AMETEK®
PROGRAMMABLE POWER

WHITE PAPER

Understanding Product Lifecycles to Ensure a Smooth End-of-Life Transition

POWERING FORWARD. **TOGETHER.**

All product families have lifecycles. Consumer beverages can have lifecycles measured in decades. Smartphones turn over every year. And electronic test equipment and programmable power sources have lifecycles somewhere in between.

Typically, power equipment and instruments have long life cycles primarily because their functions are ubiquitous. In some situations, they can be converted for use in other applications over their life.

Still, in others, the application is dedicated and will last as long as the reason for its use remains, independent of the power and test equipment.

The key to robust application management is understanding how the products used in your application contribute to the success of your test and measurement goals. For example, is your product sensitive to transition speed, voltage regulation, stability, noise, etc.? Characteristics such as these will dictate the success of transitioning from a legacy product that has moved into an End-of-Life phase.

Lifecycle Basics

An understanding of product lifecycle management can help in your purchase planning. A product goes through several stages, from inception to end-of-life (EOL). These stages were discussed in a 1965 article in the Harvard Business Review[1] and are still recognized and relevant today, and we will apply those concepts to this subject.

At the market development or introduction stage, you might find a product that offers features that simplify your task or provide benefits for future upgrades. The power and instrument supplier will undergo a lengthy VOC (Voice of the Customer) process to do their best to offer the functionality required in modern applications. As a customer at this stage, you can often provide feedback about changes or additional features you would like to see in the product as an ongoing process of further defining the optimal product. By communicating your needs about the future state of your particular application, the power and instrument supplier can determine how well the new products fulfill the requirements.

In the market-growth stage, the power and instrument supplier incorporates customer feedback into the product and optimizes production.

Then comes the market-maturity stage, where the product features and functions satisfy most needs thanks to a stable feature set and fully optimized production line.

Finally, in the market-decline stage, the manufacturer faces increased pressures from the component supply chain and manufacturing complexities brought about by obsolescence that require product control redesign to maintain the product's function and introductions from the competition. Ultimately, a manufacturer's strategy is to make its factory as efficient as possible to deliver products with the predictability customers expect at the market price points.

As a result, a dependable power and instrument supplier will identify an end-of-life date and will communicate that date to customers, along with a transition plan to a new product family with a checklist noting factors such as the last date for when someone can buy the legacy product and for how long spares and support will be available after the last time to buy.

EOL & the Transition

When transitioning to a new product family, you should experience a natural transition. This period will not be without challenges, but the process should minimize the need for emergency decisions, provide helpful guidance without pressure, and inform you of the benefits and consequences of transitioning or failing to do so.

A dependable power and instrument supplier will notify customers of the reason behind the change and try its best to provide them with the required functionality as long as possible. Some suppliers magnify stress at the EOL milestone by instilling fear, uncertainty, and doubt (FUD) during the transition process. The vendor should play it straightforwardly and continue building the legacy products per the planned EOL checklist.

The only costs you should face in the transition are the expenses related to the level of qualification you want to perform on the new product before making the change. The qualification process might begin with a paper comparison of the legacy product and new product specifications in light of your specific application, identifying potential risks and risk mitigation efforts for transitioning to the new product.

One subtle but important consideration is physically integrating the new product into the application. For example, the cabling controlling the legacy product has a particular pin-out and typically requires a system cabling change. A partner supplier would have considered this issue and devised a simple pin-swap dongle that would negate the need to touch the existing cabling or the system design drawing that document them. Another issue could be related to system software modifications associated with introducing the new product into a Test Program Set (TPS) for an automated test application. Again, a partner supplier would have understood the magnitude of the changes and provided emulation software to ease the transition.

Consider a test and measurement application as an example. The load transient response of a new power supply might be faster than that of the legacy product. In this case, the system software may not expect the voltage level to recover as quickly as it does in response to a step load change, causing issues that may need to be addressed. Once the issue is identified on paper, obtaining a demo version of the new product may be advisable to see whether the issue can be best addressed through a software change or by adjusting the new product's rise time to match that of the legacy unit.

AMETEK Programmable Power's product-line managers and applications-engineering and solutions-engineering teams can assist in making a smooth transition in a timely fashion. A manufacturer who provides insufficient time to make this natural transition can expect some uncomfortable questions: "Why didn't you know?" "Do you understand the negative effect you are having on my business?" and "Why should I trust you going forward?"

Real-Life Example of Lifecycle Transitions

AMETEK Programmable Power has recently introduced several new product lines that customers are smoothly transitioning toward. One essential requirement of these new product introductions specifically addressed the legacy EOL process. Examples include the California Instruments Asterion AC sources and Sorensen Asterion DC supplies, designed to replace legacy and competitive products with limited risk to customers regarding form, fit, and function. Asterion AC models offer power ratings from 500 VA to 3,600 VA, while Asterion DC models offer power ratings from 1.7 kW to 10 kW.

The Asterion DC lineup includes new to the world, three-channel DC supplies offering the highest power and channel density in a 1U rack-height configuration. The Asterion DC ASA offers 600 W/channel for a total of 1,800 W, and the Asterion DC ASM offers 1,700 W/channel for a total of 5,100 W. Replacing legacy supplies with the higher power-density Asterion will open rack space in the customer's end system, allowing for future expansion without buying more racks or taking up more floor space.

The Asterion DC lineup offers several innovative technologies and features beyond increased power density.

One feature, called ***Asterion SELECT***, allows customers to set a maximum power- power available. For example, let's consider a customer's product operating on a nominal 48VDC at 1700W but test system characteristics and requirements dictated the power supply to have a 52VDC maximum output.

Under normal conditions, DC programmable power supplies would be available in 40V or a 60V versions. The test requirement would be 52V and 32.7A (1700W). This would require the customer to buy a 60V, but the available current with a 60V@1700W is only 28.3A, thus requiring them to buy a 3400W unit to supply the current they need. ***With SELECT, they only need to request 52VDC at 32.7A and we can provide a 1700W power supply saving more than 60% in price***. This feature benefits customers whose applications need nonstandard voltage/current parameters, making it unnecessary to buy more expensive units with higher power ratings than they need to meet their requirements.

Asterion DC supplies are available in fixed-range and autoranging configurations. The fixed-range supplies are economical, traditional power supplies with a rectangular voltage-current output characteristic.

Autoranging supplies vary their maximum current level inversely with voltage level to approximate a constant-power capability over their current and voltage ranges. Asterion AC sources offer a similar capability, allowing current to increase linearly to two times the full-voltage rated current as voltage decreases.

Other examples include the California Instruments Sequoia and Tahoe AC sources, which replace legacy AC sources or competitive products in applications requiring regenerative capability or constant-current

control. Sequoia is a 15-kVA to 1.08-MVA precision programmable regenerative grid simulator that combines intelligence and flexibility with high power to create an advanced platform of AC solutions. The four-quadrant Sequoia combines compactness, robustness, and functionality in a floor-standing chassis. Tahoe provides the same power ratings but is economical for customers who do not need a four-quadrant operation. Both Sequoia and Tahoe employ a state-of-the-art silicon-carbide (SiC) power-switching architecture.

Passing savings on to the customer

By moving to new products like Asterion AC and DC, Sequoia, and Tahoe, AMETEK Programmable Power can streamline its operations, making its factory more efficient, conserving floor space and reducing the number of unique parts to buy. This reduces the number of design architectures it needs to support.

The resultant reduction in operating costs allows the company to pass savings on to its customers while providing them with the latest technologies.

AMETEK Programmable Power recognizes that despite the best efforts of all concerned, some customers can only upgrade slowly. If a customer cannot upgrade within the 18- to 24-month timeframe, the company will attempt to build the legacy product as long as possible.

Fabrication and testing of the legacy products after EOL will likely occur on a batch basis offline. Such a build and test process is more expensive, but we understand that keeping their equipment operational may be worth the extra cost.

AMETEK Programmable Power provides ample time to manage an EOL event. Typically, the company provides nine months to a year of EOL notice followed by nine-month to a year notice of the last time to buy, and it provides spare parts and support for five years after the last buy. This is an industry-leading timeline.

Conclusion

The programmable power supply industry's products don't have the short life cycles that many other products, such as smartphones, have. Nevertheless, the product lifecycle is inevitable, with a product moving from the development stage to the growth and maturity stages and eventually to the decline stage. With enough time and planning, the EOL transition does not need to be stressful.

AMETEK Programmable Power's sales and support staff have test engineering experience and understand the impact of factors ranging from test programs to cabling. Such factors are included in the EOL checklist. Reach out to us today for more information.

References

1. Levitt, Theodore, "Exploit the Product Life Cycle," *Harvard Business Review*, November 1965.