

Maintenance model



Service model



Circular model



From assets to access

High potential transformation of the capital goods industry

Summary and conclusion

From product sales to a service model: significant opportunity, significant change

Industry shifting focus to services

Increasingly, the technology industry earns its money through provision of services. Whereas twenty years ago almost two-thirds of (earned) income came from production activities, that figure has fallen to around 56%. There are opportunities for OEMs of capital goods in particular to reshape their business model from production and sales to a service model with an increased emphasis on providing services.

Customers want a care-free solution and flexibility

In a service model, customers benefit from further 'unburdening'. Alongside maintenance, effectively already a standard service, the major advance in a service model is the guarantee of performance of a capital good for a fixed fee. The customer is thereby assured of use and performance, without ownership. This guarantee of a care-free solution and flexibility is valued by many customers and reinforces the relationship between manufacturer and customer.

More product and market knowledge among manufacturers than customers

There are increased opportunities for manufacturers to embrace a service model. While opportunities vary from one market to the next, money can be earned by improving:

- **Maintenance:** volume, increasing technical complexity and new technology mean that this is best performed by a manufacturer;
- **Marketing:** a manufacturer knows its (second-hand) sales market better than the customer and globalisation has increased sales opportunities;
- **Financing:** the benefits of cheaper financing, if available to the manufacturer, can be (partially) passed on to the customer;
- **Utilisation:** by leveraging volume and applying new technology, a manufacturer can optimise the use of easily moved goods, thereby reducing costs;
- **Care-free:** the customer is exposed to lower risk and can concentrate on core activities.

Opportunities vary between markets, for example:

- For manufacturers with customers in the public sector, in the education and healthcare sectors and/or ports and airports, opportunities centre on providing a **care-free solution** and enhanced **maintenance**;
- For the transport sector, there is added value to be had in terms of **utilisation**, **marketing** and **financing**;
- Machinery manufacturers selling into the metalworking and rubber and plastics industries (with many SMEs) can add value in terms of **financing** and **maintenance**.

Significant opportunity, requiring significant investment

The transition from product sales to a service model must be undertaken step by step. This is due to the scale of the transition and the fact that it requires, among other things:

- Time and money to develop **technology** that improves the maintenance and use (utilisation) of capital goods;
- Investment in **(sales) staff**. The sales force has considerable experience in selling a product. The service model emphasizes the selling of a (customer) solution;
- **Capital**, since the transition will require significant liquidity in the first few years. This is due to the fact that a manufacturer will receive a periodic fee instead of the full amount for the sold product in one go.

Service model important step towards circular economy

The service model is an ideal step towards a circular economy. The service model includes provision for the return (replacement) of the product. Control over the product remains with the manufacturer. Smart design can enable far more effective disassembly, re-use or recycling. The value of the circular model is not (yet) expressed in a better procurement margin, however. It is important that demand by large corporations and public authorities (including regulations) moves in the direction of a circular economy.

Contents

Introduction	4
Manufacturers increasingly provide additional services	4
From product sales to sustainable customer solution	5
1. The maintenance model: building a customer relationship	6
Maintenance model creates valuable relationship with user	7
Technology further enhances attractiveness of maintenance model	8
2. The service model: providing the customer with a care-free solution	9
Service model: a major step forwards	10
Financial implications – customer	11
Financial implications – manufacturer	12
Capital not the only challenge	13
Transition in practice: Three examples	14
3. The circular model: the sustainable solution	15
Circular model as ultimate goal	16
Trend towards modular approach brings circular economy a step closer	17
Gradual move to circular model most likely to succeed	18
Annex 1	19
Special thanks to	20

Introduction

Manufacturers increasingly provide additional services

Opportunities for capital goods industry

Increasingly, European industrial companies earn money with services related to a product. Whereas in 1995, 66% of (labour) income still came from production activities, that figure has declined to around 56% twenty years later. Trends such as 'from ownership to use' and customer demand for flexible solutions will strengthen this tendency in the coming years.

This report focuses on capital goods manufacturers. Sales of EU capital goods manufacturers¹ amount to approximately 2,200 billion euros.

Technology presents these manufacturers with new opportunities for evolving from the traditional product sales model to a service model. However, the significant opportunities are matched by significant challenges: the switch from a product-oriented company to a service provider is a major one.

Four business models

This report is based on a conceptual framework comprising four business models (see next page).

A manufacturer can progress from a **product sales model** to a **maintenance model**, in which more technical services such as installation and maintenance are provided. Section 1 describes features of supply chains in which this model occurs and how new technology can strengthen the manufacturer's role.

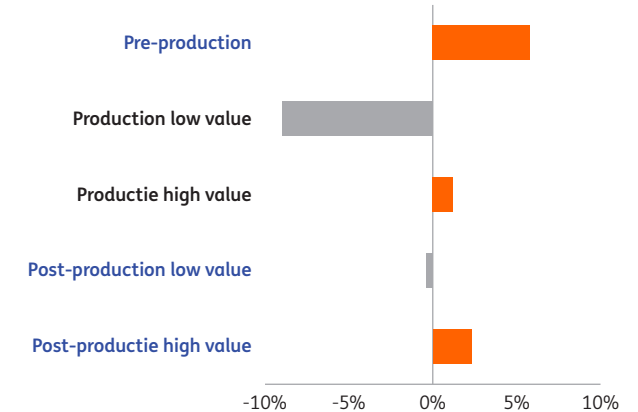
This report focuses mainly on the transition to the **service model**. Section 2 addresses the opportunities, challenges and financial implications.

Section 3, finally, briefly examines the evolution to the **circular model**. The manufacturer remains responsible for the product throughout the entire product life cycle and actively focuses on (designing for) the reusability of products and/or components. Where the service model reflects the broader trend 'from ownership to use', the circular model aligns with the trend towards sustainability.

There is a clear shift in the activities from which European industry generates its earnings

Change in share of (labour) income of capital goods industry* 1995-2011, EU15, percentage points

From production to services



Source: Dutch Manufacturing Competing in Global Value Chains, Marcel Timmer / Gaaitzen de Vries, University of Groningen, 2015, and underlying data received, *incl. metalworking

1 Defined as electrotechnical, mechanical engineering and transport equipment manufacturers

Source: Oxford Economics

Introduction

From product sales to sustainable customer solutions

The 'stairway to circularity'

The following conceptual framework shows how manufacturers can evolve their business model. The higher up the stairway, the stronger the relationship with the customer, the greater the added value, the fewer concerns the customer has and, on the last step in particular, the greater the sustainability. Also: the higher the step on the

stairway, the fewer the number of companies occupying it at this moment. In practice, every customer requires a tailor-made solution. A manufacturer must ultimately be able to provide the services referred to in a flexible modular format. A 'service' that is common to all forms is financing. Manufacturer-provided financing can occur in every model.

A framework: The 'stairway to circularity' for capital goods manufacturers

N.B. One service that a manufacturer can provide in each model is financing.

Business model	What services are provided?
Circular model	+ Disassembly, reuse of asset/parts and recycling 3 A sustainable solution • page 16-18
Service model	+ (Reverse) logistics
	+ Taking over risk (performance contract) 2 'Taking care' of the customer • page 10-14
Maintenance model	+ Maintenance 1 Building a client relationship • page 7-8
	+ Operations
Product sales	+ Installation
	None

Source: ING Economics Department

1. The maintenance model: building a customer relationship



- Maintenance model creates valuable relationship with user
- Technology further enhances attractiveness of maintenance model

7
8

Maintenance model

Maintenance model creates valuable relationship with user

Existing relationship with user is a good starting point for evolution to a service model

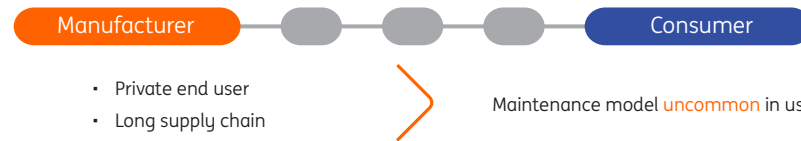
It helps in the transition from product sales to a service model if the manufacturer already has an existing structural customer relationship. Aside from the margin which manufacturers earn on maintenance, this relationship is the key value in the maintenance model.

An even closer relationship exists in specific markets with (more) complex systems and installations, since the OEM can also have responsibility for day-to-day control. A good example is Vanderlande, which manufactures automated baggage handling systems, among other things. Roughly 80 people are employed permanently at Amsterdam Airport Schiphol to operate the system.

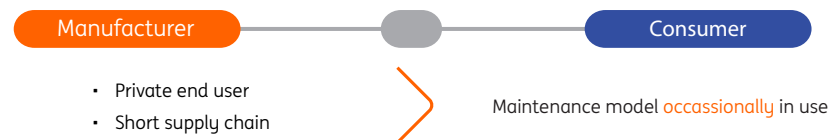
Different supply chains, different relationships

Not all manufacturers are able to provide maintenance services. An important factor is the type of supply chain in which a manufacturer operates. The number of intermediary links to the end user is also a significant factor in this regard. The maintenance model is most common in a business-to-business environment where the manufacturer's customer is also the end user.

Overview: Maintenance model by manufacturer depends on supply chain, among other things



In the case of 'long' supply chains with multiple links between manufacturer and consumer, there are few manufacturers that opt for the maintenance model. An example is capital goods in homes, such as central heating boilers. Separate installation and maintenance contractors operate in this market, alongside wholesalers, the power company and possibly the landlord.



The maintenance model is sometimes found in 'shorter' supply chains, such as in the automotive sector or large domestic appliances. It is then usually employed by financially strong manufacturers. The actual maintenance is then often performed in collaboration with (exclusive) partners.



In the case of capital goods with a business end use there is often a direct relationship between manufacturer and user. Examples include specialised machinery or buses. Maintenance is then often performed by the OEM or (exclusive) partner. The lower volumes (than in the consumer market) and short communication lines facilitate a (more) pronounced steering function for an OEM, and additionally present opportunities for evolving towards the service model.

Maintenance model

Technology further enhances attractiveness of maintenance model

Technology as driver

The leading opportunity in relation to maintenance and deployment of capital goods is presented by the use of new technology.

Technological complexity is increasing and ensures project installation is a growth segment

Increasing technological complexity is widening the 'knowledge gap' between manufacturer and user. Manufacturers are presented with new opportunities in terms of service provision, starting as early as the installation stage. Systems in modern factories are increasingly complex and link production and logistics, for example, while also generating huge volumes of data. This drives project installation as a clear growth segment.

Maintenance: remote and predictive for optimum planning

The advantage enjoyed by manufacturers in terms of technological knowledge also leads to opportunities for monitoring and maintenance. In most cases maintenance is still performed on a regular basis (inspection once a year) and reactively (if something breaks down). This is in spite of the fact that electronics and integrated software and sensors can supply the necessary information on a machine, enabling predictive maintenance. This allows machine downtime to be reduced and maintenance planning to be optimised. It is worth noting that this can be preceded by a period of many years, during which data must be collected and the relevance of the data determined.

Inspiration: Predictive maintenance at ThyssenKrupp

- In 2013, board members of German manufacturer ThyssenKrupp (turnover approx. €42 billion) and Microsoft met at a conference on the Internet of Things.
- In 2015, the two companies together launched MAX, a predictive maintenance solution for ThyssenKrupp's lifts.
- There are orders to have installed 180,000 units in 2017. A first step towards eventually making 12 million lifts 'smarter' worldwide.

Lift breakdowns translate to efficiency loss

MAX is designed to dramatically reduce the number of lift breakdowns. The tool acts as the service engineer's right hand. It shows in real time whether, and which, parts need to be replaced, but its predictive capabilities make it particularly valuable. Data from the lifts is collected in real time and sent to the Microsoft Azure platform. An algorithm calculates the service life of key lift components. This yields efficiency gains not just in terms of planning and deploying engineers, but also gains for lift users since they are less inconvenienced by breakdowns or reduced lift capacity.

Source: <https://max.thyssenkrupp-elevator.com/assets/pdf/TK-Elevator-MAX-Report.pdf>

2. The service model: providing the customer with a care-free solution



- Service model: a major step forwards 10
- Financial implications – customer 11
- Financial implications – manufacturer 12
- Capital not the only challenge 13
- Transition in practice: Three examples 14

Service model

Service model: a major step forwards

Customer wants less work for itself and fewer risks

Customers increasingly want suppliers to provide 'care-free solutions' by delivering additional services and assuming risks on their behalf. This is driven by the fact that the customer also finds itself in an increasingly complex world with critical clients, rapid market changes, regulatory burdens and competitive pressure. A service model provided by the manufacturer is the perfect answer to this need.

Ownership with manufacturer and performance contracts

The service model goes significantly further than the maintenance model. A central element in the service model is the **retention of ownership** of a capital good by the manufacturer. The customer is only interested in use. This results in a shifting of risk and perhaps financing to the manufacturer. In the service model **performance contracts** are concluded under which the supplier guarantees or is paid for a specific performance per unit (either manufactured or used by the customer).

What price for meeting this customer demand?

Providing additional services and assuming risk come at an extra cost also for a manufacturer. This will be factored into the standard fee paid by the customer in a service model. But, not surprisingly, an excessively high fee will impact on sales. It is important to consider on which elements margin can be made by the manufacturer, and when (see Service Model Checklist overview).

Service Model Checklist

How can the manufacturer earn money in the service model?

- 1 **Maintenance** Big data possibilities and volumes enable the manufacturer to perform monitoring and maintenance with optimum efficiency. Growing technical complexity and electronics also increase the customer's dependency on the manufacturer.
- 2 **Marketing** Better market insight and maintenance enable the manufacturer to market its product more effectively than the customer (improved estimation of residual value) when the latter no longer uses the capital good.
- 3 **Financing** The benefits of cheaper financing, if available to the manufacturer, can be partially passed on to the customer.
- 4 **Utilisation** In the case of relatively easily moved goods in particular, a manufacturer is able to leverage volume, market knowledge and big data to achieve better utilisation by different users of the capital good.
- 5 **Care-free solution** Assuming the (incident) risk (breakdowns), thereby providing the customer with a guarantee of access/use, has monetary value. In addition to this guarantee, it offers the customer scope to concentrate further on its core tasks. The customer furthermore has greater certainty about / stability in terms of expenditure.

Opportunities vary between markets, for example:

- For manufacturers with customers in the public sector, in the education and healthcare sectors and/or ports and airports, opportunities centre on providing a **care-free solution** and enhanced **maintenance**;
- For the transport sector, there is added value to be had in terms of **utilisation**, **marketing** and **financing**;
- Machinery manufacturers selling into the metalworking and rubber and plastics industries (with many SMEs) can add value in terms of **financing** and **maintenance**.

Service model

Financial implications of service model - customer

A sample calculation helps to explain the financial implications of switching from a maintenance model to a service model.

Sample calculation

Introduction: switching from maintenance model to service model

Jansen Machinery manufactures and sells 100 machines per year at €100,000 and provides the related maintenance. The financing and depreciation period of each machine is six years. For a complete overview of the assumptions, see Annex 1.

The company notices that customers would like greater flexibility and a more care-free solution, and so considers switching to the service model. Jansen has already begun to implement predictive maintenance, enabling it to ensure smarter planning and execution of maintenance while also continuing to guarantee the quality of the machines.

How does the customer benefit?

In the old situation, the customer purchases the machine, thereby entailing a major outlay in year 1. The customer then pays further annual fees for financing and maintenance. In the service model, the customer pays six equal amounts or instalments. With the manufacturer now bearing the risk for the machine (performance), the customer pays an annual 'care-free fee', which is set at 1.5% in this example. Over a period of six years the customer then pays 9% more under the service model than under the maintenance model. In return, the customer receives a (performance) guarantee for its machine and is assured of its continued operation as well as stability in terms of expenditure.

Figure a. Old situation (maintenance model): immediate large outlay for customer, followed by low costs

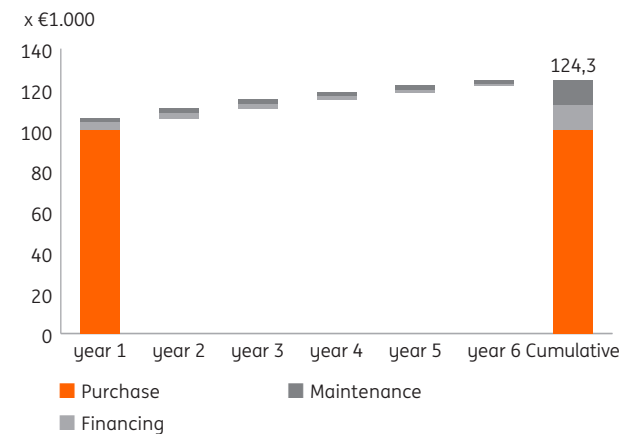
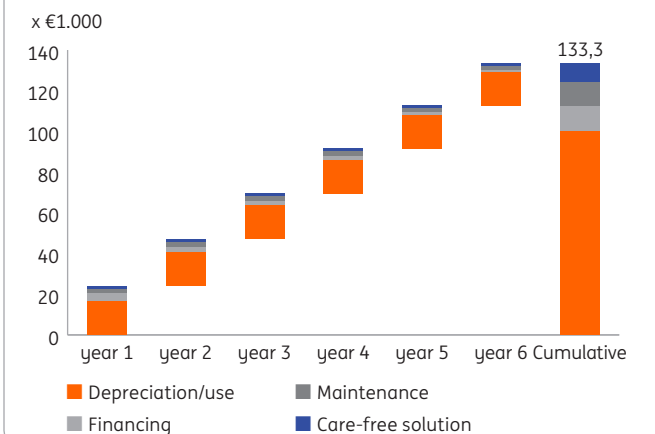


Figure b New situation (service model) more stable expenditure, ultimately higher costs due to all-inclusive service (care-free solution)



Service model

Financial implications of service model - manufacturer

Delayed profit

Rolling out the service model means that Jansen has to wait for its revenues to come on stream. It sells 100 machines a year. The six-year depreciation period means that after six years the (maximum) number of machines - 600 - are in use. The net profit will be negative for the first few years as only the income from the first few contracts to be concluded flow in. The net profit turns positive from year three, however, and will eventually be higher than in the old model.

Significant negative cash position creates financing challenge

The negative profit in the first few years is undoubtedly a financing challenge. As is the case in the maintenance model, manufacturing the machines requires pre-financing. Additional financing is needed to allow for the fact that in the service model income is generated over a far longer period. Compared with the old model, the cash position is better after thirteen years, and increases even further in subsequent years.

Service model offers greater potential

Based on this calculation, the service model is not compelling in itself. However, Jansen understands that it must be able to generate residual value. The company additionally expects to see a boost in its maintenance margin level. The inclusion of the performance guarantee in the service model provides a stronger incentive than in the past to structure this maintenance as efficiently as possible. Lastly, as a healthy OEM, Jansen Machinery enjoys favourable financing conditions, particularly compared with the multiple smaller businesses in its sales market. By passing on some of these benefits to the customer, it is possible to reduce the 'care-free fee' toward the zero mark.

This fee might even become negative after some time, so that customers have a better 'product' than in the past at lower cost.

Figure a. Net profit initially very negative under service model, later rising to become sustainably higher compared with maintenance model

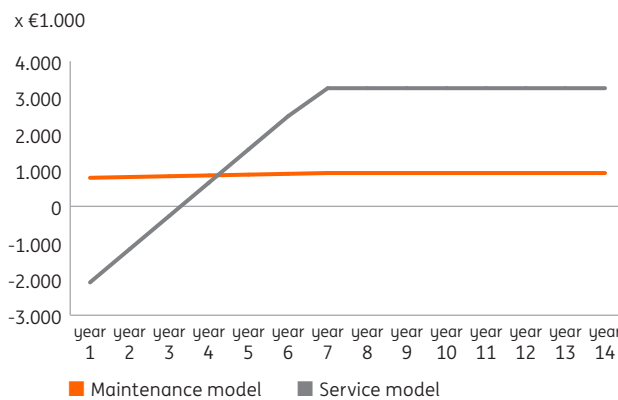
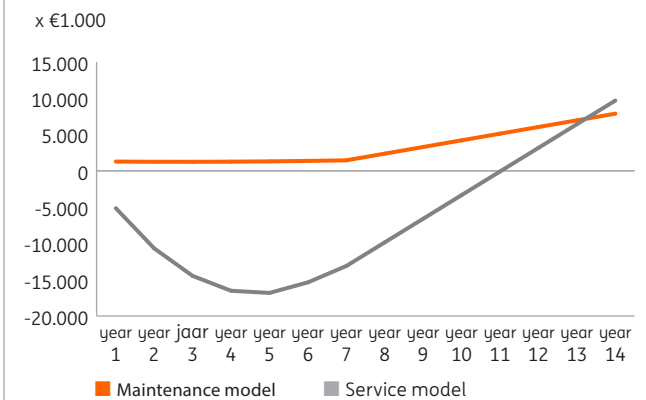


Figure b. Service model presents financing challenge due to negative cash position, although better cash position prevails after several years



Capital not the only challenge

Financially strong parties moving to service model

In addition to the attractions, the sample calculation also highlights an immediate concern when transitioning to the service model: the necessary capital. While this can be alleviated somewhat by a gradual transition, the fact remains that the switch requires an investment. This is a principal reason why financially strong parties in particular, often leaders in their

market segment, are (capable of) moving towards a service model. But capital is by no means the only factor determining the likelihood of success of a service model. Below is a (non-exhaustive) list of factors which are necessary or help to implement a successful service model.

What is necessary and what helps when transitioning to the service model?

What is necessary?

Technology

Firstly, technology must be sufficiently advanced to enable a manufacturer to make real steps in the area of predictive maintenance and/or more efficient use of (movable) goods (asset sharing). This relates in particular to the aspect of big data and retrieval of relevant data.

Clearly measurable performance

It is crucial that the delivered service is precisely measurable. The shifting of risks in the supply chain already introduces an element of complexity in terms of how the contract is structured. But if the delivered service is not clearly measurable and leaves too much scope for interpretation, the task becomes almost impossible.

Sales

The service model represents a major change for sales staff. Selling a total concept and customer solution calls for a different approach and insight than selling a capital good together with its (technical) performance. This requires manufacturers to invest in their people.

What helps?

Having an existing relationship as a foundation

A pre-existing (good) customer relationship, often rooted in the maintenance model, can accelerate the transition to a service model. The benefits of this model can be explained during talks with the customer. A possible inhibiting factor in terms of customer willingness is customer lock-in, a term that is used to signify when the customer is heavily dependent on its supplier. For the manufacturer this is a valuable aspect of the service model. But the question is how far a customer is prepared to go in this regard.

Introduction of a new product

The introduction of a new business model can be made to coincide with the introduction of a new product. The sales process then does not centre on the new product, but rather the solution being offered to the customer, with related fee.

Modified laws and regulations (tendering rules)

The (semi)public sector is a major customer for capital goods. As a service model, particularly when part of a circular model, often also involves new forms of cooperation and concept development, there is a possibility it may be at odds with tendering rules.

Service model

Transition in practice: Three examples



Better use of capital goods: transport equipment

One of the ways of increasing margin is more efficient utilisation of capital goods. Making optimum use of goods that are easily movable, such as vehicles and other transportation means, is a specialty of its own. That's the reason vehicle rental and lease companies have existed for decades and may be better positioned than manufacturers to provide further, enhanced services.

Example: TIP Trailer Services

TIP Trailer Services provides trailer leasing and rental from locations in Europe spread over sixteen countries. In addition to trailer leasing, the company also provides maintenance, repair, and fleet management, as well as other services. Transportation customers increasingly want flexibility and care-free solutions. Cost savings and improved efficiency are primary drivers in this sector, in which margins are low on average. TIP is deploying new technology in the area of telematics to further optimise trailer use and maintenance. In addition to the benefits of predictive maintenance, paying solely for usage per kilometre promises to be a valuable model in the future. Trailers are fitted with technology being developed in-house for recording relevant data. Research conducted over many years into the right data and related algorithms is intended to ensure customers can make the right decisions at the right time. This prevents unnecessary idle time, allows available capacity to be further optimised and ensures the customer only pays for actual trailer usage in the future. TIP expects to be able to achieve cost savings of up to 15% as a result.



New products offer opportunities for new business models

Major global challenges in the fields of healthcare, food supply, mobility, climate and energy require responses with new technology. Energy transition is already gathering pace in the fields of mobility and transport. The introduction of new products also offers immediate opportunities for delivering a service model.

Example: VDL Enabling Transport Solutions

VDL ETS was established in 2015. The company's objective is to develop hardware and software solutions in the field of electric transport and related matters such as battery technology, charging infrastructure and simulation software for guidance and navigation. The implementation of large-scale electric bus transport for Connexxion's South-East Brabant concession from the end of 2016 represents an important milestone.

The switch to the new bus transport mode also calls for a new business model. Transport providers are expected to ultimately adopt a model based on payment per passenger. The transport providers in turn expect their suppliers to provide a comprehensive solution with guaranteed mobility. The challenge for VDL and its partners is to deliver a complete package of buses, guidance and navigation, charging infrastructure and a stable and secure power supply. The further structuring of the necessary eco-system and the division of operational risks among the parties involved in contracts, as well as in practice, continues to require a tailored approach.



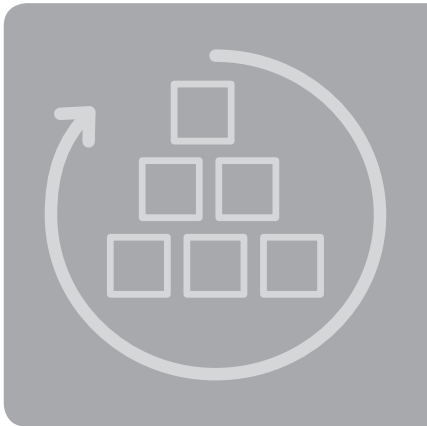
Taking over services from (semi)public sector

The more care-free the solution a customer seeks, the more lucrative the service model becomes. The (semi)public sector offers multiple opportunities for achieving the service model. Of particular interest are services related to all manner of capital goods that are used in (air)ports, the healthcare and education sectors, or other government departments.

Example: Aebi Schmidt Nederland BV, part of ASH Group

ASH Group is Europe's leading manufacturer of spreaders for de-icing operations. The Dutch market is notable in that most value is generated not through sales of products but rather through the services provided in relation to those products. In addition to advice and maintenance, the company provides training on carrying out de-icing operations. In a new move, Aebi Schmidt has begun offering a complete service model: the customer (several contracts were recently signed with public authorities) pays a fixed fee for the use and availability of winter maintenance equipment. In return, Aebi Schmidt offers a guarantee of 100% availability and 100% deployability. Contracts have even been signed specifying delivery of comprehensive performance. Given the increasing knowledge advantage of Aebi Schmidt, and the fact that public authorities must work with lower budgets, this model offers opportunities. Clear benefits for public authorities are a care-free service, guarantees and stability in terms of expenditure.

3. The circular model: the sustainable solution



- Circular model as ultimate goal 16
- Trend towards modular approach brings circular economy closer 17
- Gradual move to circular model most likely to succeed 18

Circular model

Circular model as ultimate goal

Circular model: opportunity and responsibility for the manufacturer

While the switch to a service model is significant, the transition to a circular model is even more significant. In addition to freeing the customer from worry, it also marks an important step on the path towards sustainability. In the circular economy products and materials are re-used and raw materials retain their value. Product design plays a key role in this regard.

The circular model requires the manufacturer to retain control over the product throughout the entire life cycle, while the service model 'ends' on the return of the product. In practice, a product is often given a second lease of life after return through resellers or otherwise. These capital

goods can still be put to more than adequate use in many countries, so it makes sense from an economic viewpoint, as well as from the perspective of sustainable use, to do so. The fact remains that re-use or recycling of capital goods at the end of their (technical) useful life still leaves much to be desired. Extended control and a sense of the potential of sustainability on the part of a manufacturer are essential to enable a different approach in this matter.

Large corporations and governments adopting a circular approach

Demand for circular products amongst consumers is still very limited. Nevertheless, sustainability has an increasingly high profile on corporate agendas, particularly amongst large, well-known companies. By adopting a

circular model, capital goods manufacturers that deliver to these companies can support customers in improving the sustainability of their operations. It is therefore expected that business demand for circularity in capital goods will increase.

The item is also creeping up in the agendas of public authorities. In December 2015, the European Commission presented a package of measures to stimulate Europe's transition towards a circular economy. These guidelines will be translated into national legislation in the coming years. More regulations are expected to be introduced in the coming years to support the circular economy further.

ING 

ING Economics Department

Rethinking finance in a circular economy

[financial implications of circular business models]



For a detailed analysis of the circular economy in the broad sense and the implications for financing, see the report 'Rethinking finance in a circular economy'.

Circular model

Trend towards modular approach brings circular economy closer

Modular approach = circular approach

An important trend that is bringing the circular model closer is the modular design approach. In order to meet the need for efficient (standardised) manufacturing while delivering a customer-specific solution in a flexible manner, capital goods are increasingly designed on a modular basis. And since these modules are easily disassembled, replacement, re-use or recycling is also much easier to undertake. Where a capital good is re-used, the value of the design is also preserved and not just the (more limited) value of the material.

Additional margin on procurement thanks to circular model is still some way off

By designing components or modules more smartly it ought to be cheaper to re-use them than to manufacture new modules. Especially if adequate maintenance ensures their long-lasting quality. In practice, however, this procurement benefit is not yet, or is only scarcely, achievable. For decades manufacturing processes (for new goods) have been optimised to the point that costs are now very low. Furthermore, raw material prices are currently at such a low level that purely in terms of procurement and manufacturing costs, the circular model is presently no match for the 'linear' model in most cases.

PHILIPS

Practice

Philips: each supply chain requires a unique circular approach

In the B2B market, Philips medical equipment and lighting activities represent two sectors with circular potential. As both markets differ considerably, however, the steps that can be taken in relation to the circular economy also differ.

Lighting

Offering 'light as a service' is a major step towards a circular economy in this sector. Technology, in particular the development of LED lighting, sensors and the internet, opens up new opportunities. In 2015, Philips launched a collaboration with Schiphol Airport, which was keen to purchase a circular product: a pilot project to provide light as a service. Philips effectively delivers the service model, but with an emphasis on applying circular economy principles. By retaining ownership, Philips has control over the product. Smart design enables the lighting fixtures to be re-used elsewhere, or at least recycled, in an effective manner. A challenge in designing the lighting is assessing correctly which components are subject to

rapid wear or change, since a product that is not used relevantly impedes or complicates re-use. An important learning point in the transition to a circular model is that this cannot be effective if (product) design is taken as the (sole) essential factor. The proposition to the customer serves as the starting point and basis for working towards a product (and service) design.

Medical equipment

Medical equipment (CT, MRI scanners) also presents opportunities, although the transition to a circular economy necessitates some important choices. There is a well-established large second-hand market for medical equipment, for example, which entails a loss of control by manufacturers over their products. However, this control is essential for the circular model. At the same time, refurbishment is also an important and valuable issue for Philips, and the company is increasingly focusing on 'design for re-use' and modular production. The relocation of the refurbishment line from Veldhoven (NL) to the production line in Best (NL) is a good example of how the new 'sustainable' activities are becoming increasingly integrated with the 'traditional' activities.

Circular model

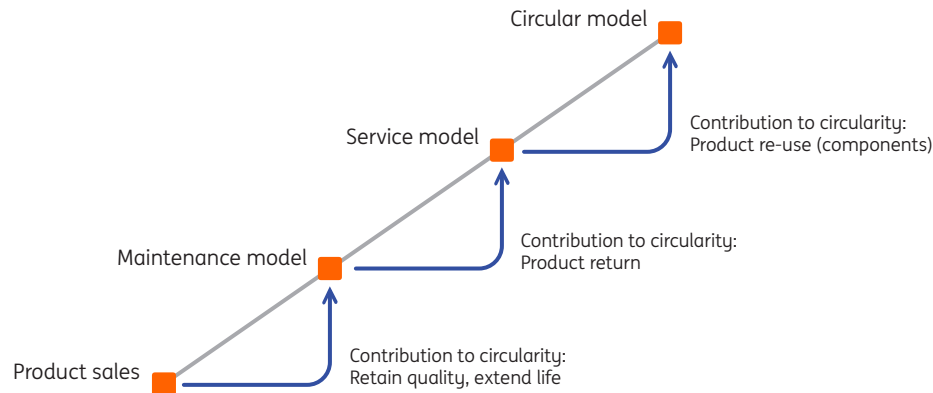
Gradual move to circular model most likely to succeed

Move in one jump not necessarily easier

The increasing embrace of circular models is no measure for their success. Companies that immediately introduce a circular model in the interest of 'sustainability' face a considerable challenge. The transition from product sales to service model is considerably challenging enough in itself. When implementing the circular model in one go it is important that design, return logistics and re-use of products also are well aligned and organised. The customer proposition in particular, which is

highlighted in the service model, must be really watertight. Relatively expensive lease concepts or 'return deposit constructions' sometimes create too many barriers for customers and prevent the successful marketing of a concept. It remains essential to take the proposition to the customer as the starting point. For capital goods manufacturers in particular, the move towards a circular model is more likely to succeed if it follows the path of maintenance model followed by service model.

Gradual transition to circular model



Source: ING Economics Department

VANDERLANDE

Practice

Vanderlande: moving towards a circular model

Vanderlande is an industrial company and the global market leader in baggage-handling systems for airports, and sorting systems for parcel and postal services. The company is also a leading supplier of warehouse automation solutions. It has more than 4,000 employees. Vanderlande is certainly no longer just a manufacturer. It generates added value through research, development, design and delivery, resulting in innovative systems. It additionally takes care of maintenance and in some cases (airport baggage-handling systems, for example) operations on behalf of customers. Vanderlande also predicts growth opportunities through selling more projects according to the DBFMO principle: Design, Build, Finance, Maintain, Operate. Customers increasingly want peace of mind, particularly in terms of risk management. The concept of 'payment by suitcase' is becoming increasingly commonplace in large investment projects at airports. Vanderlande sees this service model as a stepping stone on the path

towards a circular model in the longer run. While direct customer demand has yet to materialise, Vanderlande has identified latent demand for the new model. The intrinsic motivation driving the company also plays an important role in its further commitment to a sustainable future.

New working method, new partners

The path towards the circular model is a gradual process. The company gained valuable experience with the development of BLUEVEYOR, a conveyor belt designed according to circular principles, meaning it is easy to disassemble and is made of components which facilitate maximum re-use or recycling. This requires Vanderlande, as well as its suppliers and customers, gaining a deeper insight into, and knowledge of, the materials involved. Setting up a system of reverse logistics, determining when the product is to be replaced/removed, is another important change. As this requires new partners, Vanderlande has entered into collaboration with several companies, including waste recovery and treatment specialist SUEZ.

Annex 1

Assumptions in sample calculation pages 11-12

	Maintenance model	Service model
Selling price/Fee (incl. maintenance)	102.0	23.7
Term of contract (years)	-	6
Margin on maintenance	20%	20%
Costs of purchase (% turnover)	50%	50%
Staff costs (% turnover)	20%	20%
Other operating expenses (% turnover)	10%	10%
Tax rate	25%	25%
Depreciation of plant, machinery and equipment	10%	10%
Maintenance investments in plant, machinery and equipment	10%	10%
Debt in connection with purchase of plant, machinery and equipment	5000	5000
Annual debt repayment	833	833
Interest on debt	3.5%	3.5%
Opening balance of cash resources	400	400
# days inventory	75.0	75.0
# days accounts receivable	60.0	60.0
# days accounts payable	60.0	60.0

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