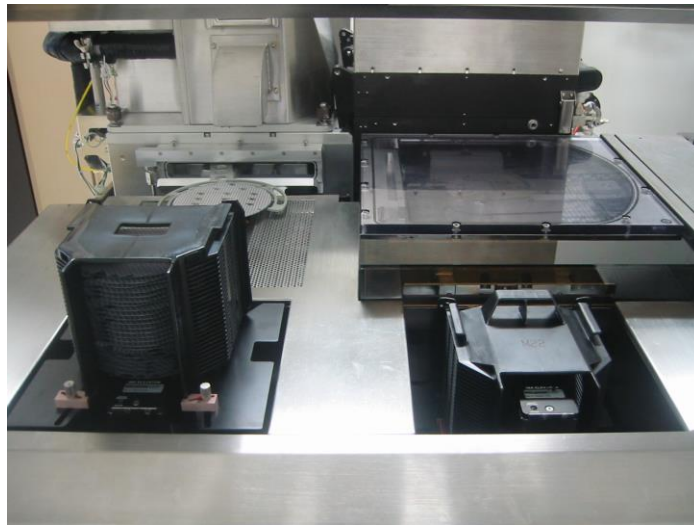


The challenges of obsolescence: how to shoehorn replacement parts into existing spaces

By Mark Firth

Nobody wants obsolescence in manufacturing equipment to be sprung on them as a nasty surprise and it is prudent to plan and manage to make sure that the product life cycle can be extended for as long as is possible.

That is why specialists such as Ichor Systems in Scotland are focused on supporting the equipment it supplies under licence from the Original Equipment Manufacturers (OEMs), but that also has a knock-on effect on other equipment types which use the same potentially obsolete components.



One of the main challenges of obsolescence is that, although suppliers have to give warning of imminent issues, they often come to light late in the day, for instance when parts are ordered.

The other issue is that replacements have to be integrated into existing spaces. This can often be straightforward, since technology has shrunk devices. But replacements often have more functions and features and, as a consequence, they are bigger.

For example, a component with separate controller power supply unit and an actuator may be combined, but the net footprint of the single device may be larger and trying to incorporate it into very tight spaces can be challenging.

It is very much a case of square pegs and round holes, with down-the-line effects such as other parts having to be relocated to accommodate the new, larger component.

The replacement also has to perform to the same standard as the original component, but often the new units are faster and have better response times – and sometimes they have to be slowed down to remain in synch with the rest of the system and avoid process impact.

So we are in the paradoxical situation where new is not necessarily better and it is vital to ensure the solution does not have an unintended negative impact on the equipment's performance.

The dry etch equipment from the OEMs which we work on is used across the semiconductor industry in the production of silicon chips. There are thousands of machines globally and it is critical that they are kept in production.

It is typically time consuming and expensive to qualify the process that is used to manufacture the devices made on these machines. If spare part support was ever compromised, production at the fab could be brought to a halt. The fab cannot just buy a different spare part as they would typically have a lengthy qualification process for any new spares parts.

For this reason, it is of utmost importance to be ahead of the curve. If suppliers give obsolescence warning, it allows us to do last-time buys and start the process of replacing the component.

In co-operation with the OEMs, we work to get the solution in place long before there is an issue of with the supply of the parts.

The solutions vary widely, from a few days' work to find a replacement to complex projects of between a year and 18 months involving virtual redesign and qualification in the field in collaboration with customers.

Our expertise in the approach to obsolescence can be applicable to other OEMs' equipment. For instance, our solution to pressure control valves could be widely useful across the sector, regardless of OEM.

Ichor has also developed in-house the application of upgrades designed for newer equipment sets to some of the older, legacy tools to improve their capabilities and performance.

What sets us apart is that the equipment in which we specialise dates from the late 1980s and 1990s. It is our era and it is highly likely that, as time passes, that expert knowledge will be called on from outside our existing base.

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