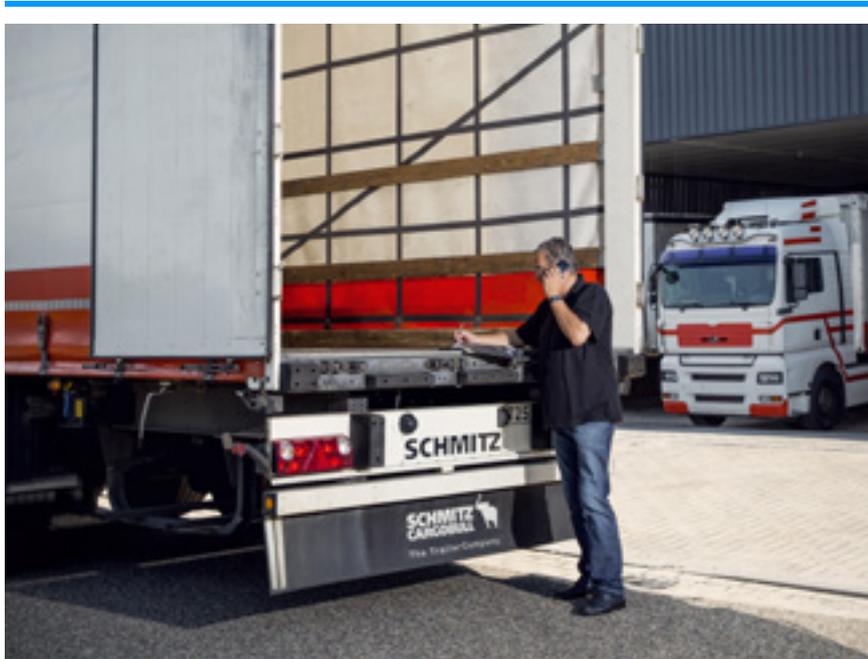

Sustainable returns by recovering used assets

Manufacturers increasingly realize the importance of having grip on their assets. But how do you successfully retrieve value from used assets?

See what counts.



Introduction

Traditionally, mid-term strategic plans and key performance indicators of manufacturers are focused on maximizing the production of new assets. As a result, manufacturers rarely know where their assets¹ end up after the point-of-sale. In the new circular economy, manufacturers control the full technical lifecycle of assets as visualized in figure 1, thereby keeping raw materials in closed loops and having lengthened producer responsibility.

This whitepaper explains why closed loop supply chains are important to manufacturers and describes the process from recovery of used assets until re-use. Furthermore, it elaborates on barriers that prevent manufacturers from implementing or extending closed loops in their supply chains. Finally, the whitepaper summarizes solutions for overcoming these barriers and elaborates on the role of leasing.

This allows manufacturers to broaden their scope and take control of their assets. A closed loop supply chain incorporates how manufacturers and dealers recover their assets after their first usage period and how these assets are prepared for re-use.

This study was conducted in close cooperation with several manufacturers operating across the construction, transportation, agriculture, healthcare and office technology industries.

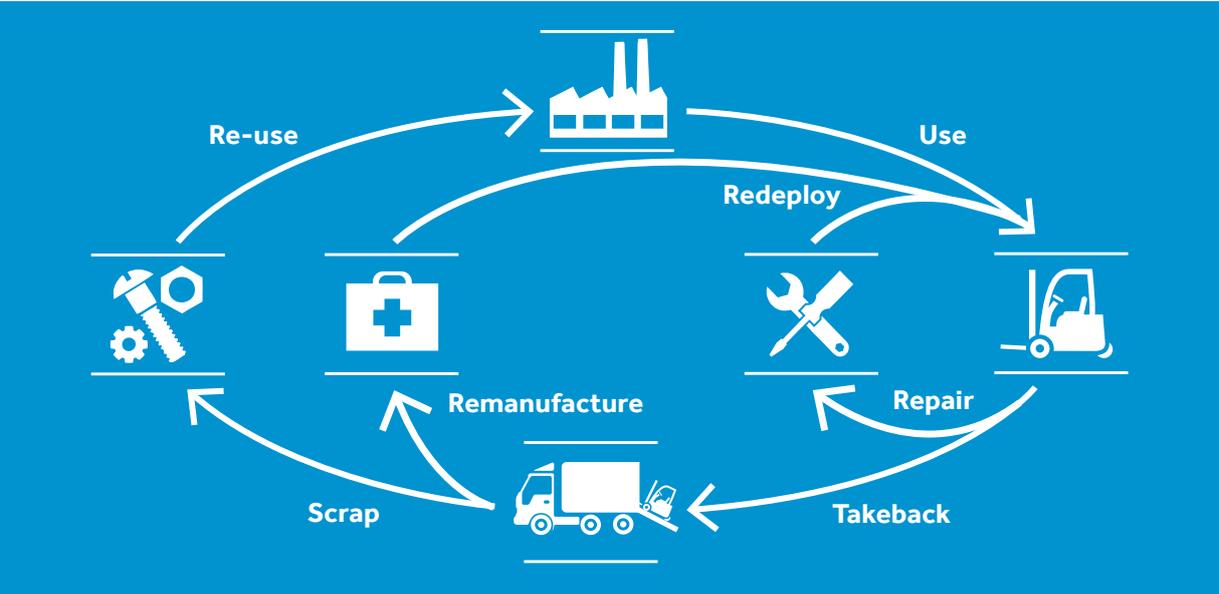


Figure 1: Theoretical model of a circular / closed loop supply chain.

1. Assets in this paper refer to equipment, systems, units or products produced by a manufacturer.

4 reasons to incorporate closed loop supply chains

The trend towards the use of closed loop supply chains extends corporate social responsibility. This section describes why manufacturers are engaged in closed loop supply chains.

Economical

- Enhanced cost savings by parts harvesting and re-use
- Increased control of secondary markets
- Enhanced profits
- Increased revenues from aftermarket sales

Manufacturers are increasingly realizing that closed loop supply chains and thereby remanufacturing and refurbishment can contribute significantly to the bottom line once sufficient scale is achieved. Closed loop supply chains put manufacturers in the driver's seat by offering enhanced control of the secondary market and preventing access to their assets by third parties and traders. Moreover, a significant reduction in costs can be realized with harvesting and re-using components and raw materials.

“Recovering used assets from the field secures feedstock for re-manufacturing and re-commerce, thus enabling value creation over multiple cycles”



James O'Toole

Global Partnerships Manager Ellen MacArthur Foundation

Environmental

- The circular economy
- Green image
- Reduced environmental impact of business
- Legislation (WEEE, Recycling etc.)

Governmental institutions attempt to guide manufacturers towards sustainable production processes by designing regulations that make the manufacturer responsible for managing the product through its complete technical lifecycle, including end-of-life treatment. Aside from compliance, consumers are becoming more and more concerned for our society's impact on the environment and are demanding products that have been produced in sustainable ways. In line with the principles of the circular economy, manufacturers are increasingly looking to keep raw materials in closed loops. This requires a constant flow of returning assets.

Customer

- Increased customer service
- Increased customer retention
- Improved quality through re-engineering

The customer value is obtained from improved customer relations. Rather than selling an asset, manufacturers offer a complete solution by taking back assets. This provides additional opportunities for increased customer service through upgrades during the usage period. As a result, manufacturers may experience increased customer retention.

Information

- Learn about wear and tear of parts
- Big data
- Design for disassembly

Closed loop supply chains provide increased insights into customer behavior and performance. Taking back used assets enables manufacturers to learn more about the wear and tear on parts and customer utilization and application behaviors. In a world where “big data” is becoming increasingly important, manufacturers are looking for innovative ways to commercialize the power of data and turn data into wisdom as visualized in figure 2.

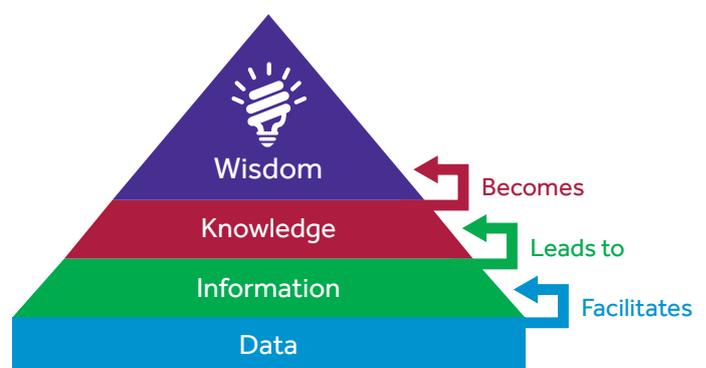


Figure 2: The power of data

Reverse logistics process steps

A closed loop supply chain consists of both a forward and reverse flow of assets as visualized in figure 3. This section focuses on the reverse flow and describes the steps from the moment that assets are recovered until reintroduction into the forward supply chain.

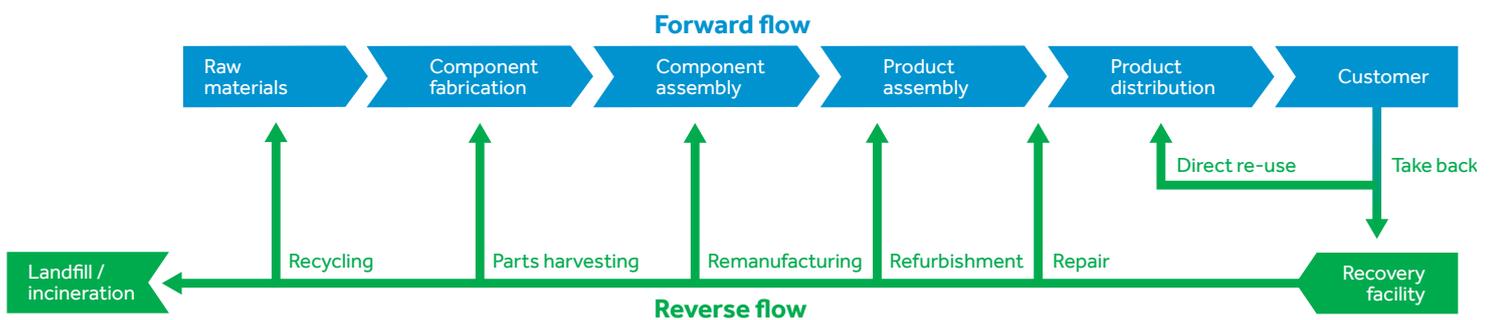


Figure 3: The closed loop supply chain

Identification and collection

The selected used asset needs to be located, collected, (possibly) inspected and transported to the manufacturer's recovery facility. Used assets are returned to the manufacturer via different channels. These include acquisition through trade-in, direct purchasing from users or third parties and end-of-lease returns. Manufacturers, dealers, distributors, brokers and municipality collection points are the primary aggregators of used assets. However, not all recovered assets automatically flow back to the manufacturer, particularly when these assets come back via brokers or independent dealers. Therefore, financial incentives have to be offered to the users or collectors to motivate them to return their assets.

"Recovering used milking robots is important to keep the used machinery business close to us."



René Poodt – General Manager
Lely Taurus NV

Selection on quality and recovery

In the recovery facility, the quality of the incoming asset is assessed and the most suitable recovery operation is determined. The asset can be sold "as is", repaired, refurbished or remanufactured.

The assessment of which recovery operation to use is always based on a cost-benefit analysis. In other words, manufacturers will not completely refurbish a used asset if the retail price will be lower than the costs required to return the asset to a predefined quality standard. It is important to note that these assessments depend on the maturity of the remanufacturing process. This can range from low volume, ad hoc asset remanufacturing to a smooth, structured process where volumes are significant and remanufacturing is "business as usual".

Disposal

Materials that are unsuitable for any of the above recovery operations are disposed of in a responsible manner. This means that valuable components are separated and reintroduced into the forward supply chain while the remainder of the asset is scrapped at a local recycling facility to retrieve the raw materials. These can be used for the production of new assets.

Re-distribution

After the recovery operation has been completed, the asset can be brought back into the forward supply chain.

Barriers to closed loop supply chains

While the potential value of closed loop supply chains may appear to be infinite, manufacturers sometimes experience barriers that hinder implementation or extension of closed loop systems.

Lack of information on the benefits of asset recovery and management inattention are known to be the main barriers. In addition, some manufacturers fear that by recovering their assets, new asset sales will be cannibalized by the sale of recovered assets². In addition, manufacturers are sometimes nervous about a possible high initial investment that may be required to set up a reverse logistics network, and therefore fear that changes need to be made in the current business model before a closed loop supply chain can be implemented.

Even when manufacturers have overcome the preceding barriers and engaged in asset recovery practices, certain factors may still inhibit organizations from realizing the optimal benefits of closed loop supply chains. In general, manufacturers that have implemented closed loop supply chains cite the following issues:

- Confusion about the requirements of a reverse logistics network.
- Inability to register or contact owners of used assets due to data protection legislation.
- Misalignment of incentives (internally and/or externally).
- Lack of reconditioning standards, which makes benchmarking impossible.
- Non-genuine spare parts on returned assets due to third party involvement.
- Selling new assets is more important than reselling used assets because manufacturers need to keep their factories running.
- Third party and trader control of secondary markets.
- Uncertainty about the value of recoverable material.
- Uncertainty about timing and quantity of returns.



“Having up-to-date information on our MR systems in the field is crucial for managing the full technical lifecycle of healthcare equipment.”



Jeroen Gruben – General Manager
Refurbished Systems
Philips Healthcare

². For more information and best practices on how manufacturers can minimize cannibalization risk, please download the whitepaper: “Complement new equipment sales with pre-owned assets”.

How manufacturers manage these challenges: “Enablers”

Several actions have enabled manufacturers to reduce the impact of the preceding constraints. These are identified in the checklist on page 7 and are worth taking into account when developing closed loop supply chains.

Internally

There has to be a clear playing field with sufficient resources and budget available to successfully roll out closed loop supply chains, thereby embedding related activities into the DNA of an organization. A lack of management attention can be overcome by turning used trade and refurbishment activities into a profit center, thereby supporting the mid-term strategic ambitions of the organization.

Customer

Manufacturers have to create a brand and quality standard for their Second Life³ product offering that is easy to understand and benchmark for the end user base. Refurbishment and remanufacturing are still relatively new and unfamiliar actions. So it is important to create transparency for the end-customer. Along with creating a standard, manufacturers are advised to register owners and users of assets. This allows them to create user profiles that can help to better position Second Life propositions to different customer segments.

Uncertainty in returns

In order to get to the end-customer and scale up refurbishment and remanufacturing activities, manufacturers need to have a stable supply of used assets. The uncertainty in the timing and quantity of the return flows can be reduced by maintaining a safety stock of returned assets and offering rental solutions, trade-in campaigns, swaps and upgrades to end-customers. Uncertainty regarding the quality of the returned assets can be countered by re-designing the asset to ensure that wear and tear is easily remedied and refurbishment involves less labor. A modular design positively contributes to optimal value recovery.

Information

Manufacturers have to monitor assets in the field through accurate installed base management. This gives manufacturers better control of their used assets, creating additional opportunities for repairs and upgrades. As a manufacturer becomes more embedded in the after sales market, information on the condition, location and the usage of assets is more readily available. An increased level of asset detail allows for more focused refurbishment activities which could reduce costs.

The role of leasing

While leasing is just one solution for recovering used assets, it does provide manufacturers with advantages that enable closed loop supply chains to become a reality:

- Control of the secondary market by retaining ownership and preventing third party traders from interfering in asset recovery.
- Enabling demand planning of refurbishment and remanufacturing activities by knowing which assets come back over time.
- Enhanced customer control by proactively upgrading customers with new assets before the contract has ended.
- More predictability in the timing and quantity of returns: manufacturers know in advance when the opportunity arises to reacquire the asset.
- The ability to include additional services like repair and maintenance. This provides the manufacturer with enhanced control over their installed base, resulting in:
 - Reduction of the risk that third parties provide service and non-genuine spare parts for the asset.
 - Increased resale values of assets.
 - One-stop shopping.
- Guaranteed return flow of used assets without being obliged to take back everything by including a right of first refusal in the agreement with the manufacturer.

³ Second Life refers to refurbished, remanufactured or used asset product offerings.

Checklist for recovering value from used assets



Strategy

Make sure your used trade and refurbishment activities operate as a profit center and align with dealers on your and their second life strategies.



Asset returns

Generate a significant and predictable flow of used assets by offering trade-in campaigns, rental solutions, swaps and upgrades.



Inventory

Maintain a safety stock of returned assets so refurbishment activities can be "leaner and meaner".



Positioning

Create a brand and quality standard for your second life product offering that is easy to understand and benchmark for your end user base.



Installed base management

Monitor assets in the field and ensure current data is readily available by enhancing data captured around the asset and registering owners and users of assets.



Re-design

Re-design the asset to ensure that wear and tear is easily remedied, and refurbishment involves less labor.

Closing note

The circular economy

The traditional linear economy model is based on a take, make, dispose system where raw materials are extracted from the earth, assets are made, sold, and eventually discarded by the user to potentially end up in a landfill or the incinerator. The circular economy model is aimed at keeping raw materials in closed loops. This model relies on usage rather than ownership of assets. It enables manufacturers to maintain more control of their assets throughout the technical cycle and offers the potential for product services to become an increasingly important profit center for manufacturers.

DLL Life Cycle Asset Management

DLL recognizes the opportunity to obtain value during the full technical life cycle of assets (Life Cycle Asset Management). This is accomplished by providing tailored financial solutions such as:

- Operational lease
- Fleet management
- Stock finance
- Second Life finance
- End-of-life treatment

These include repair, maintenance, refurbishment and remanufacturing services by DLL's manufacturing partners. This enables manufacturers, dealers, end-users and DLL to extract more value from the quality of the assets. In line with this strategy, DLL has developed a series of whitepapers and expects to develop more in the future:

- "Realising opportunities of a circular business model"
- "Complement new equipment sales with pre-owned assets"
- "Sustainable returns by recovering used assets"



"Leasing helps our manufacturing partners to plan and predict when assets will reach their workshop for refurbishment."



**Tom Casey – Sales Manager US
Construction and Industrial**

Sales Manager DLL US Construction and Industrial

At DLL, it is our passion to find original, integrated solutions that help to resolve real-world challenges. We are constantly thinking about how we can be a financial solutions partner every step of the way for the businesses we work with so that our customers can see how we use and get the most out of our assets together.

Contact

Authors

Sjoerd van der Zee, Frits Engelaer
and Bjorn Huethorst

For more information

Please contact your DLL representative or
E icam@dllgroup.com
www.dllgroup.com

Publication date

October 2015

