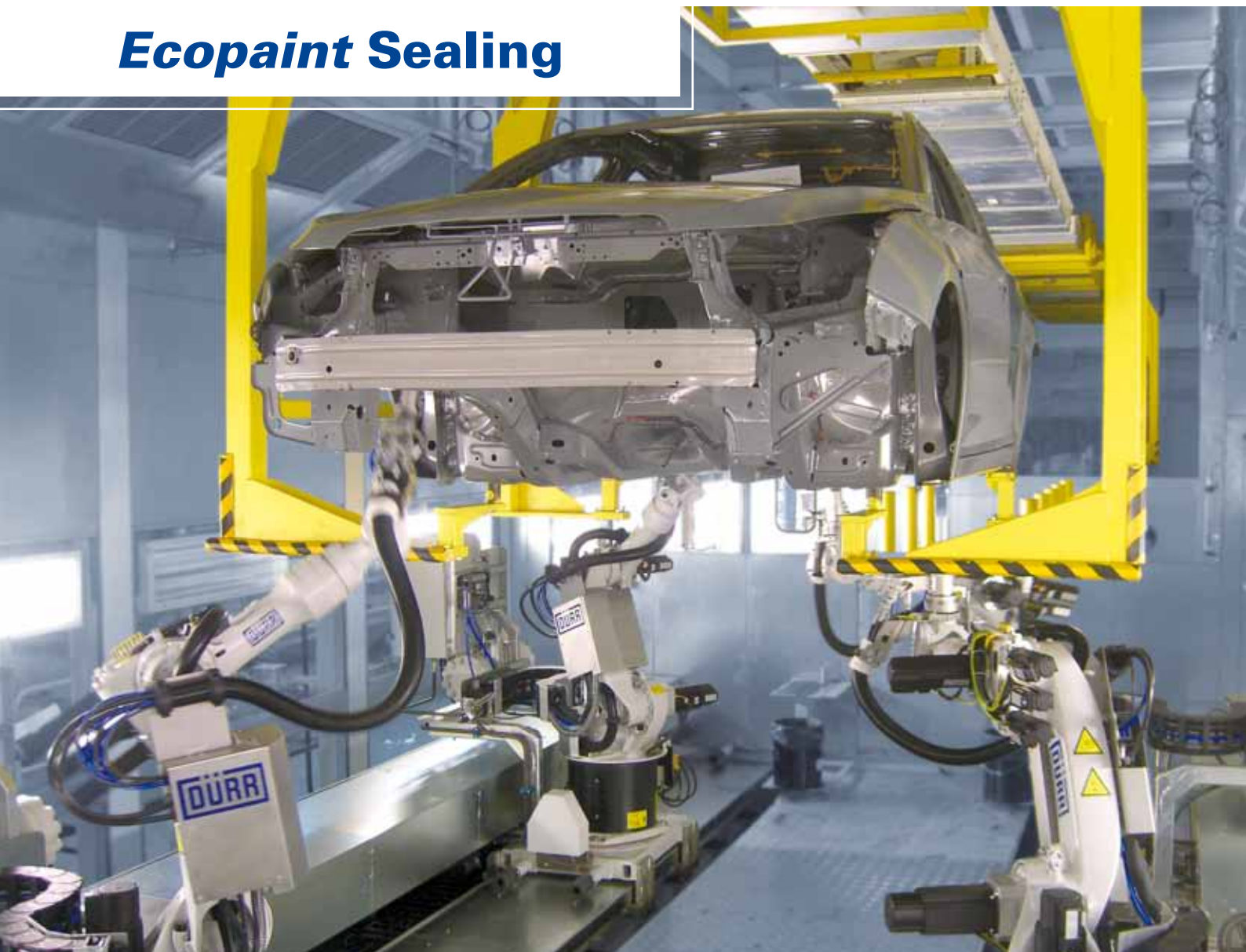


Ecopaint Sealing



Customer-oriented Solutions for Vehicle Sealing



Technologies · Systems · Solutions

Ecopaint Sealing – Customer-Oriented Solutions for Vehicle Sealing



Hem flange application



Seam sealing

Ecopaint Sealing – the Dürr product family for the automated sealing and preservation of car bodies. For preservation, sprayable materials with high viscosity such as PVC plastisols are used to protect the body against corrosion and water ingress.

The innovative Dürr **Ecopaint Sealing** system product range improves economic efficiency and guarantees highest quality and environmental compatibility:

- **Reduction of unit costs**

Manual application scopes are reduced with automation and material consumption is lowered by more precise and reproducible process control.

- **Maximum quality**

Dürr application systems guarantee an optimum, reproducible process control and thus constant product quality. This way, manual touch-ups can be avoided.

- **Highest environmental compatibility**

Targeted automated process control reduces material consumption and saves resources.

Process optimization for all areas of application

Dürr offers systems with modular designs for the optimum sealing material application on the car body:

1. Seam sealing

The sealing material is applied to overlapping sheet metals on bodies to avoid gap corrosion due to intruding water.

2. Underbody coating

In order to counteract wear in the underbody area from stone-chipping and similar influences, an underbody sealer is applied.

Mostly it is applied in wheel houses or rocker panel areas just prior to the primer spraybooth.

3. Rocker coating

The surface of vehicle rocker panels is coated to protect against stone-chipping by means of a fully automated specific masking technique. This way, the required coating with high edge definition in the upper area of the rocker panels is achieved.

4. Hem flange applications

Hem flanges at add-on pieces of the body, for instance doors, hoods or tailgates, are sealed with a highly-precise Dürr application system in connection with specific nozzle technology.

As a result, it is not necessary to open the add-on pieces for the purpose of improved accessibility. The application quality meets requirements for visible welds.

5. Spraying insulants

For cost and flexibility reasons, manually used sound dampening mats are replaced by sprayable material which is increasingly applied by robots. Here, the sound insulating material is applied with a nozzle technology that is especially designed for this purpose.

6. Cavity preservation

With a wax film, the cavities of the body are protected against corrosion. For optimum protection with minimum material usage, the wax is applied in corrosion-prone areas by robot-guided lances and injection nozzles.

7. Covering window flange

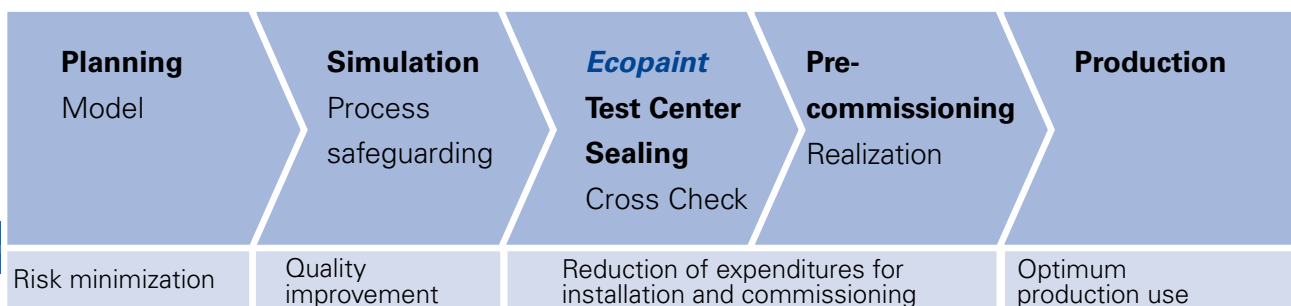
The covering of window flanges with a strip-off layer of PVC plastisol before spraying prevents paint overspray build up. After painting, the material is removed and the windshield can be glued to clean electro primed window flange.



Spraying insulants

Processes and products from planning to realization

As a supplier of turn-key installations, Dürr is well known for supplying a quality standard with comprehensive process knowledge and high-quality products. More than 500 robot installations were carried out successfully in recent years. Automation with robots guarantees a high level of model flexibility and maximum application quality. The application scope and body shape determine the arrangement of the robots. In addition, simulations, application tests, and pre-commissioning procedures before delivery provide the basis for fast production optimization. Dürr is a reliable and experienced partner for all phases of project execution and customer service after production commences.



Ecopaint Sealing – Robot Stations for All Application Processes

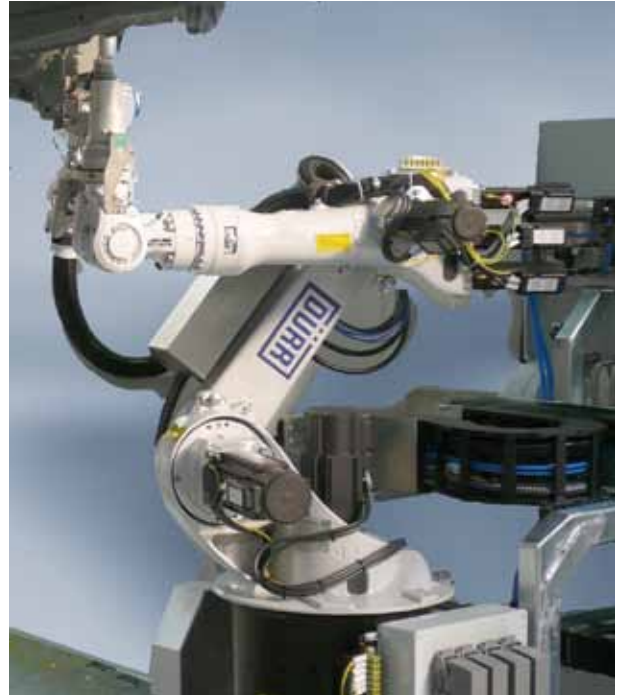
EcoRS – Efficient Robotic Technology

With the standard **EcoRS** robot, Dürr responds to car manufacturer requirements of homogeneous and economical technologies for the entire sealing area. The robots, with their various sizes and loads, are selected according to job definition and exact requirements.

The Dürr **EcoRPC** robot controller integrates movement and process control on one platform. This reduces communication times – as they occur with non integrated systems – and facilitates a homogeneous operating concept for movement and process. A common organization of the man-machine interface, for both with the sealing and the painting processes, which facilitates the operating and maintenance of robots across the entire paint shop.

EcoRail – Extended Applications via increased window of operation

To increase working space **EcoRail** extended axes are used. The **EcoRail** is a freely-programmable, horizontal moving axis for all sealing applications.



EcoRS robot with application equipment

The **EcoRail** is available in various lengths and designs – depending on customer and/or process requirement.



EcoRail	
Axis acceleration	up to 5 m/s ²
Axis speed	up to 1.5 m/s
Positioning accuracy at the TCP	up to 0.2 mm
Service life	up to 150,000 km

EcoRS robot with application equipment on EcoRail travelling axis

EcoRPC – Robot and Process Controller

EcoRPC – the Dürr controller is used both for sealing and coating processes.

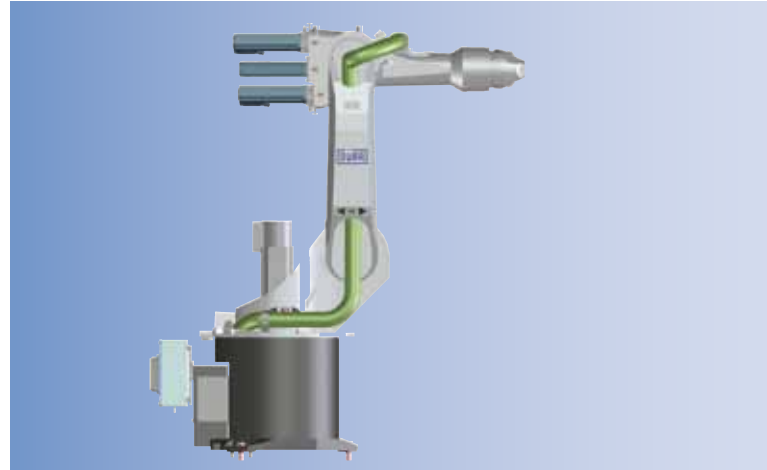
- Multikinematics/multiprocess capability with up to 4 movement/process units
- Integrated PLC system for easy diagnosis and adaptation of process and automation functions
- Easy maintenance

EcoScreen 3D-OnSite

EcoScreen 3D-OnSite is a 3D visualization and programming software developed by Dürr which was designed for the production and processing of robot programs as well as the parameterization of corresponding process data. In this way, an optimal installation operation tool is available to the customer directly at the robot cell in production.

The use of EcoScreen 3D-OnSite provides the following advantages:

- change of path and process parameters possible online and offline
- No downtimes due to online parameterization
- 3D robot cell and car body model
- Simulation



EcoRS16



EcoRS30 L16

EcoRS		
	EcoRS16	EcoRS30 L16
Load-carrying capacity at the hand axis	16 kg	16 kg
Weight (kg)	235	700
Arm lengths (mm)	670/828	1.545
Working envelop (mm)	1.611	3.102
Position repeat ability	± 0.1 mm	± 0.15 mm
Payload at the arm	10 kg	45 kg

Ecopaint Sealing – Dosing for all Requirements

EcoFlow Sealing – Optimal Dosing for each Process

The **EcoFlow Sealing** dosing systems are pressure regulator-based and work in the pressure and volume regulator modes. All requirements can be met – from manually adjustable pressure regulators to freely-programmable, pressure-controlled dosing up to volume-controlled dosing systems including compensation of viscosity changes of the sealing material.



EcoFlow Sealing, volume-controlled

EcoFlow Sealing			
Mode of operation	Pressure controlled application; fixed pressure preselection	Pressure controlled application; pressure free programmable	Volume controlled application; free programmable volume flow
Application pressure	40 to 310 bar	40 to 310 bar	40 to 310 bar
Application tolerance	5 – 8 %	5 – 8 %	2 – 5 %
Material volume flow	to 100 ccm/sec	to 100 ccm/sec	to 100 ccm/sec
Continuous dosing	yes	yes	yes
Examples of application ranges	underbody coating, rocker coating, unterbody sealer	underbody coating, rocker coating, unterbody sealer, masking of window flange	underbody coating, rocker coating, seam sealing, masking of window flange

EcoShot Meter Double		
Mode of operation	volume-controlled application; small to mid flow volumes	volume-controlled application; large flow volumes
Application pressure	up to 350 bars	up to 350 bars
Application tolerance	< 1%	< 1%
Material volume flow	3 to 35 ccm/sec continuous dosing	up to 100 ccm/sec continuous dosing
max. material temperature	max. 80 °C, heating optional	max. 80 °C, heating optional
Reaction time	< 150 msec	< 150 msec
Examples of application ranges	seam sealing, cosmetic seams, hem flange application roof ditch	sprayable sound dampening, gluing

EcoShot Meter Double – Great Dynamics in the Process

With the electrical double dosing device **EcoShot Meter Double** material is dosed continuously and extremely precise. The system is suitable for applications which require great dynamics and high accuracy in the process. Control of the double dosing device is fully integrated into the **EcoRPC** and facilitates the application of material flow. Special Dürr patented hose expansion compensation software is available. This software improves the reaction times of the system and dosing accuracy.



EcoShot Meter Double

Ecopaint Sealing – Applicators for Perfect Quality



EcoGun Sealing 3D

EcoGun Sealing

With 3D gun implementation, **EcoGun Sealing** enables the use of up to three nozzles and the selection of three different application angles – 0°, 45° and 90°. For the reduction in material quantity between needle valve and nozzle, the valves are integrated directly into the nozzle head. This guarantees optimum quality at the seam beginning and seam end.

The applicator is available in various lance lengths.

	EcoGun Sealing 1D	EcoGun Sealing 3D	
		For medium flows	For high flows
Service features			
Max. operating temperature	50 °C	50 °C	50 °C
Max. flow	up to 70 ccm/sec	up to 25 ccm/sec,	up to 130 ccm/sec,
Max. material pressure	300 bar	300 bar	300 bar
Heating	no	optional	optional
Material circulation up to material valves	possible	yes	yes
Integrated sensor system (optional)	pressure, temperature	pressure, temperature	pressure, temperature
Dimensions and weights			
Cross-section valve block	40 mm x 40 mm	45 mm x 45 mm	55 mm diameter
Weight	0.3 kg	approx. 7.5 kg (at 620 mm length)	approx. 10.6 kg

EcoGun Sealing MD – Masking Device

EcoGun Sealing MD is employed in areas where coating with high edge definition is necessary. In automobile production this application is normally used in the rocker panel area. When the **EcoGun Sealing MD** is used, masking of the rocker panel is not necessary to obtain a high edge definition.

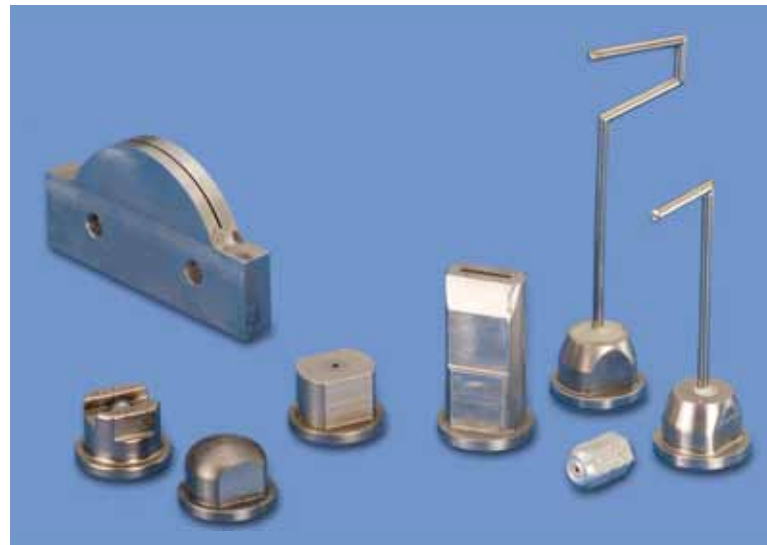


EcoGun Sealing MD

EcoJet – High Quality Nozzles with Continuous Performance

Individual sealing applications require various nozzles which must live up to their demands. Dürr has developed suitable nozzles for each application and expands the product range constantly. Nozzles for airless, flat stream, round, swirl, extrusion, LASD and hem flange applications are available.

The nozzles are characterized by constant application quality and a long life cycle. For quality assurance, tests on the nozzle test stand are carried out. This ensures the reproducibility of the application – after a nozzle is changed.



EcoJet nozzles

Ecopaint Sealing – Programming, Cleaning and Conditioning of Material

EcoGun Sealing – Easy Handling thanks to Laser Programming Aid

The laser programming aid for the ***EcoGun Sealing*** utilize optical simulation of the spray fan and thus support the programming of the robot. The laser simulates the representation of the material application points.

The laser can be operated by:

- Switching on and off the laser beam by means of the robot controller
- Seat identical with nozzle, therefore low installation expenditure

EcoGun Sealing Cleaner – Nozzle Cleaner

The ***EcoGun Sealing Cleaner*** cleans the nozzles of the applicator. Air nozzles blow off material that possibly stick to the application nozzles. The air nozzle position and height are adjustable, which gives the ***EcoGun Sealing Cleaner*** flexibility in various applications. A can collects the blown off material and collect it.

This avoids:

- the soiling of the body and the booth
- manual cleaning
- cycle time losses

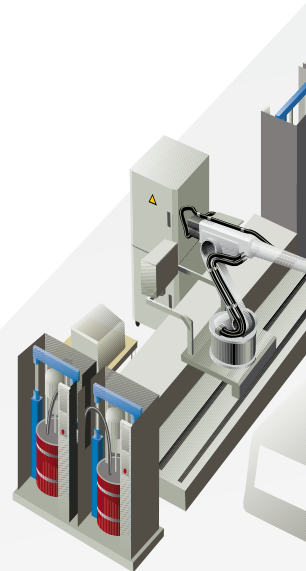
EcoTemp and EcoHeat – Conditioning of Material for Stable Application Results

Temperature conditioning of material guarantees stable application results. Material characteristics are maintained by use of cooling and/or heating. Resulting constant material viscosity in combination with volume controlled dosing system produces the highest quality application.

The following systems are used for the conditioning of materials:

- ***EcoHeat***
Electrical material heating for the temperature range of 32-45°C
- ***EcoTemp***
Waterbased temperature conditioning for the temperature range of 20-32°C

Both systems are used for all sealing process depending on ambient conditions or material requirements.



Ecopaint Test Center Sealing

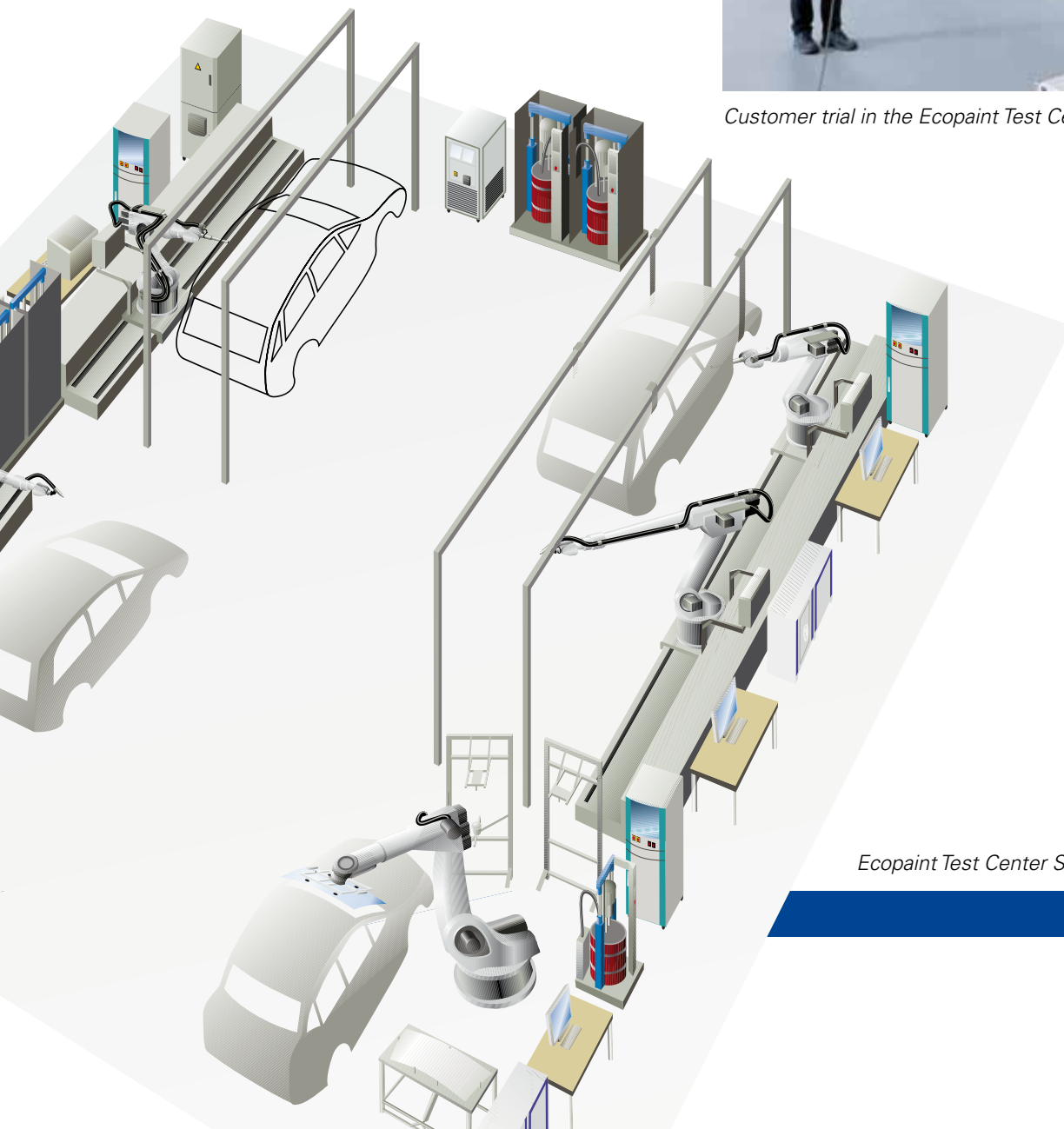
Ecopaint Test Center Sealing

The ***Ecopaint Test Center Sealing*** is Dürr's technology center for sealing applications and is available for customer trials, product and process developments and the validation of new products.

The ***Ecopaint Test Center Sealing*** is equipped with five 7-axis sealing robots, basic and high-end dosing systems and applicators for all process requirements.



Customer trial in the Ecopaint Test Center Sealing



Ecopaint Test Center Sealing

Ecopaint Sealing

Your Competitive Advantage with Dürr:

- Reduction of unit costs
- Process, product and integration competence from one supplier
- Maximum quality
- Highest environmental compliance
- Process optimization for every field of application
- Technological lead due to innovative products
- Know-how from planning up to realization

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