



LEADING IN PRODUCTION EFFICIENCY

ALUMINUM WHEEL PAINTING

EXCELLENCE IN SURFACE FINISHING





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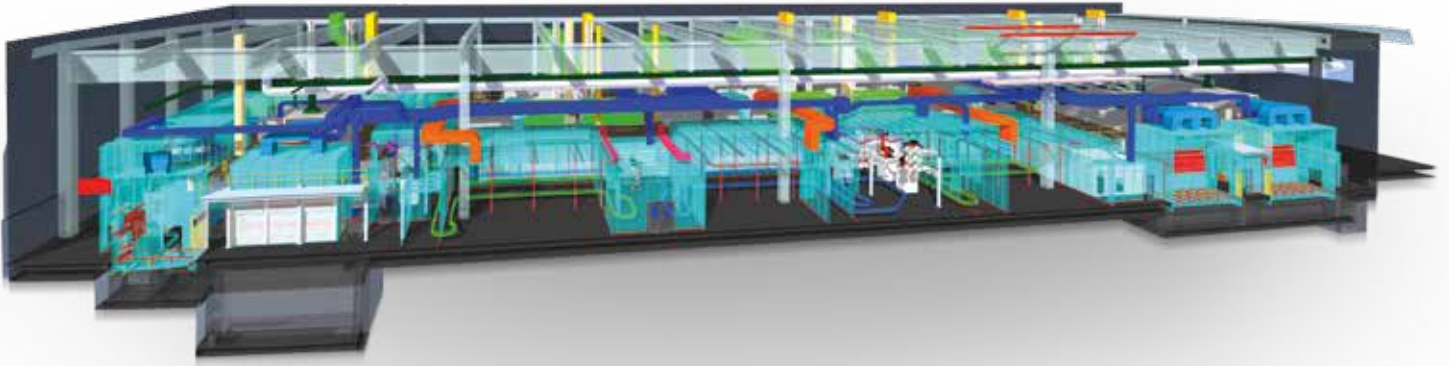
As one of the leading suppliers of mechanical and plant engineering, the Dürr Group continually strives to increase the level of efficiency in all aspects of production.

Dürr offers full turnkey paint shops all over the world based on their long-term expertise in the automotive field.

For the painting of aluminum wheels, Dürr delivers powerful technologies along the whole process, starting with wheel surface cleaning and chemical conversion for effective corrosion protection, painting and curing, to the purification of air exhaust. Dürr offers their own application technology with specially patented features that fit best with the requirements of quality-oriented aluminum wheel surface painting. Robust conveyor systems especially developed for aluminum wheel painting lines satisfy our customer's highest requests in terms of line availability and chain life.

Throughout all process stages in the paint shop, Dürr focuses on its **ECO EFFICIENCY** concept. Along with the systematical improvement of production efficiency, the decrease of costs per unit and highest quality we have a strong focus on all aspects of sustainability:

- » the reduction of material
- » the separation of paint overspray
- » heat recovery
- » energy savings
- » reducing VOC emissions
- » waste water reduction



» 3D rendering for a complete aluminum wheel paint shop

Good planning – good plant

What sounds simple at first glance pays off if done well: a sophisticated and clear layout is the starting point for a successful implementation and leads to a more efficient process including easier production supervision, operation and maintenance.

In wheel painting the processes may vary depending on the quality, product design and surface finishing requested by a customer. Dürr offers a broad know-how of different layout options based on preconditions and a customer's specifications. Upon request we act as a turnkey supplier right from the start.

Reliable project implementation

In project implementation Dürr's experience meets digitization: all processes of project handling are supported by individually adapted IT tools. From the engineering, through procurement and logistical processes to virtual commissioning, all information is managed by a software platform, the Dürr Project Center. Here, all project-related data is managed and made available to all parties at all times. The result of this highly networked project management tool is high transparency, optimized communication and plants, which are realized on time, on budget and on scope.

Individual solutions and smart layouts

During the planning phase Dürr focuses on easy accessibility to each phase of the paint line and a clear observation of the different paint application steps. Whenever possible, our preference is a single floor solution with all process equipment at ground level. When there are limited dimensions for the installation of a new paint line, Dürr provides compact layouts and looks beyond standardized solutions to develop uniquely individualized layouts upon request. As an example, repeated painting processes with intermediate grinding lead to more exclusive wheel designs that require "smart layouts" if only limited space is available.

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Dürr's powerful Manufacturing Execution System "iTAC.IoT. Suite" not only allows real-time analysis of all ongoing processes within the paint line, it also reduces downtime and maintenance efforts by comprehensive predictive maintenance functions. New technical concepts such as big data analytics enable large data volumes to be processed and evaluated to optimize production. The analysis of historically collected data allows to provide extensive energy reductions, intelligent spare part orders and increased production rates. Any help required in the operation of the line, can be given by telephone, e-mail or via our **EcoPad**, which allows for direct video or remote support. Furthermore the latest documentation as well as training videos are available by scanning the QR-Code which can be found on every product and plant of Dürr.

DÜRR – SMART SYSTEM SUPPLIER FOR ALL



Pre-treatment and corrosion protection

The process begins with the surface clean-up from upstream manufacturing processes and continues with etching. This prepares the wheel surface for a chrome-free chemical conversion and leads to extremely high corrosion resistance. To specially protect the conveyor chains and tracks from aggressive vapours, Dürr provides goose neck shaped hooks as a standard for water sealing.



Application

Dürr has developed a large and innovative range of equipment to guarantee perfect painting solutions with integrated automatic systems: from paint mix room to the spray equipment in the spray booth. With our **EcoBell3** family there are special solutions available to spray solvent and waterborne paint by means of electrostatic technology.



Paint mix room

In the paint mix room – specific for solvent-borne, waterborne and corrosion protection paint (KSL) – the paints are optimally prepared for the application of various layers. This process requires an extreme precise coat thickness and repeated accuracy. Dürr developed all products such as pumps, color changers and paint supply systems for special paints (**EcoSupply P**) for this purpose.

Overspray separation

With **EcoVertijet** and **EcoDry X** Dürr offers both wet and dry separation of overspray. **EcoVertijet** is extremely compact and requires limited excavation, while **EcoDry X** is the leading edge technology for an energy efficient process. Both systems allow a perfect process observation with full-face glass housing.

ALUMINUM WHEEL PAINTING LINES

Environmental protection: air and water

The **Ecopure** RTO air pollution control system cleans the exhaust air through combustion. It is customized for the painting process and avoids condensation that occurs when air streams from the spray booth and the oven are mixed. This leads to significant energy savings, combined with limited maintenance and operational efforts. Systems for demineralized and waste water are also designed and realized in-house.



Ovens

Dürr uses welded oven panels which avoid any condensation leakage and allows easier cleaning. Heater boxes with indirect heating and double filtration lead to a higher paint surface quality as they avoid yellowing and contamination. The heater boxes are easily accessible and maintainable through independent platforms.



Conveyors

Dürr offers the entire range of floor and overhead conveyors according to regional and customer-specific preferences. In order to avoid overspray paint deposits, the conveyor system is split into separate loops. The transfer between each conveyor and the process downstream is performed by manipulators, i.e. robots or cranes fitted with multiple grippers.





» Excellence in surface finishing with the atomizers of the **EcoBell** product family

EcoBell – EFFICIENT PAINT APPLICATION

Wheel painting is a process where excellence in surface finishing and quality coating is a must. Within the engineering phase of a new application system there are numerous parameters that have to be considered, such as:

- » wheel design
- » surface coverage and penetration
- » production rate
- » paint savings & transfer efficiency
- » paint characteristics

The best solution takes into consideration the combination of two spray technologies:

- » **EcoGun** product family (Automatic spray guns)
- » **EcoBell** product family (High-rotational atomizers with or without electrostatic)

Highlight **EcoBell** technology

Dürr relies on its own research and development and uses electrostatic technology for the automatic application of paint with its **EcoBell** product family. The electrostatic application is based on a series of powerful bells with very high transfer efficiency. Bells and spray guns can stand fixed as well as mounted on moving arms or robots.

The **EcoBell** product family stands for a high performance spraying solution, used particularly with solvent-based and water-based paints. A large selection of titanium cups is available for the application of base coat, clear coat, metallic base paint and corrosion protection paint.

COMPLETE APPLICATION PORTFOLIO

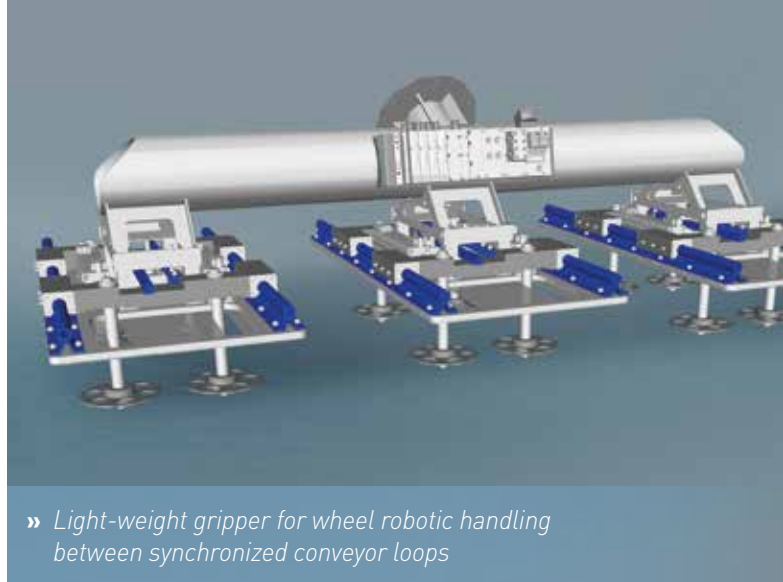
- » Agitators with low air consumption
- » Paint circulation equipment:
Vertical (**EcoPump VP**), horizontal (**EcoPump HP**) and diaphragm pumps **EcoPump AD**) and pressure pots
- » Paint flow regulators (**EcoFlow**)
- » Automotive multi color changer (**EcoMCC**)
- » Gear dosing pumps with servomotor (**EcoPump9**)
- » Automatic spray guns (**EcoGun** product family)
- » High rotational, electrostatic atomizers (**EcoBell** product family)
- » High tension controller (**EcoHT**)
- » Vertical and horizontal reciprocators (**EcoRecip**)
- » Multi-axis robots (**EcoRP** product family) with line tracking functionality

SPINDLES, JIGS, CLEANERS & GRIPPERS

Dürr provides a wide range of geometry and features for spindles and jigs. Wet and powder overspray that remains accumulated on the spindles can be removed with continuous inline cleaner systems.

Dürr has developed special cleaning devices such as their newly designed mounting face cleaner to remove powder paint particles from the wheel mounting face. The benefit: No more brushes stuck with powder paint particles. Only a smart use of compressed air.

As an additional benefit, automatic masking devices are individually customized to protect the bolt holes of the wheel.



» *Light-weight gripper for wheel robotic handling between synchronized conveyor loops*



» *Brushless hub cleaner*

SERVICES & SOLUTIONS

Dürr's Services & Solutions customer service offers support around the world.

With 65 service sites in 28 countries Dürr is always on-site to help to reduce production costs, increase plant availability and guarantee rapid technical support. Whether you are dealing with an emergency or planning or implementing a revamp project – we are available.

Our service at your demand

- » Ramp-up and launch management
- » Modifications and upgrades
- » Engineering with experience
- » Spare parts service
- » Inspection and maintenance
- » Service locations all over the world



LEADING IN PRODUCTION EFFICIENCY

Dürr – Leading in Production Efficiency

Five divisions, one goal: maximum production efficiency for our customers

- » **Paint and Final Assembly Systems:** paint shops and final assembly systems for the automotive industry
- » **Application Technology:** robot technologies for the automatic application of paint as well as sealants and adhesives
- » **Measuring and Process Systems:** balancing systems as well as assembly, testing and filling technology
- » **Clean Technology Systems:** exhaust-air purification systems and energy-efficiency technology
- » **Woodworking Machinery and Systems:** machinery and systems for the woodworking industry

Subject to change. The information in this brochure contains only general descriptions or performance characteristics which may vary in actual cases. The requested performance parameters shall be binding only if they are explicitly agreed within the sales contract. © Dürr 2017