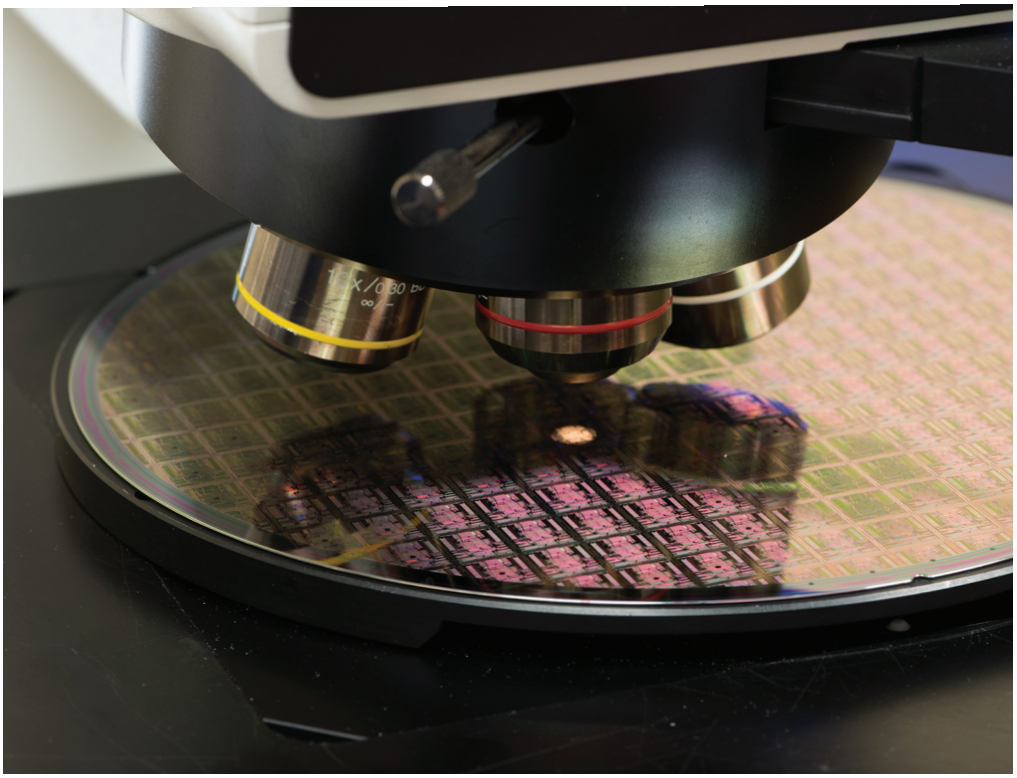
Electronics

PRODUCTS AND APPLICATIONS FOR ELECTRONICS DESIGN

INSIDE

Long-term semiconductor supply – risk-free!



Ken Greenwood, technical sales manager, EMEA at **Rochester Electronics** investigates how companies can take control of component obsolescence using proper wafer and die storage to ensure the uninterrupted, long-term supply of parts, and the reduction in overall sourcing risk

The Semiconductor industry continues to evolve both in terms of manufacturing technology and consolidations. This combination typically means that old components reach their end-of-life sooner and more applications and industry segments are being affected by obsolescence than ever before.

Why is there a need for long-term IC supply?
Systems in markets such as Mil-Aero, Industrial, Energy, Transportation, and Medical often have lengthy product and service lives. Re-design and re-qualification costs are prohibitive, and customers need support for the original system design without modification.

The semiconductors that go into them, however, tend to have much shorter life cycles. The challenge for the system supplier is how to manage the gap between these two conflicting timelines.

How do customers normally manage the mismatch between semiconductor life cycles and system life cycles?
Traditionally, customers made large Last-Time-Buy (LTB) purchases of finished components; and then attempt to store components for the life of the project; with varying degrees of success.

Carefully stored (and packaged) components can normally provide 3-5 years of risk-free supply. Beyond that point, it is inevitable that yield-losses (solderability issues) will rise, although specialist storage can mitigate some of these risks. Unfortunately yield losses do not follow a linear trajectory and variations in plating type, plating quality, package type, and lead-form, all have an impact on the diminishing usable life. The storage of finished components is also costly, both in terms of the capital tied up, and the cost of special storage conditions.

Ken Greenwood, technical sales manager, EMEA at Rochester Electronics

What are the consequences of getting the last-time-buy wrong?
One thing is certain - circumstances change! A forecast LTB purchase is almost guaranteed to be wrong. Fluctuating market demand, combined with the uncertainty of long-term storage yields, can play havoc with a customers project plans. This results in: premature system discontinuations, shortened service-lives, full re-designs driven only by component obsolescence or unused components which are subsequently scrapped.

In desperation, some customers attempt to fill gaps in last-time supply by purchasing finished components through the non-authorised/grey markets, which introduces a whole range of new risks into the supply chain such as: pre-used, damaged, contaminated, or pre-programmed Components; many sold as "new".

Is there an alternative to a traditional LTB purchase of finished components which offers a 100% guarantee?
The only way to GUARANTEE long-term semiconductor availability is: Wafer Storage + Long-term Packaging and Test

For over 35 years Rochester Electronics has offered a comprehensive range of wafer storage and processing services at our facilities in Newburyport MA, USA. Our next generation wafer storage and processing capabilities include:

- ISO-7/10K certified

- Nitrogen controlled environment
- Relative humidity control
- Real-time monitoring of temperature & humidity
- Secure cabinet and room controls
- Stainless-steel dry boxes incorporating microprocessor control
- Pick & Place for individual die performed under Class 100 (ISO-5) hoods

Our wafer stocks are either stored in wafer form – known-good-die (KGD) fully tested from the original fabs with full die maps – or in die form.

The tightly controlled nitrogen storage provides almost unlimited storage life, with no deterioration. This means that really long-term customer delivery programmes can be guaranteed, with no appreciable changes in production yield.

In parallel, Rochester's unrivalled and trusted long-term relationships with 70+ of the world leading Semiconductor manufacturers, allows for the transfer of the original assembly and test specifications after component discontinuation. Many of these manufacturers authorise Rochester to continue production, guaranteeing 100% identical parts and even allowing Rochester to use the original P/Nos.

Increasingly, where future market demand is visible, Rochester is funding the purchase of fully tested known-good-die for key "heart-beat" components at the core of our Customers most critical long-term Systems.

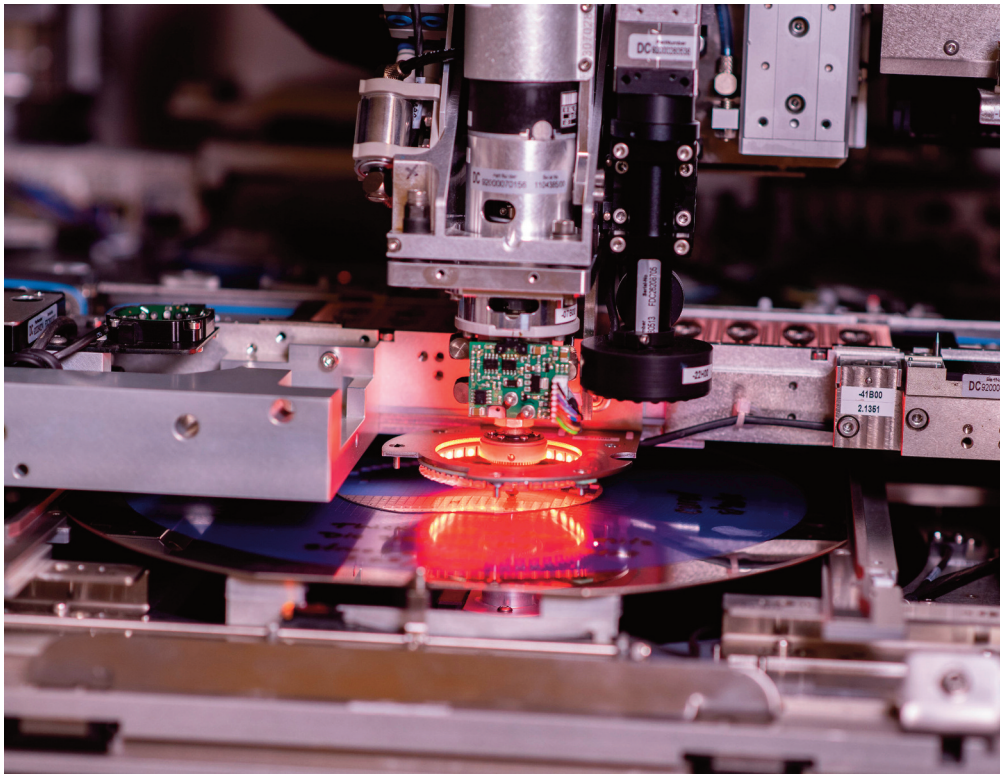
What happens if my IC package or a test platform is made obsolete?

As with the wafer itself, package styles and the sub-components which go to make them up, are also subject to obsolescence. Rochester Electronics manages the long-term supply and availability of these elements, as well as long-term support of the assembly and test equipment, to ensure that supply is 100% risk-free.

Rochester's in-house packaging capabilities (ceramic, metal-can, plastic DIP....) are supplemented by excellent relationships with other leading packaging companies, allowing Rochester to identify best-in-class sourcing for most historical packages.

Why would wafer storage and build be better than the traditional LTB purchase of Finished Goods?

There are many benefits to the customer of authorised long-term production from wafer. The cash-flow for the businesses improve because a wafer/die reservation fee is significantly more economical than the upfront purchase of finished goods for the complete project demand. The long-term storage costs are minimised because wafer storage is more economical than finished goods.



The wafer storage and build offer guaranteed long-term production yields which means that the purchase of an additional "safety factor %" is no longer required. Above all there are no quality/solderability risks because of the unpredictable deterioration finished goods.

Examples of Rochester's long-term post-EOL Semiconductor production include, Intel ®'s 186/188/196/486 Processors, ADI's Sharc & TigerSharc ® ADSP-TS20* DSP's, TI's TMS320C3/4/5 & TMS320F240/206 DSP's, Infineon/Cypress's Dual-Port and FIFO SRAM's, NXP's 8-16Bit MCU's 80C51 etc and Ampleon's VDMOS / LDMOS Power FETs.

"Carefully stored (and packaged) components can normally provide 3-5 years of risk-free supply. Beyond that point, it is inevitable that yield-losses (solderability issues) will rise, although specialist storage can mitigate some of these risks. Unfortunately yield losses do not follow a linear trajectory and variations in plating type, plating quality, package type, and lead-form, all have an impact on the diminishing usable life. The storage of finished components is also costly, both in terms of the capital tied up, and the cost of special storage conditions."

Rochester is registered to manufacture ITAR products and our process workflows include the following certifications:

- MIL-STD-883 TM5004 & 5005 for Levels B, Q, and V
- QML Certification to MIL-PR-38535 cage code (3V146)
- In-house DLA lab certified for Group A, B, C, and D

This means that Customers who purchase from Rochester, can be 100% confident that components are Authorised and fully compliant with the original Supplier's specification, not only fit-form-function but also errata/software compliant as well. No further testing or qualification is required.

With Rochester's completely authorised in-house: Wafer Storage & Processing; IC Packaging, Test Support Services, and Component Qualification, Customers now have the option to extend service-lives and/or avoid expensive System re-designs.

Rochester Electronics
www.rocelec.com

WE KEEP THINGS MOVING.

As an authorised distributor, Rochester Electronics provides the world's most extensive range of end-of-life (EOL) and broadest range of active semiconductors to keep the medical, defense and infrastructure industries moving worldwide.

100% AUTHORISED AND GUARANTEED

Rochester Electronics®
www.rocelec.com

Authorised Distribution | Licensed Manufacturing | Manufacturing Services

Unit 2 Fenice Court, Eaton Socon, St Neots • Cambridgeshire PE19 8EW • United Kingdom
+44.1480.408400 / emeasales@rocelec.com / www.rocelec.com