parts placed in storage, in order to maintain maximum independence until the end of the program.

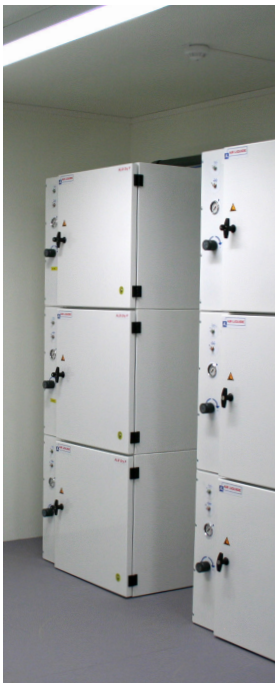
STORAGE CONDITIONS

The aim is to prevent deterioration of components. Risk analysis will focus on the quality of manufacture of the components, environmental conditions, theft, handling restrictions, seismic and flood risks, intrinsic deterioration, fire, explosion, etc. A whole range of possible mishaps can be classified into three main categories: component, location and people.

Except in special cases, storage should be as follows:

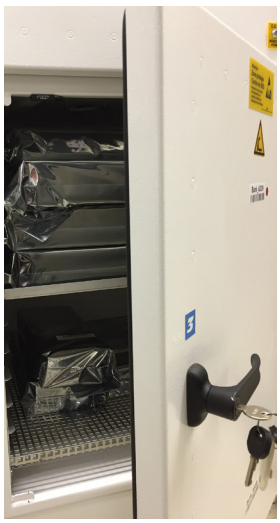
- In desiccator cabinets: wafers, dies and semiconductor components.
- In drypacks: electronic boards.
- On shelves: complete devices, cables, and components that do not tolerate too dry an atmosphere.

For the most part, electronic components do not pose a storage problem but particular attention must be paid to electromechanical and chemical components. As a general rule, it is best to consult the manufacturer regarding these types of component. Relays, for example, are sealed by a resin that does not necessarily tolerate too dry an atmosphere; shelf storage is best. A chemical capacitor needs to be powered regularly and in a controlled way. Batteries cannot be stored for long periods unless guaranteed by the manufacturer.



COMPONENT TEST

Even though components come from authorized sources, testing them prior to storage means you can go back to the manufacturer should any defect be found. Tests are carried out in accordance with the UTE C96-029 guide. The latter specifies not only storage conditions but also testing prior to storage and periodic testing based on the component and its technology. Some possible defects observed include, die revisions other than that expected, delamination in critical areas of plastic packages and terminals finish not as expected. However, the objective of the test is not the same as that for detecting counterfeits. If a part is defective under electrical testing, when tested for counterfits, it will be set aside to be opened to determine the reason for the defect, whereas in the case of long-term storage, it will be returned for investigation by the manufacturer. The objective here is to store as much information as possible about the component batches, through testing but also through information from the manufacturer. Once the components go into storage, periodic testing will seek to ensure that there is no deterioration of components.

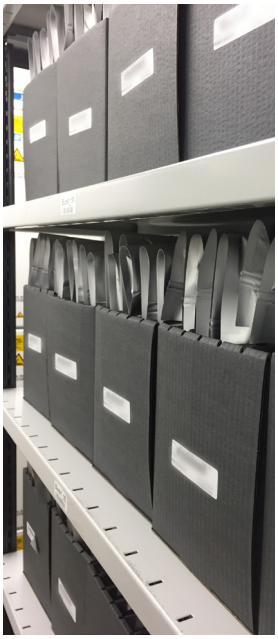


INVENTORY MANAGEMENT

Inventory sizing is paramount. It is defined in the UTE C96- 029-1 guide. It depends on the purpose of the component on the board manufacturing program, but also on the board manufacturing performance and the expected consumption for maintaining the manufactured equipment in operational condition.

The stock will be separated into several batches stored in different locations to protect against the risk of accidental destruction. Traceability must be ensured up to and including the storage location in order to be able to check whether environmental conditions and the criteria for separation of storage locations are respected.

When delivering to the customer, care will be taken to choose the storage place where the quantity is greatest, but care will also be taken to ensure regular rotation of the manufacturer's various batches. In other words, the FIFO rule should be ignored and batches should be rotated as much as possible with the aim of avoiding ending up with a single batch of components, which would be catastrophic if it were to prove defective. Stocktaking should be performed regularly, but not excessively. Stocktaking involves handling of parts and, thus, a risk of mishandling. The ideal is a management of parts in the form of off-site stock for the user, with a comparison at each stock movement between the user's computer status and that of the storage operator with annual stocktaking to confirm quantities.



GUIDES

UTE C96-029 : Electronic components - Long-term storage of electronic components - Implementation guide

UTE C96-029-1 : Electronic component obsolescence group - Methodological guide for sizing end-of-life inventories of electronic components and sub-assemblies

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