



LEADING IN PRODUCTION EFFICIENCY

LOW VOLUME SOLUTIONS IN FINAL ASSEMBLY



THE DÜRR GROUP: A LOCAL PLAYER – WORLDWIDE

The Dürr Group is one of the world's leading mechanical and plant engineering firms. Products, systems and services offered enable highly efficient manufacturing processes in different industries. Business with automobile manufacturers and their suppliers accounts for approximately 60% of Dürr's sales.

Other market segments include, for example, the mechanical engineering, chemical and pharmaceutical industries and the woodworking industry.

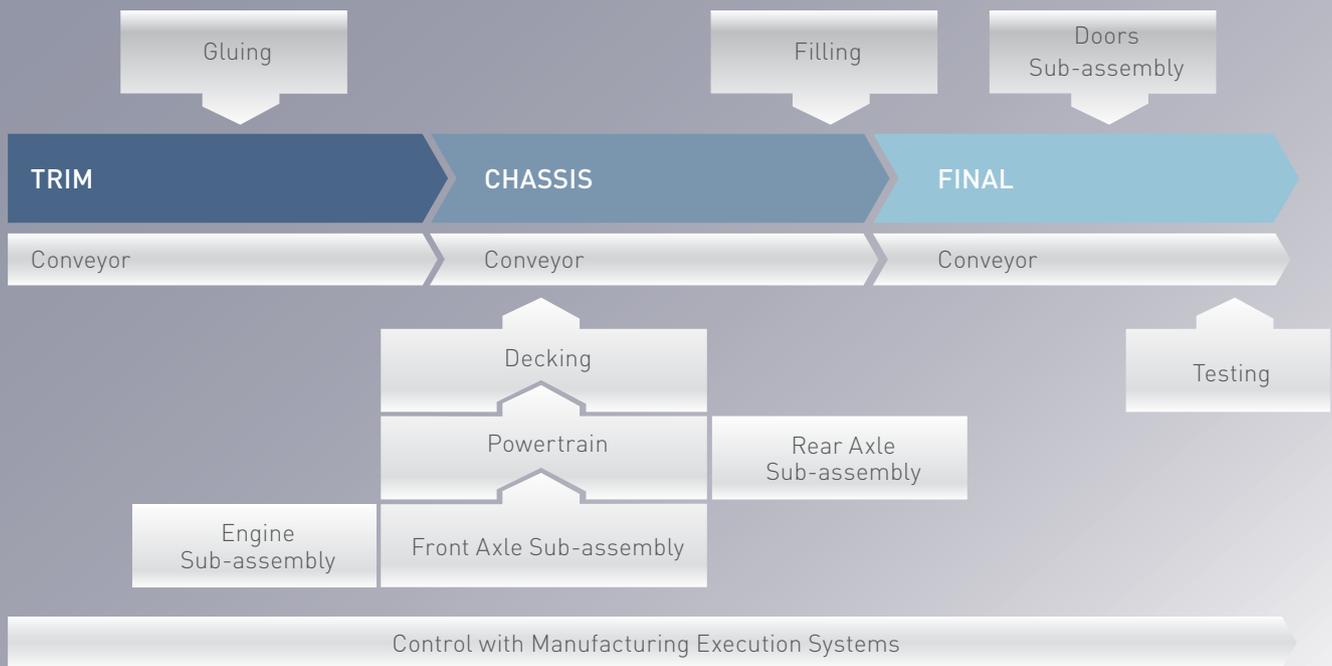
With 92 business locations in 28 countries and just under 15,000 employees the Dürr Group operates in the market with five divisions:

				
PAINT AND FINAL ASSEMBLY SYSTEMS	APPLICATION TECHNOLOGY	MEASURING AND PROCESS SYSTEMS	CLEAN TECHNOLOGY SYSTEMS	WOODWORKING MACHINERY AND SYSTEMS
Paint shops and final assembly systems for the automotive industry	Robot technologies for the automatic application of paint as well as sealants and adhesives	Balancing systems: testing and filling technology	Exhaust-air purification systems and energy-efficiency technology	Machinery and systems for the woodworking industry



ALL YOU NEED FOR FINAL ASSEMBLY

Together, the brands Dürr and Schenck are well-known for their extensive range of solutions for the automotive industry. For final assembly we offer our customers a complete service, from initial consulting and planning to project management of product and plant commissioning services. Our product range includes low volume solutions for integration, gluing, filling, conveying, testing and finally controlling and service support.



Idealized concept of a final assembly shop

Every plant starts with good planning

Do you need a new model, a renovation or a new derivative? Are you planning or currently building a new production site or restructuring an existing one? The right plan leads to the right aim and systems' integration and interface management are the key factors of our successful planning.

- » Plant structure planning
- » System integration and resource planning
- » Logistics planning
- » Conveyor/material handling technology
- » Simulation process and material flow
- » Interface management to building facilities

Dürr Consulting has developed a project management methodology. It has led to countless successfully conducted international projects in the area of plant and mechanical engineering and is our main guarantee factor for your success.

CONSULTING – PLANNING – MANAGING

Dürr Consulting also provides services for all other client and industry-specific practices, including:

- » Feasibility studies
- » Ramp-up management
- » Lean assessments
- » Supplier assessments

FAStplant®: A MODULAR CONCEPT

Worldwide we act as a turnkey supplier for all sizes of production. However, we also provide smaller solutions up to the installation of single assembly sections. Among our offers, **FAStplant®** as a stand-alone solution is ideal for quick and flexible plant build-up.

FAStplant® bears its name because it consists of a modular structural steel work which can be easily joined to become a production line. With the steel work standing on its own overhead conveyors can be used independently from the floor load or the structural quality of the building in general.

FAStplant® consists of different modules: lines, corner and handling-modules, which can make up a whole assembly line very quickly. All circuit points for power, air, etc. are integrated. Because of its modularity the system can be easily expanded or reduced, thus being fully adaptable to changing production demands. It can also be completely removed and set up at another location.

Our solutions for small series production

- » Suitable for SKD/CKD productions
- » Production output: 4-6 JPH
- » Stop & Go production
- » Flexible and modular: easy to extend and relocate
- » Independent from building structure (roof)
- » Optimized investment for quick set-up, e.g. test productions for new markets
- » Optimized process with mostly manual operation

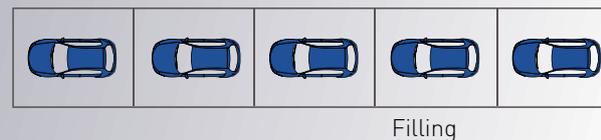
» *Manually pushed trolleys*



Trim Line



End-of-Line



» *Final line with manually pushed vehicles*



© Easymover



» Feed to trim line via garage lifter

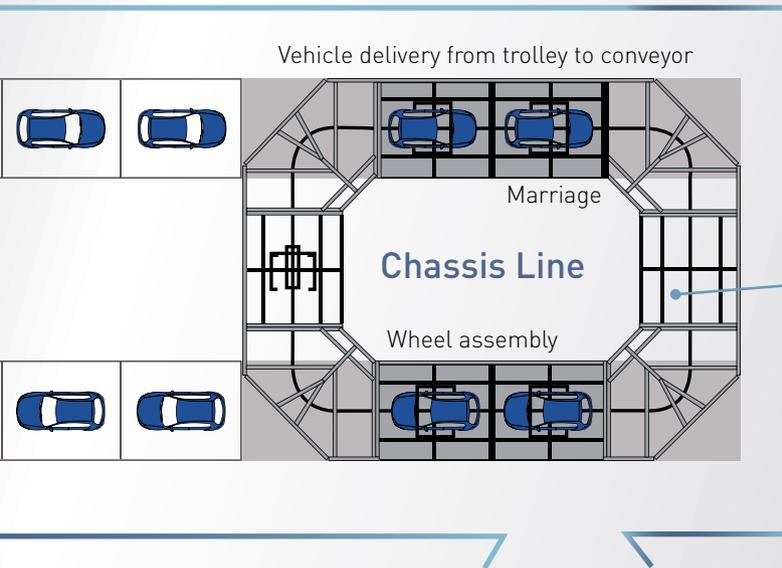


» **FASTplant**® modules form flexible production lines

Robust conveyor systems & easy transfer stations

It is our expertise to find suitable solutions for every customer need. We offer a complete portfolio of overhead and floor conveyors covering sophisticated as well as simple solutions to ensure the smooth transport of the car body along the line. The benefits of our conveyor systems lie in their high reliability and reduced maintenance efforts. Whether newly installed or integrated into existing systems, conveyor technology stands for standardization based on our high quality standards.

For the transport in the trim and final process fully automatic solutions are available as well as mechanical transport systems such as roller beds or manually pushed trolleys. For the easy transfer between different lines and handling stations a series of different equipment is offered. Vertical distances can be coped for example with garage lifters, as the easiest solution. Within the modular joined system **FASTplant**® integrated scissor lifts usually connected to the overhead conveyors, e.g. electric monorail systems, allow for an ergonomic and convenient handling of the car body.



» Body marriage & underbody work in the **FASTplant**® loop



GLUING: STICKING WITH OUR COMPETENCE

The **Ecopaint** Gluing series comprises products and solutions for demands of any complexity. We are your reliable partner for automated and manual gluing projects. We have successfully realized projects worldwide, for both passenger cars and commercial vehicles.

If you are looking for

- » Material supply systems
- » Manual glue applicators
- » Or our famous lean concepts for plug & produce solutions

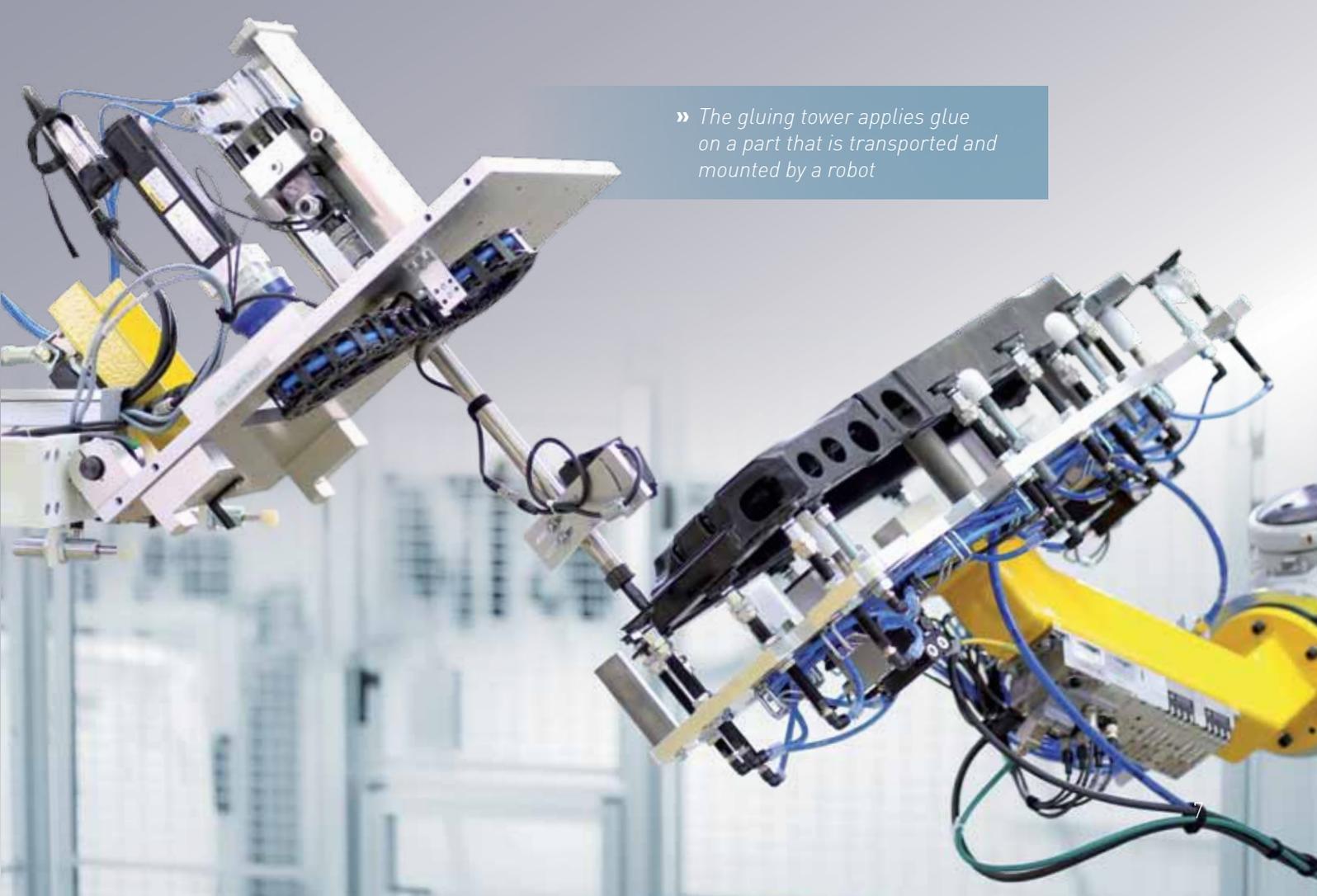
we are happy to assist.

Our plug & produce gluing concepts are ideal for you if you wish to automate your gluing processes at minimal cost.

Your benefits

- » Consistent high quality due to reproducible automated processes
- » Reduction in foot-print
- » Reduction in investigation costs

The key to success is well trained personnel. This is how you ensure the availability and efficiency of your plants over the long term, as well as the quality of your products. In our international training centers, we offer qualification and further training programs on multiple topics in paint, sealer, PVC material application and adhesives. Trainings can be performed at either our training facility or at your location.



» *The gluing tower applies glue on a part that is transported and mounted by a robot*

» Worldwide, every third vehicle is filled by using our filling stations



FILLING: EASY AND ACCURATE

Filling through optimized processes

Our range of filling stations guarantees very fast and safe processes for big fluid volumes such as radiator systems or diesel tanks.

The introduction of vacuum pressure filling reduces process time, increases quality at leak test and volume check and eliminates additional manual refilling. Individual solutions and adaptations are provided for all commercial vehicle variants up to the filling of special hydraulic systems.

Our products meet the current level of legal regulations for the handling of fluid substances and gases for air conditioning units. They are successfully used worldwide for all kinds of passenger cars and light, medium and heavy commercial vehicles.

Filling adapters

The filling adapter is the central connection between the filling station and the system to be filled. There are special requirements for it:

- » Ergonomic operation: weight-optimized, well-balanced
- » Easy and safe adaption to the filling reservoir
- » Environmental protection: drip-free-adaptation
- » Maintainability: good accessibility
- » Efficiency: long operating life



CompStart – high quality and easy handling

The CompStart filling machine is particularly designed for low production volumes or longer cycle times. Main features are its small footprint and its simple operation. Being useable as a plug-and-play installation it is highly recommended for SKD or CKD plants. Its robust design including an integrated stainless steel drip tray results in high availability and maintainability.

Independent of their design and type all our filling stations provide:

- » Efficient filling processes
- » Ergonomic filling adapters
- » Performance adjusted to the filling process requirements
- » Proven high-quality components to reduce the maintenance costs and downtimes
- » Flow optimization
- » Extensive safety and process controls during the filling
- » Environmental compliance
- » Energy-optimized operation

Compact Filling Systems

Compact Filling Stations offer a performance of the highest standards:

Easy to operate: The filling stations are comprised of easily selectable pre-programmed processes. All manometers, pushbuttons and valve isles are visible from the outside just as the filling level of the tank. The fluids are supplied from two drums with automatic changeover.

Easy to maintain: Failure diagnosis and sensor calibration are carried out conveniently on the filling station display. All components are reliable and well accessible.

Flexible and fast: Up to two drip free pneumatically clamping filling adapters with integrated valves, ergonomically balanced for a one-hand operation are connected to the filling station via a valve quick connection manifold.

FLUID HANDLING AND FILLING PROCESSES

- » Fuels (petrol, diesel)
- » Volume filling
- » Level filling
- » Leak test
- » Fluid conditioning
- » Degassing
- » Bleeding/priming

FILLING FLUID TYPES

- » Brake (DOT3, DOT4)
- » Clutch
- » Radiator coolant (glycol)
- » Power-assisted steering
- » Air Condition (R134a, R1234yf)
- » Engine, axle, gearbox oil
- » Windscreen
- » Washer
- » Urea



» *CompStart – fast and easy with plug and play*



» *Compact Filling Systems: Highest standards meet maximum flexibility*

TESTING: QUALITY IN THE END

End-of-line testing ensures driving stability and driving safety. We offer precise testing systems and processes for all parts and components.

Wheel alignment – no compromise in quality

With *x-wheel d* we have set new standards in terms of measurement and adjustment of the wheel geometry. The test stand is designed for vehicle production with large complexity and small quantity. With an optimum cost-performance-ratio the *x-wheel d* is ideally suited for chassis geometry measurement in audit and rework areas, especially in car production, CKD plants and other vehicle production plants with high quality requirements.



x-wheel d

- » Precise and reproducible toe and camber measurement at the front and at the rear axle with non-contact three dimensional measuring technology *x-3Dprofile*
- » Fulfilment of manufacturers specific requirements related to measuring accuracy, reproducibility and setting regulations
- » Easy and fast installation
- » Extensibility for further measurement tasks, e.g. steering angle test

Headlamp aiming tests – always in the right light

Operator-independent headlamp aiming by image processing is part of today's standard testing and setting technology in vehicle production. The headlamp aiming system *x-light s* has been consequently developed for increasing the setting quality of headlamps in SKD/CKD plants for passenger cars but also for production of trucks, busses and tractors and for the audit and rework sectors of vehicle production.



x-light s

- » High performance CCD camera system and well-proven measuring algorithms
- » Setting of all kinds of low beam, high beam, fog light headlamp systems, e.g. Halogen, LED, laser beam, etc. according to legal and customer requirements
- » Easy and fast installation
- » Extensibility for further measurement tasks, e.g. light intensity measurement

WHEEL
ALIGNMENT

HEADLAMP
SETTING

DYNAMIC
DRIVING TESTS

BRAKE AND
ABS TESTING

DATA MANAGEMENT

Idealized end-of-line concept

Multifunction roll test stands – efficiency meets testing

The multifunction roll test stand x-road offers the possibility to carry out vehicle function tests including dynamic driving tests, parameter set-up tests, and tests of electrical control devices for front wheel drive, rear wheel drive or 4-wheel drive vehicles in the end-of-line area. The modular design and the high degree of flexibility in the test stand enable future test requirements to be completed with minimum effort.



x-road

- » Realistic simulation of driving on roads
- » High flexibility for freely definable test sequences
- » High environmental standard by intelligent energy recovery system
- » Customisable within the roll test stand functionality for customer specific test requirement

Brake test stand – safety first

The x-brake test stand allows function tests of the brake system with measurement and analysis of the brake force, ABS function tests (sensor test, valve test, etc.) at low speed as well as function tests of the parking brake. Basically the x-brake consists of four roller sets to support the vehicle wheels, whereas each roller set is attached to an AC geared motor and a load cell to measure the brake force. Vehicle detection and slip measurement are carried out via contact.



x-brake

- » Precise and reproducible measurement of the maximum vehicle brake force at a low speed
- » Suitable to test front, rear and 4-wheel drive vehicles
- » Extensibility for further measurement tasks, e.g. test of ABS sensor with ECU (Electronic Control Unit) communication

SERVICES & SOLUTIONS: EVERYWHERE

Our customer service offers support in repair, maintenance, spare parts management and plant modernization anywhere around the world. Modernization and relocations are in the midst of our focus: How can existing plants be moved and rebuilt? How can plants be modernized and brought to an efficient level of production? Responsibility and reliability are two of our main characteristics. With 65 service sites in 28 countries we stand for cooperation and availability everywhere you need us.



PLANNING

- » Expert analysis and best practice know-how for the entire plant
- » Systematic "as is" analysis of plant conditions
- » Individual plant assessments



ENGINEERING

- » Design of new production and plant sites
- » Customer-specific modifications and problem solving



MODIFICATIONS AND UPGRADES

- » Capacity expansion and reduction of unit and energy costs
- » Upgrading existing facilities to state-of-the-art technology



RELOCATION

- » Dismantling, shipment, rebuilding and commissioning
- » Complete project planning and project management
- » Conversion and upgrading of existing equipment



RAMP-UP AND LAUNCH MANAGEMENT

- » Support in the implementation of new plants, series or technologies
- » On-the-job training
- » Qualified and prompt assistance in case of faults



MAINTENANCE AND SPARE PARTS

- » Preventative inspection and maintenance
- » Expert trouble shooting
- » Starter and emergency spare parts packages

AUTOMOTIVE SERVICE BASES WORLDWIDE



Global presence near your production site

Our worldwide service network for the automotive industry has a high level of commitment and is available in all stages from commissioning to ongoing operation. A comprehensive spare parts concept rounds off the portfolio.

Dürr incorporates its broad and worldwide experience into all projects in a profitable manner.

We will gladly advise you on questions regarding modifications and modernization.



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 and cleaning 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 2016