

DDC

WHEELDOCTOR

DIGITAL DIAMOND COPY TECHNOLOGY



**Automated gloss turning of
damaged alloy wheels with
the TÜV-tested (a technical
inspection association)
WheelDoctor process**



For 25 years a leader in alloy wheels preparation



Welcome to CARTEC.

As a medium-sized family company based in Plüderhausen near Stuttgart, we like to do things differently than everyone else.

True to the motto "fix instead of destroy", we combine sustainability with cost-effectiveness and develop intelligent repair solutions that advance our customers' service business.

More than 25 years ago, we revolutionized wheel refurbishment with the WheelDoctor rotary grinding process - and have continued to develop it ever since. We have set ourselves the goal of making the entire editing process as quick and, above all, as simple as possible.

Over 700 companies are already working with the Wheel Master system. Even well-known automobile manufacturers and suppliers rely on us for our know-how and our machines.

Developed and produced in Swabia. Made in Germany

Less time, better result:

With the WheelMaster system, we offer our customers professional solutions for everything to do with alloy wheels.

Washing, repairing, sanding and painting rims - with the specially coordinated technologies of the WheelMaster system, we have been offering a complete solution for years that is unique: mechanically instead of manually for fast and optimal results as well as more economy with maximum quality.

With the WheelDoctor DDC, we are once again raising wheel refurbishment to an innovative, forward-looking level: the first automated rim repair. Our "Digital Diamond Copy" software completely replaces the manual input of the processing parameters. All limit values are complied with 100%, manipulation and operating errors are excluded.



The managing directors of CARTEC Roland and Daniel Fuchs

Good for the **customer**,
Good for **business**,
Good for the **enviroment**

48.000.000

Over 48 Millionen damaged alloy wheels in Germany alone!

Caused by...



Corrosion damage



Kerb damage

Whether curb scratches or corrosion damage, on average every car in Germany has a damaged wheel rim. In Germany alone, around 48 million aluminum rims are damaged.

However, minor and major damage not only spoils the appearance: it is also a safety risk and costs the vehicle owner a lot of money, for example when the lease is returned.

For service-oriented companies, this means huge market potential and the opportunity to generate more sales by eliminating this damage.

More than 700 specialist companies use it the TÜV-certified WheelDoctor and the special machines of the Wheel Master System - with great success in terms of quality, economy and customer satisfaction.

With the brand new WheelDoctor DDC, we use all the advantages of Industry 4.0 for professional rim preparation in the trade. Expand your portfolio too be it for leasing returns or in the used car business, when storing wheels or when changing tires on a normal day-to-day basis.

Up to 90% of the damage can be professionally repaired with the WheelDoctor process - a worthwhile alternative for your customers.

Alloy wheel refurbishing is a sustainable business model and will become increasingly important in the future, also for environmental reasons.

Automated alloy wheel repair the future

With the WheelDoctor DDC we use all the advantages of the artificial intelligence of the craft 4.0 for the professional alloy wheel refurbishing of the future. Hardware and software have been redesigned from the ground up to achieve automated processing. Our WheelDoctor DDC software completely replaces the manual, numerical input of the processing parameters.

DDC operator terminal

- High-resolution touch display based on the Thermomix principle
- LED status light for visual feedback of the operating status
- Integration of wireless internet access

TÜV-approved procedure*

- Professional and permissible gloss turning of alloy wheels using the TÜV-tested WheelDoctor process.
- All limit values of TÜV-Süd and the CARTEC limit value catalog are 100% complied with.
- Manipulation and operating errors are excluded.

Centered clamping process over the wheel hub

- Short set-up times
- Bolting of the rim via the bolt circle
- Frequency absorber with spring preload
- No tilting and material removal in wrong places



Camera

Before and after pictures of the rims for workshop protocol and documentation

Compressed air cooling unit

- Optimum surface quality with gloss turning
- Long service life of the cutting plate
- NO time-consuming cleaning of the rim after the machining process

Automatic tool changing tower

- 2 cutting tools for standard and concave rims
- 1 high-resolution laser measuring device
- The tools are changed automatically via the DDC software

360° multi-contour laser measurement

Up to 150,000 measuring points per rim to record imbalance, depth of curb damage and rim design ensure maximum safety and precision

Innovation + Effectiveness

The Digital Diamond Copy Technology



Our aim at CARTEC is to enable our customers to have the fastest, simplest and safest way of repairing rims. With the development of the WheelDoctor DDC, we have put our accumulated know-how from 25 years of experience into the implementation of the „Digital Diamond Copy Technology“ from CARTEC.

Maximum 1 mm deep, from 50 mm from the outer edge only the clear coat, imbalance less than 0.5 mm: When it comes to alloy wheel refurbishing, there are clear guidelines that every workshop must adhere to. All in all, this is a real challenge, especially when using conventional CNC machines that have to be programmed manually. The necessary knowledge is often lacking, and manual programming is very time-consuming. The result is usually excessive material removal at impermissible locations. This can affect the stability of the rim, it must not be put back on the road and must be replaced.

With the WheelDoctor DDC, the artificial intelligence of the software completely takes over the task of programming. In fact, only what is necessary and within the permissible range is removed. There are no edges or transitions between the repair zone on the edge and the protection zone on the spokes - instead, the process ends with a flawless repair result.



The innovative WheelDoctor DDC with its Digital Diamond Copy Technology repairs your rims largely automatically and ensures maximum time and cost savings with 100% security. The software guides the user step by step through the editing process.

The "Thermomix principle" for touchpad input ensures reliable and tamper-proof operation:

The DDC technology completely replaces the manual input and programming of the processing parameters and is therefore the simplest and most user-friendly process on the market - even for semi-skilled workers.

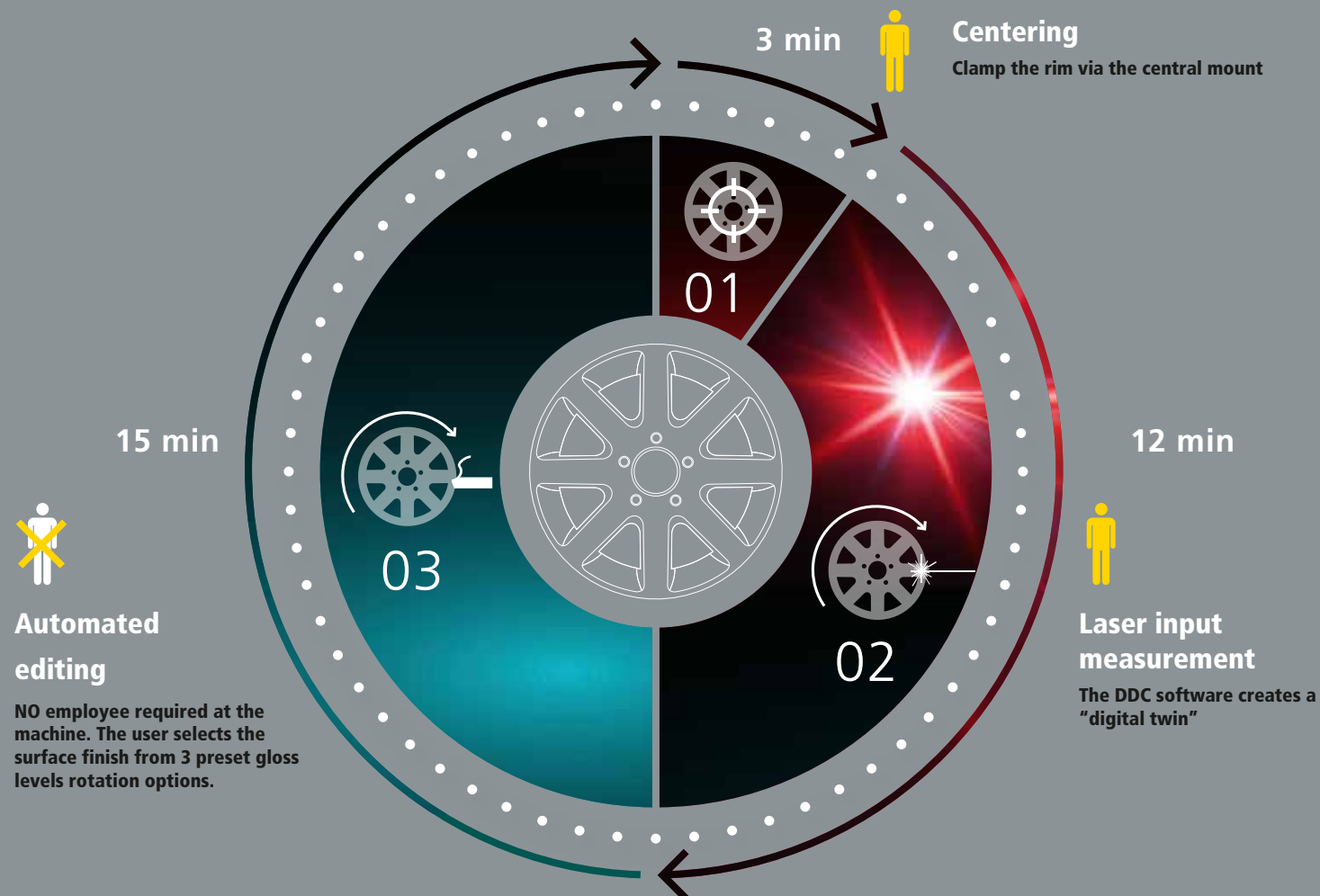
Your advantage

- Automated processing according to the "Thermomix principle"
- Permitted gloss turning with the TÜV-tested* WheelDoctor process
- NO manual input or programming of the system

And it works like this:

1. Center the rim and fasten it using the wheel bolts
2. Start of the laser input measurement to record imbalance, damage depth and rim design.
3. The DDC technology calculates the smallest possible material removal to eliminate the damage. The specifications of the TÜV-tested WheelDoctor procedure* are 100% complied with.
4. Start of the automated repair of the rim.
5. Finally, select surface finish from three gloss finish options.
6. The workshop protocol is created.
7. The rims are marked with stickers for traceability.

360° Multi-contour detection by laser measurement

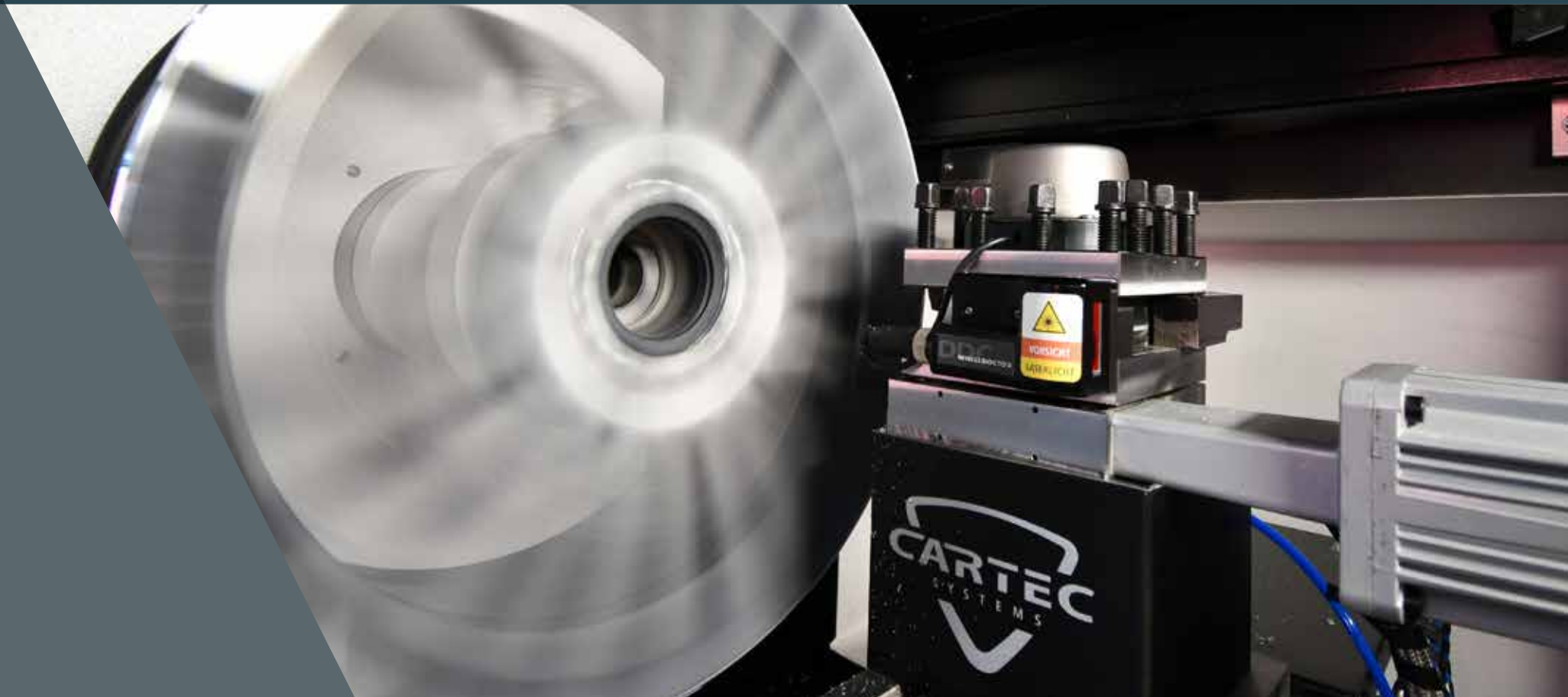


Imbalance, contour, design, damage resistance - every damaged rim is different. The heart of the automated processing with the WheelDoctor DDC takes this into account: With the 360° multi-contour recording, each rim is measured completely and in detail. A high-precision laser scans the surface with up to 150,000 measuring points. It first detects the possible imbalance of the rim, then scans the entire rim flange 360° and detects the depth and position of the most severe damage. In the third step, the rim design, i.e. the contour of the spoke, is determined. A unique feature of the DDC multi-contour recording: The software retrieves the stored values of the imbalance measurement and positions the rim in such a way that the spoke with the greatest imbalance is read.

The software then creates a "digital twin" from the available data and independently calculates how much material has to be removed from which points in order to professionally repair the rim damage. It goes without saying that the framework conditions according to the CARTEC limit value catalog are complied with 100%. If the rim is damaged beyond the permissible range, processing will not continue. This makes the machine tamper-proof and rules out incorrect operation.

Incidentally, the DDC software guides the user step-by-step through the repair process and displays the input measurements in real-time in simple, understandable graphics. In addition, the WheelDoctor DDC frees up resources: an employee only has to lend a hand when clamping the rim and during the initial laser measurement. Approx. 12 - 15 minutes are required for this. After that, the WheelDoctor DDC works independently during processing and the employee can turn to other activities.

Security through TÜV-approved* WheelDoctor procedure



CARTEC has been the technology and market leader in the field of alloy wheel repairs for 25 years. In cooperation with TÜV Süd Automotive, CARTEC has developed the Wheel Doctor limit value catalogue. The guidelines for repairing alloy wheels are clearly laid down there.

In a 3-year test procedure, TÜV Süd Automotive put the safety of our Alloy wheel refurbishing procedures through their paces. In his technical report on the influence of damage and preparation on the durability of alloy wheels, report no. 76232807-1 it is confirmed: "that if our limit value catalog for damage is observed, the operational strength of the rims prepared with the WheelDoctor process is not impaired".

The rim spokes are absolute protection zones. Here only the clear coat may be removed, but under no circumstances be turned deeper in the aluminum of the rim. To ensure this, the algorithm of the DDC software automatically calculates a smooth transition from the repair area to the spoke protection zone and adjusts it so that only the clear coat is removed from the spokes. We call this the "spider web effect". A deeper processing of the protection zone closes the system safely - and thus implements the specifications of the TÜV-tested WheelDoctor process 100%. And because the processing takes place automatically and exclusively on the basis of the calculated data, manipulation and operating errors are ruled out.

According to our professional assessment, compliance with all specifications and limit values in aluminum wheel repair is the essential basic requirement for specialist companies to run their business safely. The CARTEC-certified Wheel Doctor specialist works at all times within the permitted range and is thus taken out of the dangerous gray area of the many CNC users.



Clear coat processing gives the "spider web effect"



*TÜV Süd Automotive report no. 76232807-1

Perfect result with quality certificate

It has to be quick, as economical as possible, and then also process-reliable and in compliance with all regulations - the alloy wheel refurbishing with the WheelDoctor DDC is a real business perspective for every company.

The rims repaired with the WheelDoctor DDC convince with a first-class result - including the "rainbow effect" like the original.

Thanks to the high density of measured values in the initial measurement, the transition between the repair area and the protection zone is neither visible nor noticeable.

Manual reworking of the rims is no longer necessary with the WheelDoctor DDC. To ensure this, the software has three options for the automatic processing of the rim flange and three further options for the perfect surface finish of the high-sheen structure up its sleeve. De-burr? Fraying of the paint layer on the spokes? Doesn't exist here, instead the WheelDoctor DDC delivers high-class preparation quality. This makes the CARTEC process THE alternative to buying new rims, even for leasing returns, used vehicles, stored wheels and customer rims.



Each repair process is archived for up to 10 years after the rim repair for reasons of documentation. The WheelDoctor DDC logs all values of the initial measurement, before/after pictures and the actual processing parameters of each rim as a PDF. Our repair logs are a certificate and seal of quality for the work you have carried out, to be passed on to end customers, insurance companies and appraisers when evaluating the vehicle.



This is unique in this form and a real advantage for the certified WheelDoctor DDC specialist company, which also pays off for you. In addition, the WheelDoctor DDC specialist company can customize the repair logs with their company details.



What works!

What is forbidden?



REGULATIONS FOR THE PROFESSIONAL ALLOY WHEEL REFURBISHMENT

- ❗ RiWheels on which cracks are forming must not be refurbished and must be replaced immediately
- ❗ Heat input or build-up welding operations of any kind are not authorised.
- ❗ Material reshaping is not authorised



Catalogue of limit values

The guidelines for refurbishing alloy wheels are clearly defined in the catalogue of limit values.

50 mm



Refurbishment possible 50 mm

To a damage depth of 1 mm in the base metal, wheel refurbishment with the WheelDoctor is possible. This is the case provided that the damage is located no more than 50 mm from the outer flange in the radial direction.



No refurbishment possible

Alloy wheels with damage to the base metal in the red area must not be ground or filled. These wheels must be replaced with new ones.

whole rim



Paint damage can be refurbished anywhere on the wheel..

Scratches on the painted surface can be repaired anywhere on the wheel surface.

3-Day practical training with qualification as a certified rim specialist



In 2021 we opened the new training center of the CARTEC Academy at the company location in Plüderhausen near Stuttgart. There we offer 3-day practice-oriented courses for the WheelDoctor RST and WheelDoctor DDC - of course with competent and experienced trainers.

Detached from everyday stress in the company, the limited number of participants of up to 3 people ensures intensive and individual support. The participants have the opportunity to make their own experiences with the complete WheelMaster machine program during the training.

In addition to the practical unit from damage repair to painting, we train every step of the process up to the finished rim. In addition, we teach during the courses Guidelines according to the catalog

of limit values as well as commercial basics. The course in the CARTEC Academy offers the best starting conditions - regardless of what previous experience you already have with painting, for example.

Even after the course, we are always available to answer any questions you may have about application technology or marketing. We make you a certified WheelDoctor specialist company and support you with advice and action for your economic success with the alloy wheel refurbishment

CARTEC
ACADEMY



With the award as a certified specialist company for alloy wheel refurbishment, you show your customers your professionalism and stand out from the competition.

Perfection, precision and **maximum time saving**

(Alloy-)Wheel refurbishment

Wider, thicker, more complex: trends in design, form and colour for rims pose new challenges for businesses – but at the same time pose an immense sales potential. With these eleven key products of the Wheel Master System, you're in the position to take full advantage of it. Simple, effective, quick and professional.



WHEELLIFTER

WheelLifter battery operation Practical lifting device for wheels Health protection at work



WHEELWASHER

Innovative high-pressure technology High-pressure flushing with clear water Patented



WHEELDOCTOR RST

rotary grinding technology TÜV-approved WheelDoctor procedure WD 200 TÜV-certified



WHEELWORKER

Ergonomic rim machining station Protected by a utility model



WHEELDOCTOR DDC

Digital Diamond Copy Automated gloss turning of alloy wheels with the TÜV-tested WheelDoctor process



WHEELBLOWER

Innovative eddy current rotation process for the perfect matting of rims. Protected by a utility model.



WHEELPAINTER

Practical and mobile painting box for rims and small parts. Extraction of the paint mist directly at the rim.

The WheelWasher ULTRASONIC product family

The right solution for every need

Ultrasonic wheel wash without aggressive chemicals and microplastics, costs only 10 cents/wheel
Up to 400 wheels/day possible..

Ultrasonic actuators controlled by a microprocessor set the warm washing water in the cleaning tank into extreme vibrations. This creates trillions of small cavitation bubbles filled with hot steam. When the cavitation bubbles implode, the dirt is blasted off the rim and the cleaning effect is perfect.



WHEELWASHER

ULTRASONIC 1-Wheel



ULTRASONIC 2-Wheel



ULTRASONIC 2-Wheel including wash basin



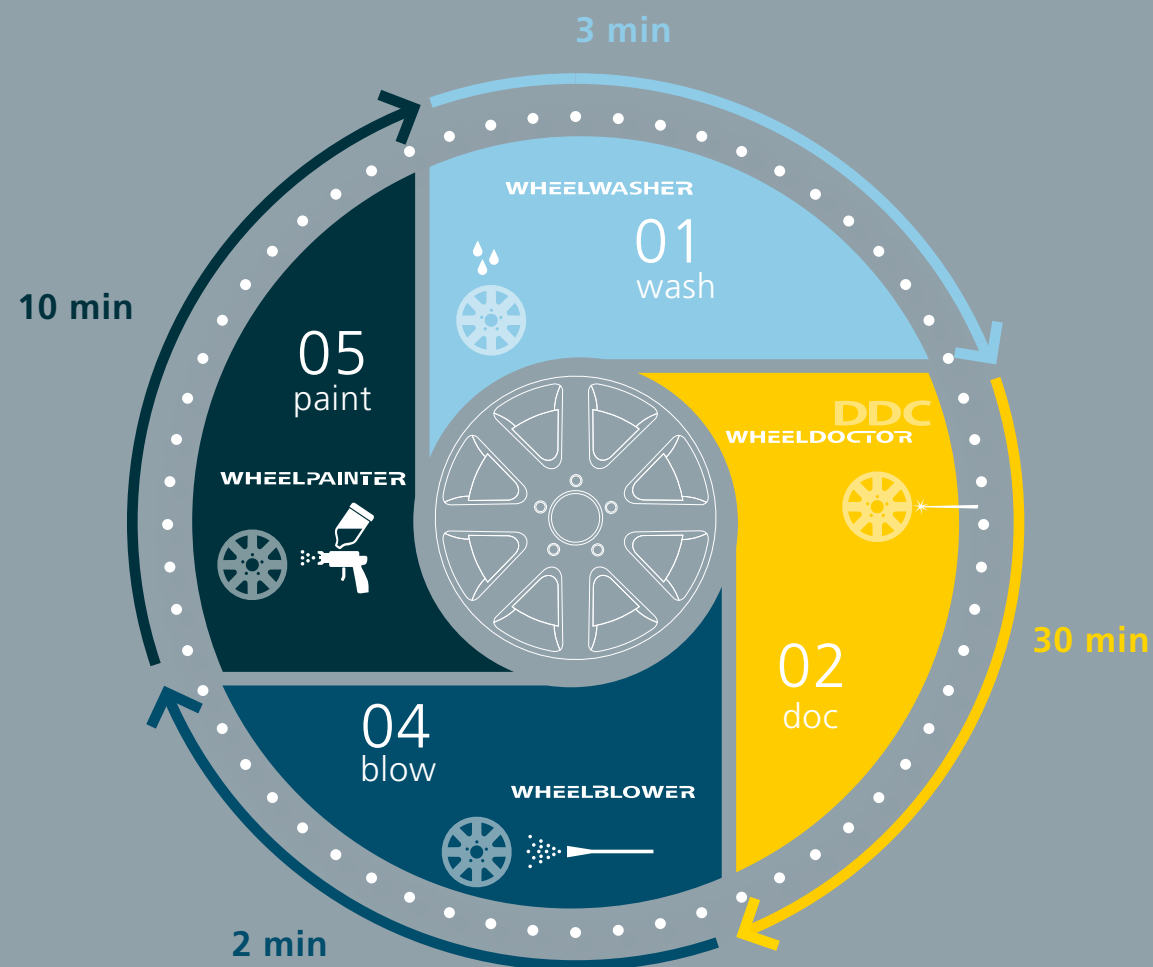
Ultrasonic 2 Wheel tandem for larger wheel hotels

Who has turned the clock...

Wheel Master System with Wheel Doctor DDC
The Wheel Master System DDC enables quick, easy and efficient alloy wheel refurbishing of all gloss turning rims. On average, these are repaired after 45 minutes. Depending on the program selected, the wash cycle in the WheelWasher lasts between 1 and 4 minutes.

The professional refurbishing of the high-shine rims with the WheelDoctor DDC takes about 30 minutes. Micro-fine matting in the WheelBlower to prepare for painting takes an average of 2 minutes. Approximately 10 minutes are required for painting and vacuuming in the WheelPainter.

All machines are ideally tailored to the ergonomics and tasks of the technicians. Alloy wheel refurbishment with the Wheel Master System DDC. Professional and fast.



On average, every car has a damaged alloy wheel. The main causes are the kerb or corrosion damage.

Used vehicles with damaged alloy wheels can only be sold at reduced prices.

An attractive range of services for greater customer loyalty with unique competitive advantages.

The professional alloy wheel refurbishing saves the lessee money when they are returned and the workshop also has fun doing it.

Higher operational utilization in the off-season.

With alloy wheel refurbishing achieve a higher turnover and an interesting additional profit.

Seasonal wheel storage for the refurbishment of damaged alloy wheels.

More success - more satisfaction.

Over 32 years of experience

CARTEC Autotechnik Fuchs GmbH has been developing and selling clever industry solutions for minor car damage repairs for over 32 years - and with great success. The Swabian family company is one of the leading and most innovative smart repair specialists and, with the TÜV-certified WheelDoctor, is the technology and market leader with over 700 companies in the field of aluminum rim preparation. But we also have a suitable, proven and inexpensive repair option ready for almost any other type of damage.

Well-known car dealerships, workshops, body and paint shops, automotive suppliers and automotive manufacturers rely on the know-how and the CARTEC products made in Germany. The service portfolio also includes the product training program for the various smart repair systems with experienced application technicians in the CARTEC Academy training center in Plüderhausen near Stuttgart. technology and know-how Made in Germany



Technology and know-how made in Germany



CARTEC | AUTOTECHNIK FUCHS GMBH

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Facebook: @CartecSmartRepairSystems
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