SPARE PARTS AS INSURANCE

SPARE PARTS AREN’T JUST INVENTORY. THEY ARE INSURANCE AGAINST COSTLY GROUND TIME AND PRODUCTION DELAYS.

AUTHORS
Chris Spafford, Partner
Tim Cleary, Associate Partner
Matthew Poitras, Associate
Spare parts are big business. The global aviation industry alone spends more than $5 billion annually to replenish and maintain an insurance policy against the inevitable failure of component parts. For airlines, this translates to a collective balance sheet item of $19 billion. Yet, few, if any, aviation experts would say they’ve cracked the code for securing reliable operations while minimizing excess.

And this isn’t just an aviation problem. Other heavy industries such as oil and gas, utilities, and ground transportation also rely on spare parts inventory to keep their production equipment running.

Here’s the problem. Most companies think of spare parts as regular inventory that would be consumed in a factory to make final goods for sale. But spare parts are a very different class of asset, requiring a different set of tools and analysis to manage. Spares aren’t used and sold as part of a final product, so just-in-time inventory management doesn’t apply in the same way. Instead, spare parts for airplanes, trains, and oil rigs are insurance against costly downtime. Companies that rely on spares need to determine the best insurance coverage, figure out the right amount of spares, and ensure the parts are in the right place at the right price.

Failure to understand the insurance nature of these products can result in the nightmarish, but not uncommon, phenomenon of carrying high levels of spare parts while, at the same time, experiencing costly delays and downtime of critical production equipment.

Many companies rely on recommended spare parts lists (RSPLs) from the manufacturer or spares provider to decide how many spares to own. These lists overlook the insurance nature of spare assets and are conservative at best and fat at worst. What’s more, organizations often relegate incremental decisions about purchasing additional spares and replacing existing ones to an operational, fail-and-fix process. In these situations, the long-term economic impact to the business is usually a secondary concern. What this means is, the upfront strategy is generic and the on-going management is reactive. That’s no recipe for efficiency or maximizing the return on investment.

Many companies have begun hiring third-party parts providers to provision spare parts on the airlines’ behalf. This helps improve access to spares while reducing the amount of capital tied up in inventory. However, even under these arrangements, companies are still investing in spares via
pool access fees and lease charges, while delegating to suppliers the important decisions of how many spares to own and where to position them.

Given the operational and financial risk of these decisions, it is surprising that companies decline to dedicate more time and resources to get the right insurance coverage and truly maximize the return on spare part assets.

Based on experience helping various aviation clients in these situations, Oliver Wyman developed a two-phase approach to help companies get the most out of spare assets. First, make sure the right amount of insurance is available in the right place (see Exhibit 1A). And second, tailor internal business processes to mitigate business risk and thereby reduce the amount of insurance a company needs to buy (see Exhibit 1B).

**AIRLINE SPARE PARTS INSURANCE**

**Oliver Wyman worked with a leading North American airline on spare parts insurance.**

1. Identified $110 million in over-insured and poorly positioned spares that were less critical to operations and required little lead time.

2. Identified $65 million in under-insured and poorly positioned spares that were highly critical to operations. These parts often carried long lead times, or were in short supply for aircraft-on-ground situations, and drove many maintenance-related delays and cancellations.

3. Reduced internal cycle times by 60 percent by streamlining and eliminating redundant inventory management and logistics processes.

4. Reduced repair cycle times by collaborating with repair and exchange providers to streamline the transaction processes.

5. Developed and implemented appropriate pooling and vendor supply agreements to improve stocking levels and spares coverage at smaller locations.

Overall, the process reduced aggregate inventory by more than 20 percent while improving maintenance related delays and cancellations by more than 10 percent.
PHASE 1: A FIVE-STEP APPROACH TO BUYING THE RIGHT INSURANCE

The RSPLs provided by original equipment manufacturers or maintenance vendors usually consider only the average failure characteristics of the component parts and, in the case of a repairable part, the average repair time.

This method does not account for the economic impact to the airline of having an aircraft out of service while waiting for a spare part to arrive. Further, the use of industry averages can ignore important differences in how a specific airline flies and maintains its airplanes. For instance, seasonal variations in flying, weather conditions, number of locations where maintenance is performed, and how concentrated or dispersed these maintenance locations are changes from airline to airline.

A five-step analytical approach can help companies quantify and understand the economic impact of downtime and identify the right amount of spares needed to support the operation.

<table>
<thead>
<tr>
<th>ANALYSIS</th>
<th>KEY CONSIDERATIONS</th>
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| 1. Assess the operational impact of not having a spare available. | • Segregate component parts based on how critical they are to the operation. Not all spares are created equal.  
• Estimate the average recovery time required to identify and relocate a spare part. |
| 2. Estimate the cost of downtime. | • Cost of downtime: Estimate the lost operating profit for each hour of aircraft downtime.  
• Cost to resolve: Quantify the incremental cost of expediting a spare part if one is not immediately available. |
| 3. Calculate the expected value of insurance. | • With statistical methods, determine the likelihood of using the insurance.  
• Quantify the cost of buying and not using the insurance. That is, the carrying cost of inventory.  
• Quantify the cost of not having insurance based on steps 1 and 2. |
| 4. Assess the market for insurance and price out the options. | • Estimate the purchase cost of spares, new vs. used. Or, isolate the insurance related cost of performance-based contracts, such as lease rates and pool access fees.  
• Identify commercial terms and conditions outlining service levels, coverage, and exclusions. |
| 5. Choose the best value for money. | • Assess the accuracy and quality of the inputs.  
• Consider capital cost vs. operating expense.  
• Account for budgetary restrictions.  
• Evaluate the extent of performance guarantees.  
• Assess the risk of obsolescence due to changes in technology.  
• Assess the risk of surplus due to planned changes in operating model (fleet size, utilization, etc.). |
PHASE 2: REDUCE THE AMOUNT OF INSURANCE YOU NEED BY CUTTING RISK FOR KEY BUSINESS PROCESSES

Understanding the insurance nature of spares has also helped our clients identify ways to cut risk to their operations and, over time, reduce the amount of insurance they need. In many cases, improvements require only marginal cost or effort.

INVEST IN AN INTERNAL ASSET MANAGEMENT PROCESS
Developing and maintaining internal processes to drive economic decision-making about spares will help balance operational needs with financial limitations. The asset management process delivers a data-driven, analytical approach to maximizing the return on investment in the spares pool.

IMPLEMENT PURCHASING STANDARDS FOR SPARE PARTS
In most businesses, the urgency of day-to-day operations can overrule the best long-term economic decisions. Once inventory levels are set, communicate target spare levels and implement a balanced set of purchasing controls. This can ensure that spares are maintained at the right levels over time, without compromising speedy decision-making for day-to-day operations. Clear standards can also help simplify the process of assessing whether to replace a non-repairable asset.

FOCUS ON RELIABILITY
The ability to accurately forecast failure rates is a precursor to a robust asset management process. In many cases, this same intelligence can be used to identify and prioritize reliability programs designed to improve failure rates of component parts or increase the predictability of failures. In either case, improved reliability can drastically reduce the amount of insurance coverage required to maintain the operation.

SEEK OUT OPPORTUNITIES FOR SCALE
Like any insurance product, the more people sharing insurance, the better the coverage and the lower the cost. Find ways to pool assets and share coverage with other airlines or maintenance providers in order to reduce cost without impacting operational performance.

AGGRESSIVELY CUT ROTABLE CYCLE TIMES
For an average airline, each day cut from cycle time amounts to around $1 million in inventory that can be shed from the balance sheet. Historically, many airlines have focused on reducing repair times to improve performance of their spares. However, targeting internal process delays with equal zeal can be faster and cheaper than improving repair turnaround times through a vendor management process. Process delays in receiving, logistics, staging, and decision-making are common culprits. Measuring and reporting cycle times on a regular basis increases awareness about the financial impact of delays and helps identify areas for improvement.
THE LIFE OF A SPARE PART

Airlines work hard to reduce aircraft downtime, and rightly so. But they tend to focus on speeding up the repair, which is often handled by an outside vendor. Airlines can just as easily and cheaply address other delays in internal business processes, such as receiving, logistics, staging, and decision-making.

EXHIBIT 2: END-TO-END CYCLE TIME

<table>
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<tr>
<th>PURCHASE SPARES</th>
<th>RECEIVING</th>
<th>CENTRAL STORES</th>
<th>PART FAILS AND REPLACEMENT ORDERED</th>
<th>PICK, PACK, AND SHIP</th>
<th>INBOUND LOGISTICS</th>
<th>STAGING AND INSTALLATION</th>
<th>RETURN OF UNSERVICEABLE SPARE</th>
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<tr>
<td>Traditional cycle focus</td>
<td>Common culprits in cycle time delays</td>
<td>Other opportunities</td>
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Source: Oliver Wyman analysis

CONCLUSION

If your company relies on spare parts to guarantee the serviceability of its airplanes (or oil rig, mining equipment, train, or utility), understanding the insurance nature of spares can improve the operational and financial performance of your business.

Speak with members of your finance team, supply chain, and maintenance operation to understand how they manage spare parts. If these decisions have been delegated to under-trained or under-resourced parts of the business, chances are you have been buying insurance piecemeal for some time or simply buying insurance in bulk.

If this is the case, it is inevitable that some areas are over-insured while other critical areas are left exposed. You might be paying for flood insurance in the desert, but neglecting to cover a drought. When the time comes to make a claim, you could find you’ve been overpaying for coverage that does not suit your needs.
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For more information on this article, please contact:

Roger Lehman
Practice Leader
+1 214 758 1875
roger.lehman@oliverwyman.com

Chris Spafford
Partner
+1 214 758 1879
christopher.spafford@oliverwyman.com

www.oliverwyman.com

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