



ELECTRONIC MFG. SERVICES (EMS)

Long-Term Component Storage Prevents Obsolescence Issues

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During product development, or even shortly after launch, single components often go obsolete. Decisions about how to proceed then have to be made, including the option to redesign the product, or make a last-time buy (LTB) to ensure the availability of the required parts until the product's discontinuation or product change notification (PCN).

The issue of discontinued products is escalating, due to the increasing number of huge semiconductor companies merging. Unprofitable or redundant product lines are cut off with little notice. Proactive and strategic obsolescence management in a company proves to be very difficult.

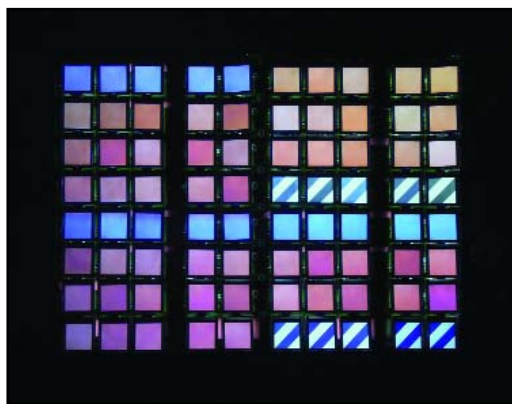
Even the method of storing the required components involves underestimated risks. Only a qualified storage design, tailored to the components, ensures their functionality and usefulness after being stored for several years.

Many companies establish divisions that are responsible for coordinating obsolescence, which communicate directly with company management. To prevent obsolescence and to solve related issues, this division must be involved with product development, quality management and the purchasing departments. It is essential to specify components according to the availability of a second source, in order to deal with sudden discontinuation.

However, even with a precise and proactive obsolescence management strategy, the need for an LTB cannot be avoided completely. What is more important is the appropriate and qualified long-term storage of components in order to eliminate risks through poor functionality or processability. The commonly held opinion that storage in nitrogen dry packs will halt the aging processes is wrong.

With a nitrogen-exclusive atmosphere, oxidation is

reduced, but not eliminated. Even in the standard packing process, the so-called nitrogen dry packs still contain percentages of oxygen. The aging processes, such as diffusion or corrosion caused by outgassing hazardous substances, will not be minimized at all.



Long-term storage is particularly beneficial for displays.

Thermal-Absorptive Gas-Barrier

To ensure the long-term availability of electronic components and spare parts, HTV developed its TAB[®] procedure, a thermal-absorptive gas-barrier system. This enables the storage of components and assemblies for up to 50 years, by reducing physicochemical aging effects. Usually, components are affected by aging after only one or two years in conventional storage.

As one of the global market providers of testing, component programming, long-term conservation and storage, as well as analytics and component processing of electronic components, the HTV group invested its experience of more than 30 years into

the development of its TAB program.

TAB permits the long-term prevention of corrosion and oxidation processes, based on special absorption systems — humidity, oxygen and hazardous substances, depending on the material. The aging processes inside the component, the diffusion at chip level, as well as material migration at chip level and pin level is significantly minimized with TAB.

Even the risk of whisker formation is controlled. Whiskers are tiny tin needles that grow out of the material and can lead to short circuits on PCBs or single devices. The growth of the intermetallic compound can nearly be stopped, for instance between the external tin coating and the base material of the pins, as well as the aging due to diffusion

processes at chip level.

This way, the quality, processability, functionality, and availability of spare components can be ensured for several decades. Storage in high-security buildings, which are made of reinforced concrete and have a fire-preventive atmosphere and a sophisticated alarm and camera monitoring system, provides excellent protection from theft and natural disasters.

Long-Term Display Storage

This long-term storage is particularly beneficial for displays, which is one of the most strongly growing markets. For many sensitive components of the display, such as the polarization foil, conventional storage is not the best solution. Generally, there is little information available from the manufacturer regarding long-term storage or aging.

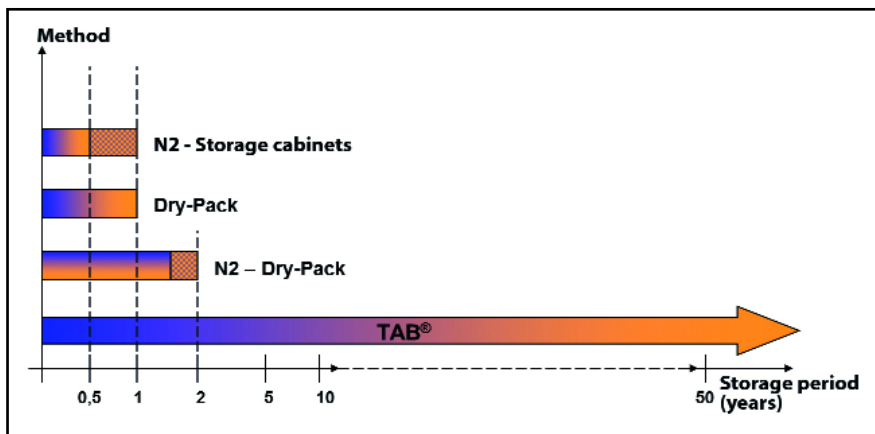
Displays should be stored in the dark — not exposed to sunlight — in a temperature between 32 and 95°F (0 and 35°C) and low relative humidity. Storage at higher temperatures tends to diminish the contrast of the display, while storage at lower temperatures slightly enhances it.

Other aging factors include temperature-related degradation of the adhesives, plastic components and the OLEDs, as well as change in the liquid crystal mixtures. This results in poor liquid crystal flexibility, response time and contrast. With HTV's TAB conservation, even these aging processes are reduced drastically.

After documenting the initial state and, if required, after sorting damaged or defective goods, the storage will take place with special packaging in chambers. Documentation includes

topography, microscopy, sealings, and contrast measurement. These chambers are developed specifically at previously defined temperature ranges and with special absorbers of hazardous substances.

Frequent operation, as well as cyclic analytics for sample



Comparison of conventional storage vs. HTV's TAB.

tests of possible aging complete the TAB conservation process, ensures the functionality of these displays.

With TAB, the gap of provision caused by a lack of available spare parts can be proactively closed. Discontinuations of spare parts lose their urgency and enormous expense can be saved.

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