UPS Supply Chain Solutions℠

Cornerstones of Post-sales Service Excellence

Table of Contents

Executive Summary

Equipment manufacturers in industries such as networking, telecom, medical and industrial automation are striving to achieve higher profit margins and retain clients through value-added services that differentiate them from the competition. Customers in these industries demand the highest reliability levels of equipment availability and are willing to pay a premium for these services. This compresses allowable response time and creates service revenue opportunities and challenges. Post-sales service is often tied to service level agreements (SLAs) that have stringent performance metrics with specific penalties for non-compliance that can be severe. To ensure SLAs are adhered to these companies often invest heavily in inventory management systems, planning and design tools, warehouses and service technicians which can detract from their core competency of product development, innovation and sales.

To help post-sales services remain a profit center rather than a cost center, equipment manufacturers must ensure key business processes are in place. These include: *Infrastructure Optimization*, *360-Degree Inventory Control*, *Lifecycle Planning* and *Global Information Management*. Essentially, these processes help to minimize investment in facilities, tighten inventory control, help manage and predict service call needs and provide visibility and management of vital information. The complexity and scope of these key areas often leads companies to choose one logistics partner as a single-point of contact for end-to-end post sales service logistics.

Introduction

In the competitive high-tech marketplace manufacturers have long gone head-to-head, openly vying for market share around the world. Now manufacturers are seeking an edge over their rivals in the often undervalued area of service. The quality and delivery of post-sales service is becoming increasingly critical as businesses do everything in their power to be more cost-effective, boost profit margins and meet customer demand for near-continuous availability of products. For finance directors, inventory reduction has become the corporate mantra as they seek to squeeze days-stock-on-hand, while increasing the level of customer service. Companies face a number of inefficiencies in post-sales service that increase costs and cause delays. Topping the list is inefficient network design, followed by factors such as poor visibility into inventory, long cycle times, inconsistent customer service, inventory obsolescence and the significant costs of brick-and-mortar investments.

To overcome these obstacles and turn post-sales service into a competitive advantage, more manufacturers are seeking global service parts logistics assistance. The service parts logistics (SPL) industry supports the overall repair and maintenance of equipment as it moves through its post-sales lifecycle. SPL includes the management, distribution and return of parts, as well as parts repair and refurbishment. A service parts network includes order and inventory management, distribution and technical support, call centers, technical couriers, repair engineers and repair centers. Given client uptime requirements, an effective SPL network must provide for storage of parts in close proximity to field engineers and customer sites around the world.

The SPL process is typically characterized by multiple hand-offs among disparate locations. Central stocking locations, field stocking locations and service technicians all hold inventory at various times and places, making access to needed parts more difficult and visibility of inventory on hand even more daunting. Companies that previously met expected service levels by holding inventory at multiple points to ensure that it would be available when needed are now facing economic pressures to decrease inventory carrying costs or the expense of holding goods. Compounding the problem are huge product and parts lists, customers all over the world and increasingly demanding service levels of eight, four and even two hour response times. Parts availability is key to meeting final customer expectations.

Bottom-line Impact

As of 2003, annual global SPL spend was estimated to be $21 billion, increasing at a rate of 7 percent per year. Post-sales service has even greater Wall Street implications. Forrester Research notes that aftermarket quality issues have a direct correlation to stock value. “The very day a manufacturer unveils a product quality issue to Wall Street, its market cap drops almost 10 percent and doesn’t recover for at least three months.” [1]

In today’s economy, every second counts, as companies often experience severe penalties for service delays. For example, semiconductor chip foundries lose $100,000 per hour when equipment fails, according to Forrester Research.[2] Simply put, manufacturers and their customers benefit significantly by maximizing uptime and improving response measures by using a SPL provider.

At the same time successful SPL management requires newer and more complex competencies than traditional supply chain management. Multiple distribution points exist with materials flowing in various directions. Companies must coordinate sending new replacement parts to the needed location along with a technician capable of making the repair. The company must then deal with returns of defective parts. Given the complexity of these tasks many businesses outsource service parts logistics to a single company that can provide an integrated solution.

Additionally, decision makers within these companies typically are looking for ways to differentiate their business from the competition often by offering services that can justify premium pricing. A strong post-sales service program, founded upon excellent product development, meets this need. World-class, post-sales service leads to improved customer relations and ultimately increased loyalty. Services such as rapid onsite restoration, returns processing, spare parts fulfillment and equipment refurbishment all fall under that umbrella.

Companies with significant post-sales service commitments need to evaluate their operations to ensure they are providing optimal levels of support while at the same time gaining the benefits of business growth, customer loyalty and premium pricing.

---

[1] Forrester Research: Unleashing the Aftermarket’s Hidden Value, September 2002, citing T.S. Becker, Georgia Tech Research, December 2000

[2] Forrester Research: Services Eclipse Products: An Opportunity for OEMs, September 2002

The Four Cornerstones of Services Parts Logistics Excellence

There are four critical elements of post-sales service: *Infrastructure Optimization*, *360-Degree Inventory Control*, *Lifecycle Planning* and *Global Information Management* – that, if followed, can greatly contribute to the success of a manufacturer's business performance.

Cornerstone 1: Infrastructure Optimization

As the term implies, infrastructure provides the framework for business operations and can refer to everything from facilities to personnel. For global businesses, physical infrastructure is a primary consideration because it may dictate which markets to enter, speed of availability and overall inventory investment. However, infrastructure also has the potential to be a huge drain on a company's bottom line. Facilities are fixed assets that, if underutilized, can become a financial burden.

Many companies work around this problem by utilizing service technicians who literally work from the trunk of their cars. They maintain inventories known as "trunk stock" so they have immediate access when a problem arises. But this "just-in-case stock" can lead to issues of parts obsolescence as 60 percent of spare parts inventory sits idle in technicians' trunk.[3] A stocking facility that is easily accessible by technicians helps reduce idle, obsolete stock and provides a higher service level to customers.

Optimization of facility location and rapid fulfillment capability is a first, vital step in laying the groundwork for a world-class, post-sales program that can consistently meet the demands of global service level agreements (SLAs). These agreements often apply the same standards across geographies. Response times averaging two hours or less are often required regardless of the transportation challenges in countries with limited or poor roads.

A thorough assessment of geographies served, existing SLA requirements and business growth strategy is critical to determining the optimal facility network design. The design must be flexible and adaptable to changing demand for parts, new customer locations, transportation availability as well as variable rates, sources of supply and service level targets.

Unless your company is a startup it may have little ability to "redesign" its physical infrastructure. You can consider eliminating stocking facilities that are underused in exchange for shared facilities that are managed by a third-party service provider. These facilities range from sophisticated warehouses with millions of square feet to secure, self-service storage lockers. This arrangement provides access to a global network of stocking locations and service operations while allowing the flexibility to expand or reduce the amount of space and services needed. This is particularly beneficial for businesses that experience seasonal fluctuations or time definite maintenance needs. The shift from a fixed to a variable cost network can generate significant financial savings.

[3] Forrester Research: Unleashing the Aftermarket's Hidden Value, September 2002

Cornerstone 2: 360-Degree Inventory Control

Inventory control and accuracy directly impacts service delivery, revenue opportunities and efficiency. A high degree of control and accuracy enables a process to become exception driven without redundant oversight or manual validations. Work orders can be executed the first time using stock that is where it is suppose to be. The number of physical inventory audits can be reduced and the volume of cycle counting can go down. Higher profit margins can be achieved when obsolete parts are minimized, technicians are immediately deployed with the right parts and tools and satisfied customers increase their service contracts.

Inventory accuracy results from integrated capabilities supported by technology and operational processes. It is not limited to four-wall facilities but includes 360-degree involvement in the service cycle: inbound transportation, distribution centers, replenishment in-transit, field stocking locations, outbound to points of service, field technician receipt, returns shipping and depot repair.

Many manufacturers have little visibility or control of parts as they work their way back from the field engineer, through repair and return to useful inventory. A poorly managed returns pipeline can exceed 50 days. Better control of returns begins with simple steps such as requiring field engineers to send defective and unused parts back as soon as the service call is complete. Tracking tools tied to field engineers and a systematic "nag" program can ensure accountability and compliance. This program can result in significant parts pipeline velocity improvements and reduce procurement of new inventory.

The key to such pinpoint accuracy and accountability – particularly on a global scale – is transaction visibility. Complete transactional tracking information allows for optimal inventory management across the entire operation. Standard operating procedures ensure reliable inventory controls.

The primary benefits derived from inventory control are improved service levels and field engineer productivity. A secondary benefit is efficiency in inventory level. The "just-in-case" inventory approach of the SPL industry can often lead to overstocking. So knowing exactly what inventory is in stock and exactly where it is located can pare down requirements for on-hand inventory.

Cornerstone 3: Product Lifecycle Planning

The very essence of post-sales service is to maximize the uptime and prolong the life of the product. Lifecycle planning and management involves the ability to map out the longevity of a product and/or its parts in order to plan for maintenance and predict repair cycles. While this is a simple concept, it is a complex task. From research and development specifications to actual product failure rates, information needed for effective lifecycle planning and management is fragmented. New software to manage this information is gaining heightened attention from supply chain analysts.

Product lifecycle planning enables the effective delivery of service according to forecasted service levels as well as increased control of the investment in inventory working capital. Lifecycle planning focuses on the right level of inventory at designated locations. Network modeling and simulation determines the appropriate locations for holding inventory and is a complementary process activity.

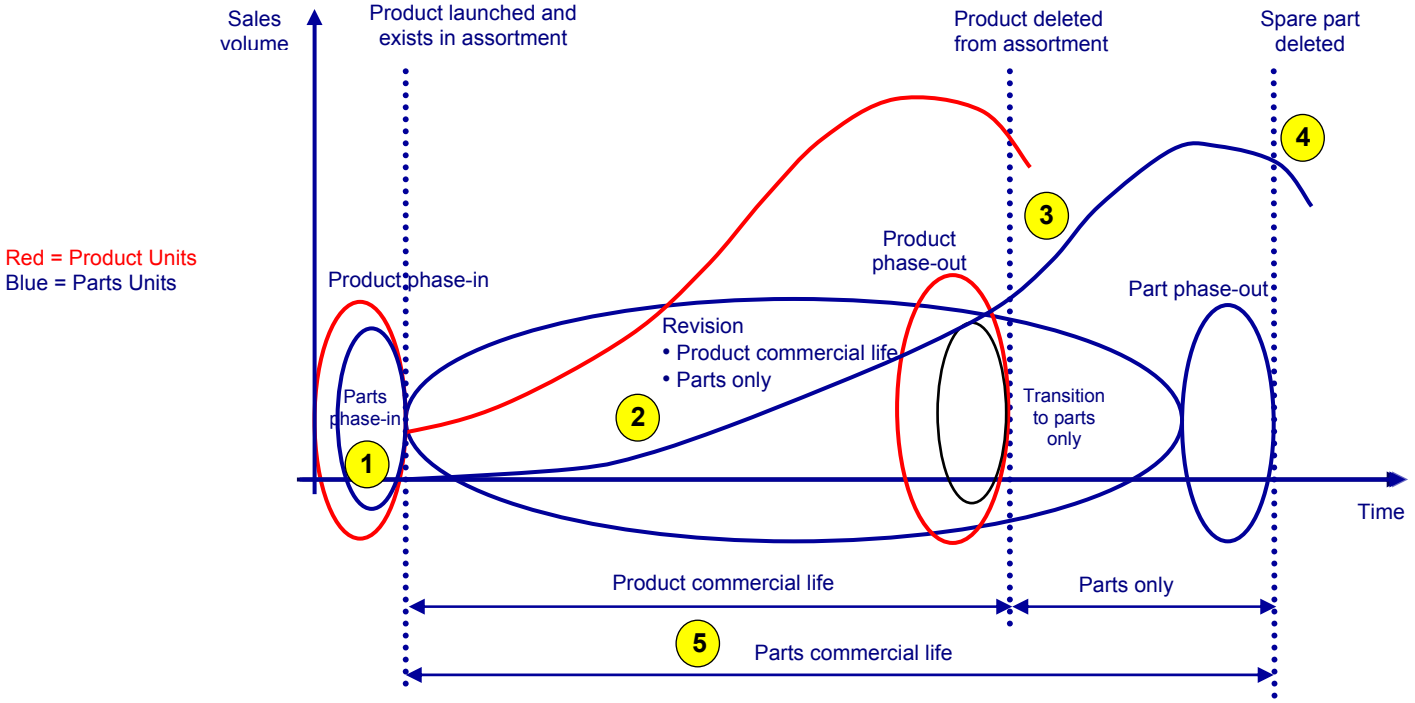
Optimal lifecycle planning also increases companies' ability to predict maintenance needs before a critical situation arises as well as upsell customers on new product upgrades while on maintenance and service calls.

The following chart displays the complexities and challenges of lifecycle planning that must be considered when developing an aftermarket/post-sales service program.

The most challenging task in lifecycle planning is to extend it throughout global markets, where product and part variations must be considered and managed. Well-executed planning allows for optimized global parts inventory.

The benefits of a well-executed lifecycle planning process include improvements in service levels which increase revenue and decrease service penalties; lower inventory carrying costs; reduced transportation expense associated with expedited shipments and improved productivity of service parts planners.

The Challenge of Service Parts Supply Chain Management



1. The need for spare parts begins at or near the same time as the supported product introduction
2. Initial demand for spare parts is generally slower, lagging behind the demand for the supported product
3. Demand for spare parts may increase the most even after the supporting product is phased-out
4. Management decisions surrounding spare part phase-out must consider potential remaining customer demand
5. The life cycle for a spare part is generally much longer than that of the supported product

C. John Langley, Jr., Ph.D, Georgia Institute of Technology, 2002. "Supply Chain Trends and Issues for High-Tech Electronics Industries"

Cornerstone 4: Global Information Management

The ability to execute the previously mentioned cornerstones rests on the availability of information. While North American markets often take data capture and storage for granted, there is no global standard for this type of information management. Integrating and managing global customer, product, inventory and service deployment information can be difficult. Technology infrastructure is a central enabler to service logistics and a requirement for establishing a world-class, post-sales service program.

Integration of technology internal to operations and with customers, suppliers and carriers enables service parts logistics control, reduces transaction costs and increases cross-functional synergy in the fulfillment of service.

Difficulty in integration is usually determined by how many points of access are involved. Point-to-point integration is more complex, while a hub-and-spoke network design reduces the number of integration points and drives standardization. Consistency and simplicity lowers costs and speeds return on investment. Hub-and-spoke networks for service logistics are provided through service logistics solution providers. A secondary consideration is the quality and structure of the enabling integration infrastructure supporting operations. Integration technology has made significant advances over the past few years and is even becoming less cost prohibitive.

However, businesses should avoid the temptation of purchasing an enterprise software suite and instead look for specialized solutions offered by best-of-breed technology. AMR Research notes six aftermarket service areas that can be significantly improved by using specialized technologies: service parts planning, scheduling optimization, product knowledge, remote diagnostics, contract management and customer intelligence.[4] The prerequisite for all service area improvement is operational excellence and connected systems. Admittedly, costs and integration issues can be weighted with either top-of-the-line enterprise solutions or combined vendors. To gain access to fully integrated, best-of-breed technologies many manufacturers are outsourcing their aftermarket programs to third-party providers who offer the latest sophisticated parts management systems on a global scale. The benefits of integration are huge.

Well-integrated systems can track everything from trunk stock inventory to a customer's total service history. They ensure real-time visibility of information and notifications that can increase the ability to accurately meet SLA requirements. Inventory management systems, customer relationship management programs and wireless notification tools all tremendously impact service delivery. Consider whether your business has the means to deploy and update technology systems and make sure these systems are truly integrated so you can create a seamless information network.

A Case in Point

Taking over the service parts logistics function for an original equipment manufacturer (OEM), UPS Supply Chain Solutions helped lower internal service expense and lowered overall product ownership costs for their end consumer. By consolidating the OEM's seven warehouses into its end-of-runway distribution facility in Louisville, Kentucky the program achieved a 15 percent decrease in

[4] AMR Research: Service Lifecycle Management (Part 3): One Enterprise Suite, Six Parts Best-of-Breed and a Healthy Dose of Integration, 2002

transportation costs and enabled next-day delivery of its parts anywhere in the United States. UPS Supply Chain Solutions also leveraged over one-third of the more than 3,000 The UPS Store™ locations nationwide as hold-for-pickup sites. The needed service parts were delivered to these sites by 8 a.m. the next day which allowed the service technicians to gain two hours of productive time per day because they were able to begin work earlier instead of waiting for parts to arrive.

This manufacturer retains ownership of its customers to ensure that they receive excellent after-sales service. UPS Supply Chain Solutions provides the manufacturer with enough information to monitor customer service and inventory. The manufacturer also handles its own financials, plans the parts inventory at the sites and manages procurement for the service parts business.

On the IT side, this manufacturer has outsourced underlying systems infrastructure including the applications used for transportation management, warehouse management, material tracking, operational data management and the business knowledge underlying the systems in these applications.

When creating a total network solution, the goal is higher savings. Some expenses, however, may indeed rise. In this example, the OEM's cost of hiring UPS Supply Chain Solutions to run its parts network saw a slight increase in its distribution center expense from $19 million to $19.8 million. However, UPS Supply Chain Solutions significantly reduced costs in other categories such as field network, customer engineering, transportation and inventory. Overall, SPL expenses were reduced by $18.3 million to $104.8 million from $123.1 million. Ultimately, improved service levels and lower service expense reduced product cost of ownership for the end consumer.

In short, savings from improved SPL can be dramatic. By reducing a 35-day pipeline of $200 million in inventory to five days, for example, a company can realize a one-time $38 million cost reduction and $7.8 million in annual savings.

Conclusion

The common tasks of managing facilities, inventory, people and information are difficult in running an efficient and profitable manufacturing operation. Post-sales service provides an additional layer of complexities that requires ongoing evaluation and adjustments.

However, whether your company decides to take on these tasks internally, or outsource, the cornerstones described here remain important steps to developing and maintaining a world-class, post-sales service program. While the process can be complex, the approach involves fairly simple considerations: getting parts and technicians close to customers and ensuring that inventory is being tracked and used in an optimal way. It all boils down to responsiveness and accuracy – basic principles of operating any successful service business.

Other published white papers:

Potential Energy and the Retail Supply Chain

Distribution Center Bypass and the Consumer Goods Supply Chain

Outsourcing and the Biotech Supply Chain

UPS Supply Chain Solutions develops and implements solutions that optimally manage goods, information and funds to create enhanced business performance.

This white paper has been developed by UPS Supply Chain Solutions to offer insight to global business leaders.

Call us at 1.800.742.5727 (U.S.) or 1.678.746.4365 (International), or visit ups-scs.com for more information.

UPS Supply Chain Solutions℠