PARTNER TO THE INTERNATIONAL MOBILITY INDUSTRY
AGENDA

1. Presentation of the EDAG Group
   - Expertise – Key figures – Sites

2. Range of EDAG Services
   - Portfolio and References

3. Why choose EDAG?
   - Innovations, Awards, Certification
PRESENTATION OF THE EDAG GROUP
DEVELOPMENT WITH PASSION – THAT'S WHAT WE STAND FOR

EDAG. One of the largest independent engineering experts in the automotive industry

“"We are the experts in the development of vehicles, production plants and the optimisation of your processes. We see mobility as an integral approach."

Our expertise covers the integrated development and optimisation of vehicles, production facilities, derivatives and modules. This has made us what we are today: the acknowledged, independent engineering experts for the automotive industry.
## OUR HISTORY

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1969</td>
<td>Founding of the Horst Eckard design office in Groß-Zimmern</td>
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<td>1970</td>
<td>Foundation of company headquarters in Fulda</td>
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<td>1987</td>
<td>First steps toward globalisation, first European subsidiary in Barcelona</td>
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<td>1995</td>
<td>Germany: 10 facilities close to the major automobile manufacturers</td>
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<td>2006</td>
<td>ATON Group becomes the main shareholder of EDAG.</td>
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<td>2013</td>
<td>Acquisition of the BFFT Group</td>
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<td>2016</td>
<td>Acquisition of Rücker Group with 2500 employees</td>
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<tr>
<td>2019</td>
<td>New technology centre with room for 1500 employees is built in Wolfsburg</td>
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**50 years’ experience in automotive engineering!**
THE EXECUTIVE BOARD OF EDAG ENGINEERING GMBH

Harald Keller
COO

Cosimo De Carlo
CEO

Holger Merz
CFO
8,641 EDAG employees
Total sales revenue of 792 million in 2018
EDAG IN GERMANY

more than 6,000 Employees

more than 26 Locations

Company headquarters
100/500/1000 employees

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PRODUCT DEVELOPMENT BUSINESS MODELS
COOPERATION BETWEEN THE SUBSIDIARIES

Complexity

- **Business development & consulting**
- **Complete vehicle development**
- **Engineering services**
- **Module development**

Focus of the Fulda site
Focus of the subsidiaries
Assumption of responsibility
OUR RANGE OF SERVICES
OUR RANGE OF SERVICES

PRODUCT DEVELOPMENT

- Design and concept development
- Vehicle development
- Function development
- Vehicle validation and testing
- Electrics/Electronics

PRODUCTION SOLUTIONS

- Control engineering and automation technology
- Production engineering
- Production process planning
- Factory and logistics planning
- Tool and vehicle body systems
COMPANY STRUCTURE AND SEGMENTS OF THE EDAG GROUP

EDAG Engineering Group AG
Switzerland

EDAG Engineering GmbH
Directors: Cosimo De Carlo – CEO, Harald Keller – COO and Holger Merz – CFO

EDAG Vehicle Engineering
Vehicle development

EDAG Production Solutions
Development of production facilities

EDAG Electrics/Electronics
Electrical/electronic development, car IT
We provide extensive expertise for complete vehicle development as a one-stop solution.

When it comes to the development of bodywork systems and vehicle interiors, EDAG is a strong and innovative partner in every respect – with a special emphasis on complete vehicle development.
VEHICLE ENGINEERING DESIGN CONCEPTS

EDAG Design Studio
The final result of the design process must be to strengthen your brand.
- Design brand strategy (DNA)
- Design ideas
- Product conception and design visualisation (2D, 3D, VR)

Surface development
Our surface simulation team creates photorealistic images and scenarios of the vehicles of tomorrow.
- Class-A surfaces concept through to volume production
- Form finding in clay

Model Building
Our model making centres create high-precision physical models of your future vehicles.
- Mobile show and concept cars
- Design models

We create visions that can be developed into vehicles that meet the demands of the future.
VEHICLE ENGINEERING
MODELS & VEHICLES SOLUTIONS
LOW VOLUME PRODUCTION

Logistics/Procurement
- Creation of production equipment
- Supplier specification and management
- Purchase of parts volumes
- Supply chain management

Low-volume production planning/implementation
- Process creation
- ISO-compliant documentation
- Manufacturing concepts
- Series production

Test, Verification
- Accredited test centre (ATC)
- Component and module tests
- Safety (crash)/durability
- Endurance testing and CAE validation

Complete vehicle assembly (VPC)
- Prototype management
- Creation of welding assemblies
- Vehicle construction/assembly
- Installation of sub-assemblies

Model Building
- Creation of fixtures
- Manufacturing components
- Saddler work
- Paint

Concept development
- Feasibility study
- Definition of material concepts
- Definition of manufacturing concepts

Safety, quality, cost
- Risk management
- Preventive quality planning
- Supplier quality

Product development
- Interior/exterior development
- Creation of production documents

Tool construction/ parts manufacturing
- Design/simulation
- Production of tools
- Production of parts
VEHICLE ENGINEERING
VEHICLE DEVELOPMENT

Concept Development and Package
Our task in the package is to optimise the arrangement of components and modules according to geometric and functional requirements.

- Complete vehicle package
- Ergonomic analysis
- Platform and modular product concepts

Vehicle Body and Door Systems
Our primary target is to achieve optimum product properties at minimum cost and weight.

- Concept and series development
- Development and supplier management
- Lightweight design / hybrid material selection

Interior and exterior
The design of your vehicle brand should be immediately recognisable from its interior and exterior.

- Concept and series development
- Design validation and preparation of technical specifications
- Supplier management and change management

We provide extensive development expertise as a one-stop solution. Our unique quality is the fact that we specialise in complete vehicle development.
VEHICLE ENGINEERING
MOTORCYCLE

Development and design
From the initial design sketch through to the finished component, assembly or complete vehicle development.

- Innovative styling from the concept sketch to the finished design model
- Design with styling, lightweight design and production know-how
- Function development of motorcycle components

Testing and validation
We pay close attention to the specific features of motorcycles - at the race track, on the test stand or in the virtual world.

- Chassis and control system coordination and testing
- Virtual validation
- Vehicle dynamics simulation
- Hardware validation
- Endurance testing

Prototype and low-volume production
From prototype parts to low-volume production: we implement the highest possible standards throughout.

- Special series production
- Prototype components
- Prototype vehicles

We are Motorcycle – from the initial design sketch through to the complete, finished vehicle.
VEHICLE ENGINEERING
FUNCTION DEVELOPMENT

Chassis / vehicle dynamics
Excellent vehicle dynamics and optimum safety are our aims.

- Development and integration of complete chassis
- Function development vehicle dynamics and driving comfort
- Design, simulation, testing & application

Vehicle safety
We achieve "integral safety" - the interaction of active and passive safety measures.

- Calculation and test management
- Development and supplier management

Aerodynamics, Acoustics, Vibration and Driving Comfort
Optimum vehicle acoustics and noise reduction make for maximum driving comfort.

- Function development and validation of NVH acoustics
- Assessment and optimisation of vibration phenomena
- Design and development of attributes for comfortable driving

We are responsible for the integrated development of vehicle attributes, components and modules. Our speciality is the fact that our experts are involved right from the start.
VEHICLE VALIDATION

**Complete Vehicle and Component Validation**

We ensure that your prototype fulfils the statutory regulations and your quality demands.

- Validation planning
- Test vehicle management
- Test coordination and support
- Certification and homologation

**Testing, Material Inspection and Test Stand Construction**

Our own test laboratories offer you maximum flexibility in vehicle development.

- Accredited test laboratories
- Component and system testing
- Material inspection, appraisal of material properties, materials consulting

**Calculation and Simulation**

We focus on ensuring a radical reduction in development times.

- Stiffness, stability and durability
- Crash, passenger and pedestrian protection
- NVH
- Flow simulation
- Tolerance management

We offer all relevant CAE solutions, as well as a unique network of test laboratories, at the most important sites in Germany.
Focus on Product and Production Process

Our goals are to achieve top quality standards, meet deadlines and keep costs to a minimum.

- Product targets
- Cost and weight of product
- Product quality
- Production process

Processes and Tools

Professional process management to monitor and document all data and non-conformities.

- Risk management
- Change management
- Engineering quality
- Production quality

Engineering Responsibility

We are a partner that meets the stringent requirements of complete vehicle development.

- Complete vehicles / derivatives
- Factory and production solutions
- Management of international projects
- Development and supplier management

A clear structure, bespoke solutions and continuous tracking characterise our project management.
VEHICLE ENGINEERING
QUALITY AND DOCUMENTATION
MANAGEMENT

Quality Solutions
In spite of reduced development times and increasing model variety, we help to ensure high quality standards.
- Series and launch support
- Complaints management
- Quality audits and coaching
- Supplier management
- Mobile measuring

Communication solutions
We are specialists in the fields of information design, technical documentation and data structuring.
- Operating instructions
- CE documentation
- 3D image editing
- Service literature

Individual Solutions
In interdisciplinary teams of communications and quality experts, we create methodically supported solutions for practical applications.
- Statistical/linguistic analysis
- Quality process optimisation
- Knowledge transfer via interactive media

In cooperation with our clients, we improve product quality and increase customer satisfaction with customised communication and quality solutions.
**REFERENCES**

**BMW Mini Countryman**
Development of the complete body and control of the development process chain

**Mercedes-Benz GLC Fuel Cell**
Body in white/exterior/interior derivative development – drive train integration
Production vehicle assembly in low volume series process

**DAF XF & CF Euro 6 integration**
Series development of cab / development of chassis front end & cab interface

**Mercedes-Benz C-Class T-Model**
Body in white derivative development/aluminium hybrid design/ready to install aluminium roof

**Opel Insignia**
Development of body in white, doors, boot lid and tailgate, exterior, interior and electrical/electronic systems
Our expert teams are developing the eMobility of tomorrow.

eMobility and car IT will be the greatest automotive challenges in the next few years. Reason enough for us to press ahead with technologies and their applications with our own team of experts. With future-oriented subjects connectivity, digitalisation and autonomous driving, we cover the key areas of the networked vehicle.
E/E Vehicle Engineering
Support throughout the entire function development, from the concept phase to production support.
- Architecture and electrical system engineering
- Integration of physical vehicle electrical systems

E/E Systems Engineering
Definition of requirements, drafting concepts, and implementation in solutions for E/E systems
- Integration of system components (control unit, sensors, actuators) to give a complete system
- Validation with regard to function and network integration

E/E Embedded Systems
Development and validation of hardware and software for electronic steering devices.
- Topology evaluation and preparation of product specifications
- ECU development (HW and SW)
- Power electronics

We ensure capacity and flexibility in electric/electronic product engineering. So that you can gain or retain a competitive edge with innovations.
trive.me is a powerful brand with a mission:
We develop innovative software solutions and products for the networked mobility of tomorrow, and offer this digital transformation know-how on the market.
EE Scopes - Derivative Development
System development, system integration, test / validation and supplier management for all EE components and functions. Validation in complete vehicle

Battery System for PHEV Vehicle
Structural, thermal and electrical design, BMS, assembly, integration and commissioning of a 17 kWh battery system

Controls for Self-Driving Commercial Vehicle
Development of the ECU software to control the driving functions in compliance with ASIL-D

Software Connectivity Module
Software development to create secured Internet connections and implement the statutory eCall function

Software Infotainment Unit
Software development Infotainment unit with extensive entertainment, connectivity and international radio functions

Algorithms for automated driving
Programming driving situation evaluation and manoeuvre planning
PRODUCTION SOLUTIONS

We are your competent partner for project management and networked production engineering on your way to the factory of the future.

Our expertise and strength lie in the integrated development of production systems and the optimisation of production processes.
PRODUCTION SOLUTIONS
EXPERTISE

- Development of individual solutions through to turn-key systems for complete body manufacturing
- Development and realisation of complete factories with all the technical disciplines involved
- Implementation of customer projects in cooperation with Feynsinn process consulting specialists
- more than 50 years of experience in systems engineering
- Independent service provider
PRODUCTION SOLUTIONS
REFERENCES

**Daimler BR 205**
Systems engineering of three plants on three continents

**Geely CX11**
Planning and development support

**BMW F60/ Mini Countryman**
Turn-key project management and SE planning for diverse assembly sections

**WOB AG**
Factory planning for OpenHybrid LabFactory

**BMW**
Rollout of body engineering process without using drawings
WHY CHOOSE EDAG?
INNOVATIONS - COMPETENCE CENTRES
LIGHTWEIGHT DESIGN AND LIGHTING TECHNOLOGY

CC for Lightweight Design, Materials & Technology
Every material must perform to its utmost. In the right application and in the right place.

Ideas, strategies and customised implementation:
- Technology scouting
- Networks
- Pilot projects and technology transfer

Neutral view of things:
- Energy-efficient lightweight design in steel
- Light metals and/or multi-material systems
- Fibre composites, hybrids and additive manufacturing

CC for Light and Sight Technology
We provide system developments for innovative light design on the vehicle of tomorrow.

We are open to new methods:
- Design and conception
- Simulation and light laboratory
- Research and development

Our main focuses:
- Headlights, rear lights, fog lights
- Ambience and interior
- Exterior and interior
INNOVATIONS - COMPETENCE CENTRES
EMOBILITY AND INTEGRAL SAFETY

CC for eMobility
New technologies and system solutions as the key to the mobility of the future

Our contribution to the mobility of the future:
- Mobility and vehicle concepts
- Innovative system and charging concepts
- Technical innovations

eMobility system concept:
- Energy efficiency through innovative system solutions
- Scalable system concepts
- Single-source layout, integration, validation

CC for Integral Safety
Cooperation instead of collision
Clarity instead of surprises

We merge passive and active safety:
- Accident prevention through driver assistance
- Savings in time for more effective passive protection systems
- Simulation/test: holistic, automated, autonomous

In the complete vehicle, we network and bundle:
- Expert knowledge on electronics, chassis, safety
- Systems: sensors, actuators, protection systems
THAT´S WHAT WE ARE PROUD OF - LATEST AWARDS

Top Employer Award 2018 Engineering

Top Employer Award 2017 Engineering

Top Employer Award 2016 Automotive

Gold Award German Innovation 2018 für LightHinge+

Gold Award Materialica 2017

reddot award 2016 for the design of the EDAG Light Cocoon
CERTIFICATION QUALITY FOR PROCESSES AND PRODUCTS

Certification Types

- DIN EN ISO 9001 (EDAG, EDAG Production Solutions)
- DIN ISO/IEC 27001 VDA (EDAG, EDAG Production Solutions)
- ISO 14001 (EDAG) (EDAG, EDAG Production Solutions)
- DocCert (EDAG Documentation)
- OHSAS 18001 (EDAG, EDAG Production Solutions)

Assessment

- DIN ISO/IEC 15504 Spice (EDAG)

Accreditations

- DIN EN ISO/IEC 17025 (EDAG Testing Böblingen, Fulda, Ingolstadt, Munich)
2014
EDAG GENESIS

The EDAG impulse: 3D printing in body engineering for the first time!
The EDAG impulse: 25% weight reduction due to ultralight 3D printed bionic structure and textile outershell of bodywork
The EDAG impulse: prototype-based implementation of future HMI technologies and user experience
EDAG CITYBOT – a game changer for the city of the future
THANK YOU.