

**“The icing on the cake  
for your product.”**

**BPW services for vehicle  
manufacturers**

**we think transport**



# we think transport

The BPW Group's objective is to provide the best possible support to our customers in the transportation and logistics industry. Therefore, top priority is given to a no-compromise orientation towards the needs of the customers. This includes listening to them, adapting our solutions towards their particular requirements and being there for them in all situations. For us as BPW, this partnership-based objective means:

## **FIVE BRANDS – ONE STRONG PARTNER.**

With the BPW Group and its five strong brands – BPW, Ermax, HBN-Teknik, Hestal and idem telematics – we offer you decades of experience that is unique in the industry. For us, the BPW Group is the basis for coordinating our products and services even more precisely.

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# PRODUCT

We support you in understanding the BPW Group's product range and to use them for yourself and your customers.

## WE OFFER:

Application advice | Product training | Product standardisation

## Application advice



### OUR EXPERTISE:

- › Experienced engineers advise you during the engineering of your vehicles – from development to design to assembly
- › We navigate you through the most diverse product programme in the market
- › Support in the selection of suitable components with regard to design, cost-benefit analysis as well as process efficiency

### YOUR ADVANTAGES:

- › You benefit from BPW's many years of experience with vehicles in the global use – be it regarding the running gear, structural components or all other BPW products

### EXAMPLE:

- › Selection of the suitable axle, suspension, brake, steering system for your vehicle concept
- › Finding solutions for gusseting air suspension hanger brackets in the vehicle chassis

# Training



## OUR EXPERTISE:

- › Wide range of seminars and training courses covering the entire product and service portfolio of the BPW Group
- › Our own training department with many years of experience
- › Implementation of the training at the BPW training centre in Wiehl or at your own premises

## YOUR ADVANTAGES:

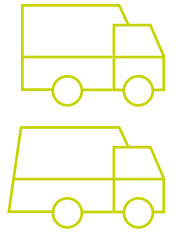
- › Ensured compatibility of components and systems used
- › Saving on costs: more efficient selection and use of components and systems--
- › Reduction of complexity
- › Simplification of processes
- › Tailored training for your particular requirements

## EXAMPLE:

- › Workshop personnel training
- › Training for commercial vehicle parts trade
- › Training based on individual requirements (focus on the target company) with focuses from design and maintenance



# Product standardisation



## OUR EXPERTISE:

- › Identification of standardization possibilities
- › Profound market knowledge based on the decentralised positioning of the BPW Group
- › Extensive knowledge of all vehicle types in a variety of fields of application

## YOUR ADVANTAGES:

- › Reduction of product variance
- › Reduction of complexity
- › Simplification of assembly and logistics processes
- › Lower stockkeeping and thus lower capital lockup

## EXAMPLE:

- › Replacement of uncommon special solutions by standard parts with the same function, e.g. in the case of air suspension hanger brackets, shock absorbers or bellows air bags



# DEVELOPMENT DESIGN



You receive the opportunity to take advantage of the capacities and expertise of the design departments of the BPW Group. Thus, design orders can be issued to us, which we accompany up to the complete production process in your or our plants.

## WE OFFER:

FEM/CAE (finite element method/computer aided engineering) | Braking, rollover resistance and circular driving calculations | Sheet-metal processing expertise | Plastics expertise

FEM/CAE

## Structural mechanics simulation



## OUR EXPERTISE:

- › Successful use of the finite element method for more than 25 years by BPW specialists with high expertise in the field of trailers
- › Reliable calculation of forces, stresses and deformations in the systems and component

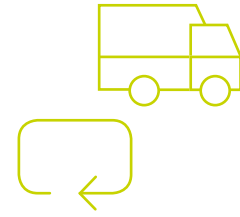
## YOUR ADVANTAGES:

- › Use of a modern design method (automotive industry standard)
- › Validation of your design and thus avoidance of complaints
- › Further development of components, especially with a view to lightweight design
- › Consideration of new materials (for example aluminium, plastic, etc.)
- › Consulting on your own FEM calculations (load cases, boundary conditions and interpretation of the results)
- › Development of new joining techniques: e.g. screwing instead of welding
- › Saving of time and costs

## EXAMPLE:

- › Vehicle frame calculations
- › Guessting calculations

# Complete vehicle calculations



## OUR EXPERTISE:

- › Calculation of braking and cornering behaviour to optimise the design and compliance with legal requirements

## YOUR ADVANTAGES:

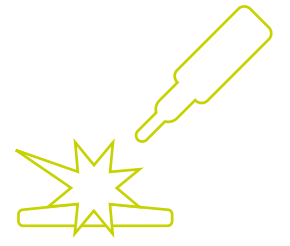
- › This calculation is recognised in the vehicle license homologation and replaces the practical demonstration in almost all cases
- › No practical test required – thus saving on costs and time

## EXAMPLE:

- › Circular driving calculation, e.g. according to 97/27 EG or §70 of the German Road Traffic Act (StVZO)
- › Brake system calculation according to ECE R13
- › Rollover resistance calculation according to ECE R111



# Sheet metal processing expertise



## OUR EXPERTISE:

- › Competent advice on design, production, tools and service in the field of sheet metal working area
- › Tools of up to 4,160 mm in length and 1,900 mm in width
- › Material of up to 1,000 mm in width, 12 mm in thickness
- › Grades up to S550 or DP600, currently higher grades possible and coil diameters of up to 2,000 mm
- › 1,600 t press capacity at up to 50 lifting per minute and a stroke of 500 mm
- › Concept design & design support
- › Accompaniment of tool creation at suppliers
- › Manufacturing support in the case of in-house manufacturing

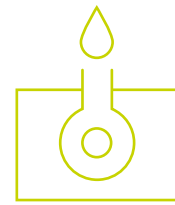
## YOUR ADVANTAGES:

- › You benefit from BPW's many years of manufacturing and toolmaking expertise
- › We support you in the implementation of your design ideas for economically efficient manufacturing

## EXAMPLE:

- › Optimisation of design in order to enhance efficiency in manufacturing
- › Manufacture of ABS pole wheels in the follow-on die
- › Manufacture of punching and bending parts in the range of 6-8 mm

# Plastics expertise



## OUR EXPERTISE:

- › Integrated development and implementation of innovative plastic and composite lightweight construction solutions
- › Engineering service: systematic metal substitution, design, CAE simulation
- › Expert service: consulting, project management, material and process selection
- › Manufacturing service: tool and mould making, prototype and series production
- › Technology transfer from other sophisticated industries, e.g. mechanical engineering, medical engineering and marine engineering

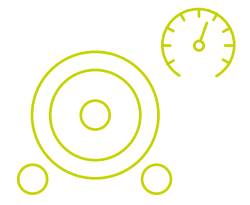
## YOUR ADVANTAGES:

- › Saving on weight and thus reduction in fuel consumption and/or CO<sub>2</sub> reduction
- › Freedom from corrosion
- › Customised design: shaping and colouring

## EXAMPLE:

- › Axles and chassis components
- › Pressure containers and tanks for air, gases, fuels, AdBlue and hydraulics
- › Suspensions and consoles, such as battery boxes
- › Further add-on parts, such as fenders, underride protection and aerodynamic components

# Tests on test benches and with vehicles



## OUR EXPERTISE:

- › Testing the service life of vehicles and components as well as measurement data experience
- › Our own test centre with experienced specialists and state-of-the-art equipment such as 30 hydro-pulse test benches for simulations, state-of-the-art inertia weight brake roller test benches or twelve-channel axial running gear test bench according to automotive industry standard
- › Development and test methodology according to automotive standard

## YOUR ADVANTAGES:

- › Coverage of your construction design
- › Complete documentation of all steps performed
- › Replacement and/or supplementation to the FEM calculation
- › Wide range of different test structures

## EXAMPLE:

- › Service strength tests on servohydraulic test system, driving tests on test track
- › Component measurements, e.g. with wire strain gauge





# MANUFACTURING



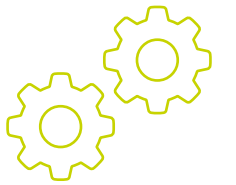
The BPW Group develops and produces components itself, according to the specifications and requirements of demanding customers. Therefore, we place major importance on efficient, streamlined production in which errors are avoided according to the Kaizen principle. We offer you the chance to hire our in-house PROP team for process optimisation for development at your company. We develop customer-specific assembly equipment and we also gladly undertake manufacturing orders relieving you of your production capacities.

## OUR OFFERS:

Process optimization (PROP) | Assembly jig | Contract manufacture | Logistic concepts

(PROP)

## Process optimisation



## OUR EXPERTISE:

- Many years of experience in lean/Kaizen processes and extensive method expertise in BPW's own PROP team with Group-wide application (international lean team)
- Support for structured problem solving
- Carrying out value stream analyses/design
- Conducting basic lean training

## YOUR ADVANTAGES:

Saving on time and costs thanks to:

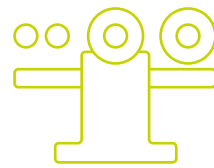
- Optimisation of stockpiling and stockkeeping
- Avoidance of economic inefficiency/waste
- Improvement of processing times
- Reduction of capital lockup

## EXAMPLE:

- Supermarket with Kanban management/pull principle and shop floor management
- Workplace layout to increase employee efficiency
- Optimisation of retrofitting processes
- 5 s (select, sort, clean, standardise, self-discipline)



# Assembly equipment



## OUR EXPERTISE:

- › Individual development and production of process-optimizing devices and equipment
- › Many years of experience in manufacturing and assembly processes both in-house and on an accompanying basis at vehicle manufacturers of the commercial vehicle industry
- › We deliver from individual part to fully automated equipment

## YOUR ADVANTAGES:

- › Optimisation of assembly processes and times
- › Cost reductions and quality assurance

## EXAMPLE:

- › Assembly jig for positioning supports and air bag plates on the vehicle frame
- › Assembly jig for tracking and welding, for pre-assembly and end assembly – for durability tests, quality control and parts handling
- › Manufacture of prototypes, spare parts and small batches of all scales



# Contract manufacturing



## OUR EXPERTISE:

- › Individual development and production of process-optimizing devices and equipment
- › Many years of experience, especially in mechanical processing, surface treatment (KTL since 1998) and assembly
- › Various quality assurance certificates held; we have facilities for quality assurance and measuring rooms
- › Successful partner of the trailer and truck industry
- › Versatile service portfolio
- › Individual and system components
- › Small quantities and series including project management according to VDA or PPAP

## YOUR ADVANTAGES:

- › Concentrate on your own core areas of expertise
- › Coverage of production bottlenecks
- › Avoidance of new investments/reduction of fixed costs
- › Avoidance of your own production risk

## EXAMPLE:

### Press centre:

- › Tools: up to 4,160 mm in length, 1,900 mm in width
- › Material: grades up to S550, DP600 or higher, up to 1,000 mm in width, 12 mm thickness, 15 t coil weight
- › Presses: 500 mm stroke up to 1,600 t press force (50 lifting per minute), 40 mm stroke up to 4,200 t

### Tool design:

- › Concept design and construction/construction support
- › Support in tool manufacturing, in own toolmaking department or at suppliers
- › Project planning, tool commissioning, tool repair, manufacturing support (in the case of in-house manufacturing)

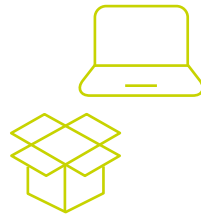
### Mechanical processing:

- › Large and small batches, automated systems (rotating, boring, cutting)
- › Wheel ends (hubs): up to 400 mm in diameter, 280 mm in height, 60 kg in weight
- › Shaft parts (e.g. upright/spindle): up to 250 mm in diameter, 500 mm in length, 35 kg in weight
- › Cubic components (e.g. braking, chassis, steering components) from 50 x 50 x 50 mm to 500 x 600 x 800 mm
- › Material: cast and forged components, other materials (or sizes) on request

### Cataphoretic dip painting coat:

- › Up to 40 µm, up to max. 2 m in length and 1,500 kg in weight
- › Manual loading or system frames

# Logistics concepts



## OUR EXPERTISE:

- › Personal consulting for customised, customer-specific logistics concepts
- › Implementation of value flow analyses and value flow designs in order to optimise processing time
- › Lean logistics training aimed at sensitising as well as imparting method expertise S

## YOUR ADVANTAGES:

- › Optimised stock (reduction of processing time and space requirements)
- › Process improvements in the order process
- › Reduced pre-orders
- › Increased transparency in stocks and production
- › Flexibility in production
- › Cost advantages/increased liquidity
- › Shorter reactions due to higher process reliability

## EXAMPLE:

- › Alternative methods of order processing (e.g. through EDI or delivery plans)
- › VMI (vendor managed inventory)
- › Supermarket with Kaban management
- › General process optimisation through e.g. lean management, value flow analysis and optimisation of the stocks
- › Concepts of optimising external material supply (e.g. just in time or Milkrun)



## Our standard of quality is very simple: it is orientated towards you.

When you work together with us as a partner, you can be sure that we will use all our expertise vigorously for your objectives.

By means of our modular service range, we make available to you the BPW combined package of expertise in research, development, manufacturing and logistics.

As a mid-sized company with a global presence, we know which roads lead to success. In the process, we are guided by our high standard of quality, which is a main reason why vehicle manufacturers and users trust us. This standard we set of ourselves enables us to offer tailored services for your company so that you can achieve your objectives – for example, increased economic efficiency and competitiveness.



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