

GLOBAL REMANUFACTURING BENCHMARK

2019

New insights into the remanufacturing markets, products and processes.

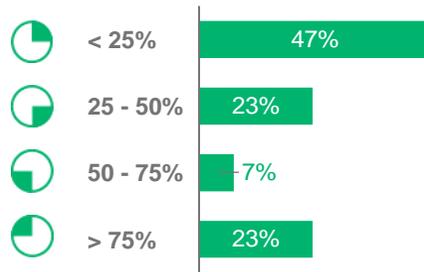
We regard remanufacturing to be an important instrument of after-sales. In the second edition of the exclusive Global Remanufacturing Benchmark, Rematec and Kemény Boehme & Company (KBC) have gained insights into current remanufacturing trends, developments and challenges of today. The survey was conducted before and at Rematec in Amsterdam (June 2019) and Guangzhou, China (October 2019), which allows us to take a closer look at the situation in the European and Asian markets in this issue.



INDUSTRY PLAYERS & THEIR CHALLENGES

In the remanufacturing playing field, various players compete for aftermarket shares. The study participants entail remanufacturing professionals, from **Original Equipment Manufacturers / -Suppliers** (44%) to **independent aftermarket manufacturers** (26%), who, as independent players, provide mostly lower-priced, alternative parts. Besides **Tier-n suppliers** (9%) further participants are from various sectors (21%) such as core brokers or IT service providers for example.

Most of the industry players surveyed generate **less than 25% of their revenue** in remanufacturing. **About 30%** of the respondents state that remanufacturing accounts for the **largest part** of their revenue [► Fig. 1]. It is striking that the remanufacturing sector of the companies surveyed is either small or relatively predominant.



[Fig. 1: Revenue in remanufacturing]

The **major challenges** of the remanufacturing professionals surveyed are characterized by the influence of increasing electromobility and price pressure:



New technologies are required, particularly as a result of the rapidly increasing electromobility.



Pricing remains one of the main competition criteria as price pressure in the industry is becoming ever stronger.



Core Management (Tier-n and IAM)



Consistency of processes such as for core return is a major challenge for representatives of various sectors.

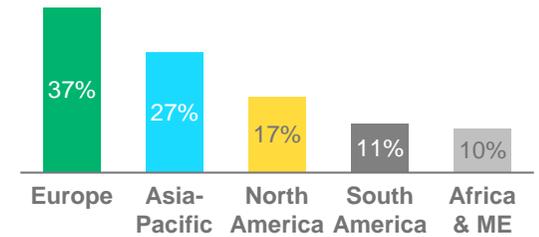


Marketing and Sales of remanufactured parts as well as a consistent Green Marketing approach is a key success factor.

MARKETS

Central and Eastern Europe are and remain **main markets** for remanufacturing and remanufactured parts. Despite the strong focus of the survey on the Asian market, in particular Central Europe plays an important role for the reman business. Furthermore, **Asia-Pacific and North America** are also playing an important role in this context. In particular the **Chinese remanufacturing market** is becoming increasingly important for international reman organisations, who are aware of the growing influence of Chinese sustainability politics and the increasing demand for new equipment (hardware) and know-how [► Fig. 2].

Reman plants are mostly located in Asia-Pacific (41%) and Europe (37%), followed by North America (16%). Less commonly remanufacturing is located in South America (11%), Africa and Middle East (10%).



[Fig. 2: Remanufacturing markets]

The study participants gave an assessment of the **top industries**. Top industries continue to be **passenger cars** and **trucks**. We observe that the predominant focus of the reman industry on passenger cars is going to decrease in the future whereas other focus industries remain rather stable or even expand [► Fig. 3]. Also in other rather niche sectors remanufacturing is becoming increasingly important. An increase is to be expected for **marine** (up to 11%), **energy** (up to 9%), **trains** (up to 7%), **industrial machines / electronics** (up to 5%), **aerospace** (to 4%), and **health care** (to 4%).



Passenger cars
from 36% to 15%



Heavy trucks
from 17% to 13%



Bus & coach
constant at 10%



Road machinery
from 10% to 8%



Agriculture
from 9% to 10%

[Fig. 3: Top focus industries]

PRODUCTS & PROCESSES

The increasing number of environmental policy measures and the great influence of Dieselgate have contributed to the rapid growth of **electromobility solutions**. This also has a significant **impact on remanufacturing of certain products**. Remanufacturing is to be expected to take an increasingly important role for certain products, such as electric and hybrid drive units (from 3% today to 16% in the future) as well as electronic components and electronic control units (ECU) (from 8% to 12%) and batteries (from 1% to 8%). With increasing electromobility, combustion-related parts will become less important to the remanufacturing industry. A decrease is expected in combustion engines and parts (from 15% to 10%), starters and alternators (from 18% to 9%) and transmission and transmission parts (from 15% to 12%) [► Fig. 4]. Combustion-related parts will become less and less important with increasing electromobility.

Airconditioning / cooling components

Brake systems / components

Electronic components / ECU's

Combustion engines / parts

Electric / hybrid drive units

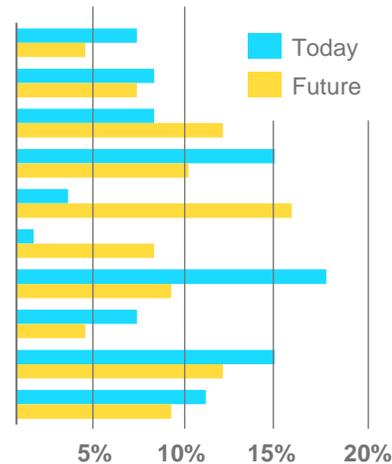
Batteries

Starters / alternators / parts

Steering / suspension systems / components

Transmission / transmission parts

Turbo / turbo parts

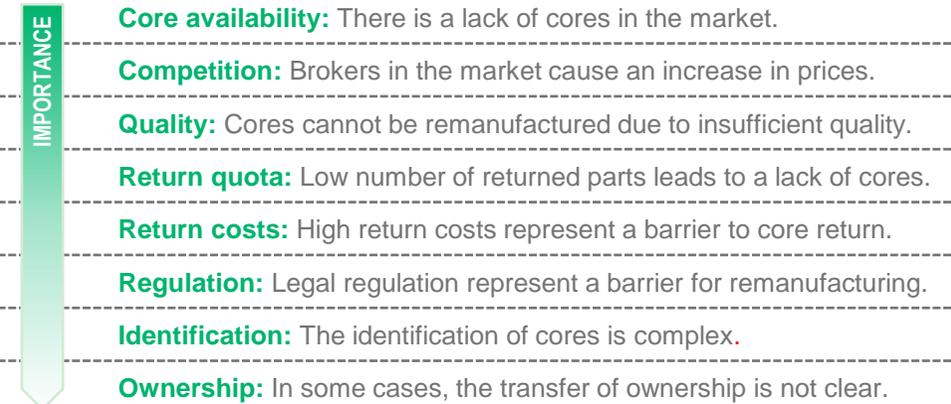


[Fig. 4: Focus products today and in the future]

Besides, certain **core competencies** of remanufacturing businesses are to be expected to change. Already **today** most important competencies are design and development of components and parts (14%), cleaning technology (13%), remanufacturing technology (12%) and recycling, in terms of utilization of residues, which cannot be used for remanufacturing (12%). Other additional competencies will be more and more required in the **future**. Testing and diagnostics technology, core management, logistics, software and programming and the design and development of remanufacturing equipment and tools will be demanded from future remanufacturing professionals.

CORE MANAGEMENT

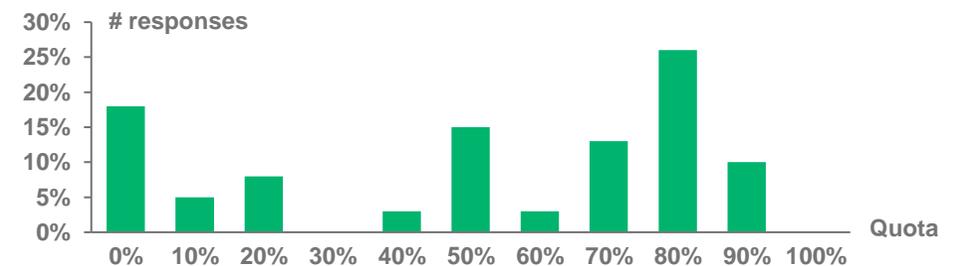
There are some major **challenges of core return**:



There are few main **sources of cores** for remanufacturing. Most of the remanufacturing professionals surveyed obtain the cores from core dealers (29%). Other important sources are the company's own products sold without warranty (26%) and warranty return products (26%). Second and third party products also play an important role as a basis for remanufacturing (19%).

To get the cores back from the markets, certain **incentives** are used for core return. Most of the remanufacturing professionals use deposits and surcharges to incentivise core return (74%) or charge retroactively depending on the core return (26%).

Not every returned part can be used for remanufacturing. The average **good core quota** of the remanufacturing businesses is 51%, with a range of 0% to 90% [► Fig. 5].



[Fig. 5: Good core quota]

QUALITY

There are different ways to **guarantee quality** to the customer. While the one-year warranty is the most frequently chosen solution (67%), some remanufacturers also offer more than 2-years warranty (8%) or waive it completely (8%) [► Fig. 6].



[Fig. 6: Warranty periods]

To ensure the **technical functionality** of the remanufactured products, responsibility, there are defined responsibilities within the remanufacturing companies. In this context, various functions and departments are responsible for technical release of remanufactured parts, most commonly the quality department (29%) and / or the after sales department (26%) [► Fig. 7].



[Fig. 7: Departments responsible for technical release]

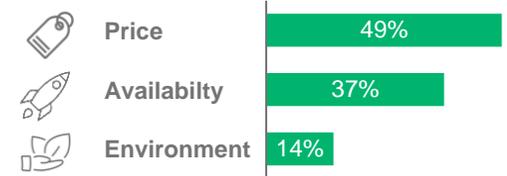
Technical functionality is most commonly **standardised** (85%), for example by means of standardised technical released processes, quality checks or work instructions.

MARKETING & SALES

Major **sales channels** for remanufactured parts are direct sales (43%), distributors (40%) and / or E-commerce (17%). While most of the remanufacturing professionals state that **target customers** are primarily the own organisation's customers (65%) other remanufacturers also target competitors' customers (35%).

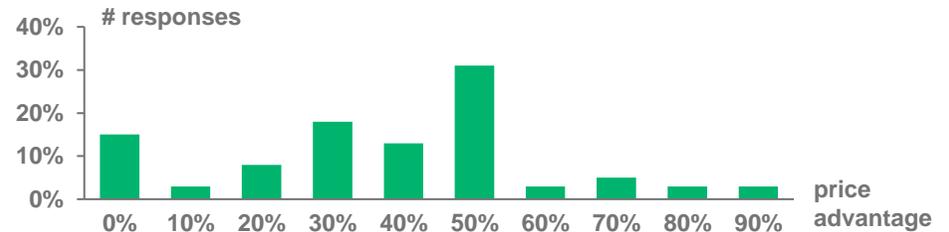
The **motivation** for the survey participants' customers to buy remanufactured parts is predominantly the price saving. Other customers chose remanufactured parts due to spare part availability.

Environmental reasons are also a decisive factor for the purchase decision, which will continue to gain in importance due to the increasing focus on environmental and climate protection and sustainability [► Fig. 8].



[Fig. 8: USP of remanufactured parts]

The **financial advantage** of remanufactured parts in relation to new ones is most commonly between 30% and 50% [► Fig. 9].



[Fig. 9: Price advantage of remanufactured parts]

Remanufacturers expect **future sales potential** predominantly to grow significantly: while more than one third expect sales to increase more than 10%, half of the remanufacturers expect a growth of 5% to 10%..



CLOSING REMARKS

The current disruption in politics and society with regard to environmental and climate protection and the subsequently increasing focus on electric mobility will have a major impact on remanufacturing – the classic remanufacturing components such as engines and associated components will become obsolete in the long term. Respondents of the study already reflect this when asked about the future. However, on the short term the majority of the remanufacturing industry is expecting to grow current product sales with at least 5%.