VOIT Automotive is a multinational system supplier for the automotive industry. The technology company manufactures for some of the world's largest automotive manufacturers and suppliers. VOIT technology can be found in over 250 vehicle models and 45 brands. Almost 65% of the world's leading automobile manufacturers place their trust in VOIT. Approximately 100 million VOIT parts are used annually at Audi, BMW, Mercedes, VW, Ford, Jaguar, Landrover.

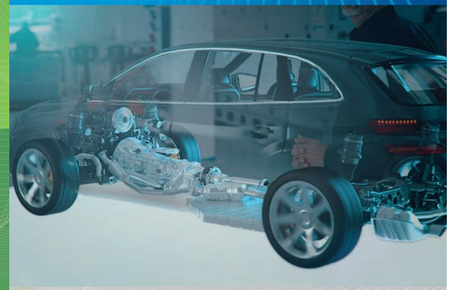
The group of companies employs 2,000 people at 5 locations worldwide, 1,000 of whom work in St. Ingbert. The group includes VOIT Automotive, VOIT Automotive de MÉXICO, BTI and Fonderie Lorraine SAS, a joint venture with ZF Friedrichshafen AG under the technology leadership of VOIT Automotive.

VOIT develops and manufactures high-precision customer-specific aluminium die casting parts with finished functional surfaces as well as modules and components in forming technology. The core competence is to optimize our customer's complex product designs at an early stage and to produce them on a large scale in process reliability.

VOIT offers solutions from a single source: from product & process engineering to prototyping, tool making, large scale production in our foundries and stamping shops, surface treatment, assembly and functional testing to just-in-time delivery of ready-to-install serial parts.

Even today, VOIT is already moving in today's world of electrification and in the autonomous driving of tomorrow. In the product field of comfort & safety / driver assistance systems division, VOIT manufactures components for braking systems, thermal management and chassis. In the driving technology sector, powertrain components for vehicles with combustion engines as well as hybrids and purely electric drives are developed and manufactured. The range extends from internal gearbox parts to complete housing components for E-axles. Thus, new production technologies allow new design possibilities for the future design of cooled electric motors and power electronics.

Images: VOIT, CAD animations: zeitraum



The VOIT Group

Headquarters St. Ingbert, Plant 1 and Plant 2

VOIT Automotive GmbH

BTI Bearbeitungstechnologie St. Ingbert GmbH

Location in México

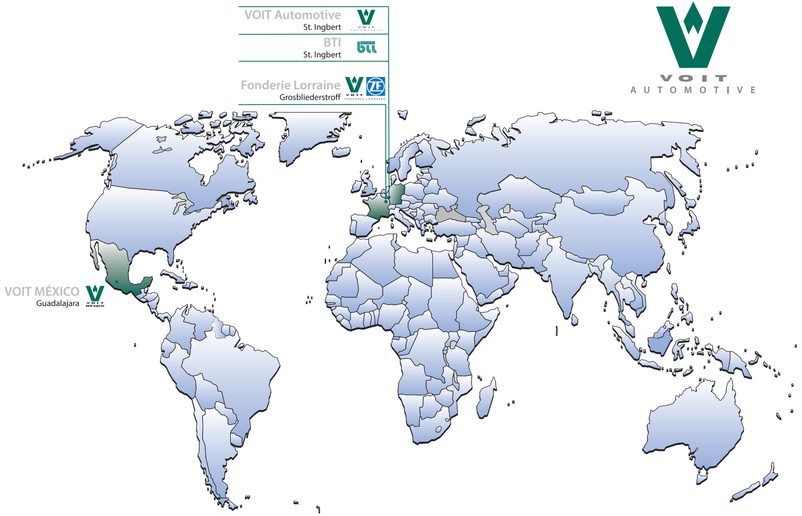
VOIT Automotive de MÉXICO S.A. de C.V., Guadalajara

Location in France:
Joint Venture VOIT / ZF Friedrichshafen AG

Fonderie Lorraine S.A.S, Grosbliederstroff

References

AMK, Audi, Behr, BorgWarner, Bosch, Brose, Chrysler, Continental, Eberspächer, Ford, Nidec Electronics, Valeo, VW, ZF Friedrichshafen ...



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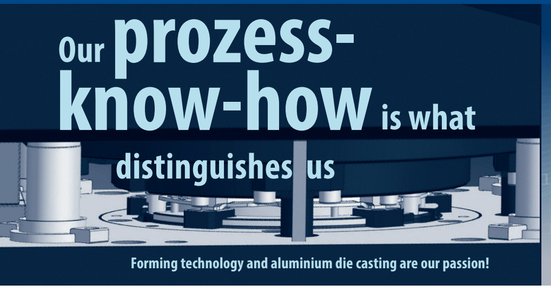
E-MOBILITY
VOIT ELECTRIFIES!

VOIT - Your technology partner
for product engineering,
process development
and large-scale series production
for the mobility of tomorrow

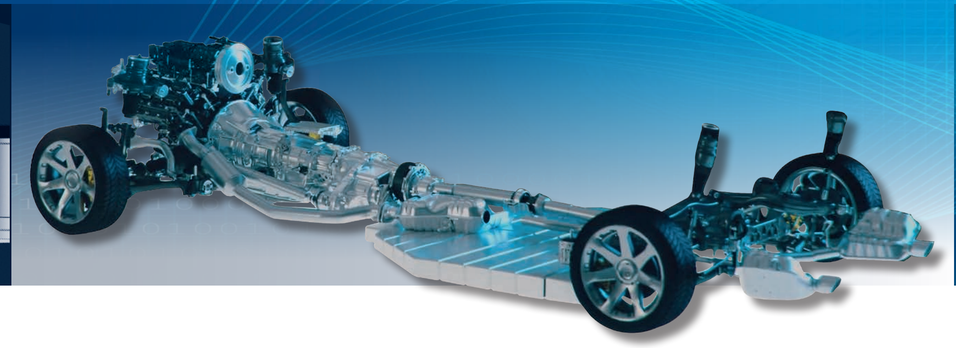
TECHNOLOGY INFO
E-Mobility

WELCOME | to tomorrow's world of mobility

Our prozess-know-how is what distinguishes us



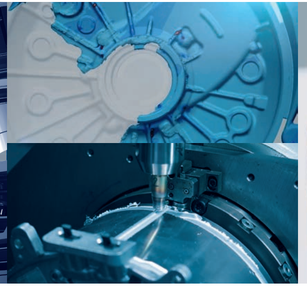
Forming technology and aluminium die casting are our passion!

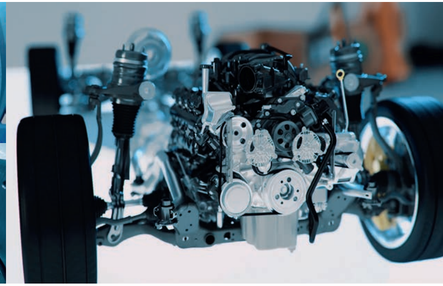


VOIT elektrifies

As a development partner for manufacturing processes and a reliable series manufacturer, VOIT is in high demand as a technology partner. With you, we create tomorrow's mobile worlds!

VOIT | emotion for mobile worlds





Hybridisation and electrification: innovative technologies for a wide public

Electromobility and autonomous driving are the automotive future trend and "electrify" car drivers, OEMs and suppliers to the same degree.

The global market is therefore increasingly concentrating on powertrain electrification

Our process expertise is what distinguishes us.

We master complexity and precision, further developing ourselves sustainably together with our clients from complex components to an increasing number of ready-to-install assembly groups, and from product engineering and prototyping at an early stage to mass production of ready-to-install series components.

Our employees in our competence centres for forming technology, pressure die casting, machining and tool making have extensive knowledge of the material and process as well as paying great attention to detail.

This wide-ranging competence across different fields of material and process expertise as well as innovative production technologies are what make VOIT so unique.

It is thus possible to have state-of the art manufacturing technologies such as friction stir welding in series as well as new possibilities in the design of cooled electric engines and power electronics.

Our core competence lies in the optimization of our clients' complex product designs in order to allow them to be mass produced in a secure and economic process.

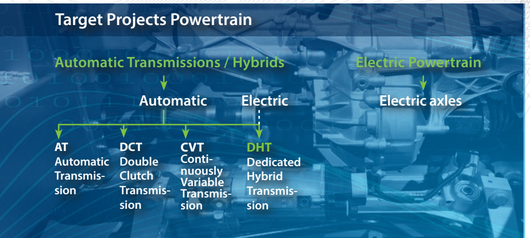
In a time when life cycles are becoming ever shorter, we join our clients in the mutual product development process as an engineering partner early on in the development stage including prototyping.

For each product design, there are countless possibilities for implementation. Different materials. Different manufacturing technologies. Different machining options. Different joining options. Finding THE version of a product out of all of these possibilities, which can be implemented to be economical, highly precise and with a reliable process – THAT is our core competence and your benefit in working with VOIT. This simultaneous engineering approach guarantees high volume mass production with a reliable process whilst simultaneously allowing fast market entry.

Today, Voit is already involved in tomorrow's world of electrification and manufactures powertrain components for vehicles with combustion engines as well as for hybrid and purely electric drives: from internal transmission components and intermediate plates up to plates for control units and complete housing components for E-axes. In the future of autonomous driving and electrification, the product fields of comfort & safety and driver assistance systems will play an increasingly important role. For these fields, among other components, we produce parts for brake systems, thermal management and the chassis.

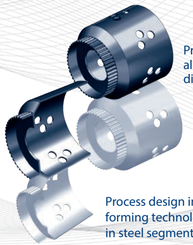
Because we love cars and are leading the way.
VOIT - emotion for mobile worlds.

Target Projects Powertrain



Process development and series delivery from a single source

- **Process-independent manufacturing consulting -> Pressure die casting and/or forming technology**
- **Technical consulting for the process chain -> robust processes for large scale series production**
- **Ready to install components including mechanical processing & surface conditioning**
- **Ready-to-install component groups -> in-house assembly capabilities**
- **Solution-orientated process development -> e.g. large scale application of a friction stir welding process for die casting parts (= new possibilities for water-cooled engine housing)**



Process design in aluminium pressure die casting

Process design in forming technology in steel segments

Fields of application & technologies

Components for future vehicle concepts for partially or fully autonomous driving

Automatic transmission in the power train

Transmission components ● ●
Electrical machine components ● ●
Rotationally symmetrical cup structures ● ●
Planetary & ring gear supports ● ●
Axial pistons ● ● ●
Power electronics housings ●
Disk carriers ●

Chassis stabilisation (Air) suspension damping systems

Suspension strut components ●
Compressor air suspension ●
Component module assembly ●

Autonomous steering

Housing for electrical steering motors ●
Bearing brackets for electrical steering motors ●
Motor housing for steering column transmission ●

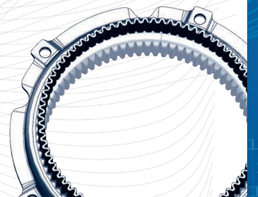
Autonomous braking

Brake power assist unit ●
Brake assist systems ABS/ESP ●
Motor housings for ABS/ESP controllers ●

Components for electrified wheel drives and axles

Power electronics housings ●
Electric motor housings ●
Motor housings, also water-cooled ●
Stator carrier ● ●
Housing thermal management ●
Disconnect clutches ●
Rotationally symmetrical cup structures ● ●
Disk carriers ●
Planetary supports & ring gear supports ● ●

● = Metal working technology
● = Aluminium pressure die casting
● = Combined material usage



Quality first

Specialised and qualified employees in the fields of development, project management, manufacturing technology, logistics, quality management and business administration work target-orientated, on a daily basis in order to fulfill the demands of the whole value chain right through to our customers.

VOIT is certified according to:
ISO/ TS 16949, DIN EN ISO 9001
ISO 14001, DIN EN ISO 50001

All manufacturing technologies from a single source

Prototyping

Simultaneus Engineering

Development production process

Cold forming: punching, drawing & roll-bending technology

Transfer & deep drawing presses up to 24.000 kN, Material thicknesses of up to 8 mm, material grade 5500

Aluminium pressure die casting

Casting cells: Locking force of 5,000 – 25,000 kN
Linked production lines,
CNC machining lines up to 5 axis, automated testing of tightness, surface refinement, assembly services, friction stir welding units

Surface finish

Assembly work

Welding and fusion processes, new: friction stir welding in series

Possible VOIT manufacturing portfolio for future plug-in transmissions, DHT transmissions and electric axles