THE BENTELER ELECTRIC DRIVE SYSTEM 2.0
A LEADING GLOBAL PARTNER FOR THE AUTOMOTIVE INDUSTRY

BENTELER offers first-class engineering and metal-processing competence combined with production excellence. From components and modules for chassis, body-in-white and engine and exhaust applications to modular e-mobility system solutions.

Such as the new BENTELER Electric Drive System 2.0: A series-ready platform solution for electric vehicles. And a showcase for our entire technological competence and collaborative approach to development. Together with a broad network of strategic partners we develop modular and tailor-made solutions for our customers.
The **BENTELER Electric Drive System 2.0** is yet another proof point of our engineering and metal-processing competence. It is *scalable for numerous vehicle segments*. It is specially *designed for e-mobility* and integrates several functions answering your needs such as

- integrated crash management,
- a flexible and scalable battery storage system with standard and customized components, and integrated thermal management,
- electrified chassis solutions,
- e-motor integration 2-wheel-drive and 4-wheel-drive,
- thermal management solutions for electronic components and
- wireless / inductive charging.

These features can be engineered as a complete solution or as individual modules. The BENTELER Electric Drive System 2.0 is *series-ready, immediately applicable and has a proven design*. The industrialization concept is *ready for immediate implementation*.

The BENTELER Electric Drive System 2.0 is a *weight-optimized, modular system solution and adjustable to any customer requirement*. Our offer will focus on engineering and program management including license models.
We engineer, simulate and validate the complete system of the BENTELER Electric Drive System 2.0 – „from bumper to bumper“

- For all vehicle segments
- System integration of e-mobility requirements
- Systems in mono- and multi-material design
- Flexible, scalable and modular lightweight solutions
- Integration of electrical and electronic architecture incl. e-motor (2-wheel-drive and 4-wheel-drive)
FULL SYSTEM ENGINEERING PARTNER

- Flex frame
- Crash management system
- Battery pack incl. batteries, cooling and high voltage routing
- Electrical and electronic architecture
- Inductive charging
- E-Chassis (2-wheel-drive and 4-wheel-drive)
- Thermal management solutions (battery and electronic components)
BODY ON FLEX FRAME – HIGH SCALABILITY FOR PLATFORM STRATEGIES FROM B- TO E-SEGMENT

- **Weight optimized scalable frame** by aluminum extrusion profiles
- **Flexible in length and width** for different vehicle segments and body types
- **Defined body connection** with cold joining technology
- **Basis for high torsional stiffness** and best crash performance
MODULAR BATTERY PACK SOLUTION FOR OPTIMIZED
ENERGY DENSITY AND SAFETY

- Designed to resist all crash intrusions and to fulfill legal directives
- Flexible scalable design by aluminum extrusion frame structure
- Integrated battery cooling for best battery performance and durability
- Battery module integration with focus on high battery density

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INTEGRATED CRASH MANAGEMENT FOR HIGHEST SAFETY AND LEGAL DIRECTIVES

- Optimized lightweight crash design for battery electric vehicles
- New energy absorption elements to protect the battery system
- Crash management systems achieving pole test and offset crash requirements
- Special qualified aluminum and steel materials
MODULAR FRONT AND REAR E-CHASSIS SOLUTIONS FOR BEST RIDE AND HANDLING

**E-Chassis**

- Front and rear suspension modules with high integrated electrical drive units
- Subframes offer modularity due to profile length among longitudinal and lateral direction
- Each subframe with NVH (noise, vibration, harshness) - optimized rubber bush concept
- Insulated sub frames with an additionally insulated electrical drive unit for best NVH behavior

**B- to C-segment**

- Front E-Chassis
- Rear E-Chassis

**C- to E-segment**

- Front E-Chassis
- Rear E-Chassis
THERMAL MANAGEMENT FOR EFFICIENT ENERGY UTILIZATION

- Special battery cooling plate design for **lower weight and height**
- Secures **long life** of batteries and electronic devices
- High **integrated routing** of cooling circuits
- Controls **battery temperature** for best operating conditions
BATTERY AND CHARGING TECHNOLOGY SOLUTIONS FOR
BEST ELECTRIC VEHICLE PERFORMANCE

- Qualified for fast DC charging process (100KW)
- Prepared for inductive charging
- High energy prismatic battery cells
- Special battery module size for high package density
ELECTRIC AND ELECTRONIC ARCHITECTURE – SECURITY FOR HIGH FUNCTIONALITY

- Flexible, scalable and **high functional safety**
- Charging, power and thermal management **centrally controlled** via CAN BUS by VCU (Vehicle Control Unit)
- **Optimal, safe electric power and signal distribution** between all electrical and electronic components
VEHICLE INTEGRATION – IT IS MORE THAN THE SUM OF ALL PARTS

- Specification of all OEM interfaces
- High interface and complexity reduction
- Best packaging of all systems
- Secured functionality on vehicle level
BENTELER ELECTRIC DRIVE SYSTEM 2.0

BENTELER ELECTRIC DRIVE SYSTEM IS OPEN TO INDIVIDUAL ENGINEERING AND SOURCING STRATEGIES

- Full system engineering for free global sourcing of e-modules or full BENTELER Electric Drive System
- Industrialization support and supplier management
- Direct manufacturing in a partnership
- Licensing of BENTELER Electric Drive System possible
BENTELER SUPPORTS THE FULL VALUE CHAIN – ENGINEERING, PROTOTYPING, TESTING, PROCESS DESIGN AND PRODUCTION

- Whole **vehicle target setting** process (definition of vehicle performance, targets and requirements)
- From **concept studies** to **series build to print design**
- **Prototyping** and **mule car production**
- **Module and vehicle validation**
- Development of **flexible production concepts**
BENTELER – solutions that make a difference

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