AUTOMOTIVE SOLUTIONS

PRECISION AND POWER RESISTORS / RESISTANCE AND THERMOELECTRIC ALLOYS / PRECISION MEASUREMENT TECHNOLOGY

ISABELLENHÜTTE

Innovation by Tradition

OUR ISA-PLAN® RESISTORS

Deliver very low internal heat resistance, exceptional long-term stability under full load and operate in temperatures up to 338°F (170°C).

OUR ISA-WELD® RESISTORS

These high-current shunts are used for high-current applications, such as battery management, battery-charging technology, drive technology and in electronic energy meters.

OUR ISA-CON® PRECISION ALLOYS

Combine superior electrical conductivity with high mechanical strength. They exhibit electrical conductivity up to 85% IACS and mechanical strength up to 450 MPa.

OUR ISA-SCALE® MEASUREMENT SENSORS

Are specifically designed for use in high-voltage battery systems, including 4-cell Li-ion starter batteries.

WE UNDERSTAND YOUR MOST PRESSING NEED: KEEPING PACE WITH CHANGE.

It's no secret; the electronics content in vehicles has soared in recent years. Cars and trucks, as well as hybrid and electric vehicles, are becoming more and more packed with sophisticated sensors, safety features, connectivity and automation.

Evolution is a constant need. It's about keeping up or falling behind. Because of this, we know you're dealing with a myriad of ever-evolving and increasingly complex product engineering challenges. We believe these challenges amplify important and immediate requirements you have:

HIGH PERFORMANCE / TOTAL COST OF OWNERSHIP

You need to integrate new technologies into the relatively harsh automobile environment while maintaining acceptable performance and cost levels.

SPEED TO MARKET

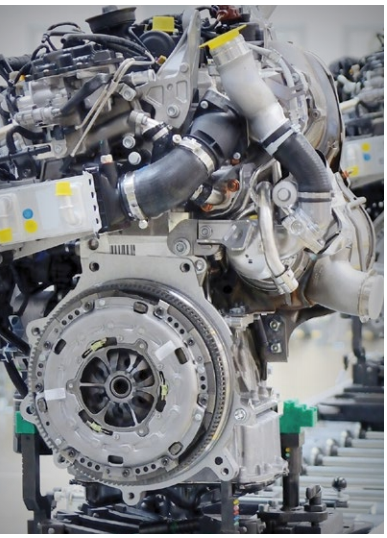
There is a direct relationship between support excellence and your road to market. You need a human. You need a response. You need support. You need a partner that sees the same levels of urgency as you. Whether it's a print review, prototype samples or design input from our engineering group, we promise to value your project as you do. In the automotive world, time is of the essence.

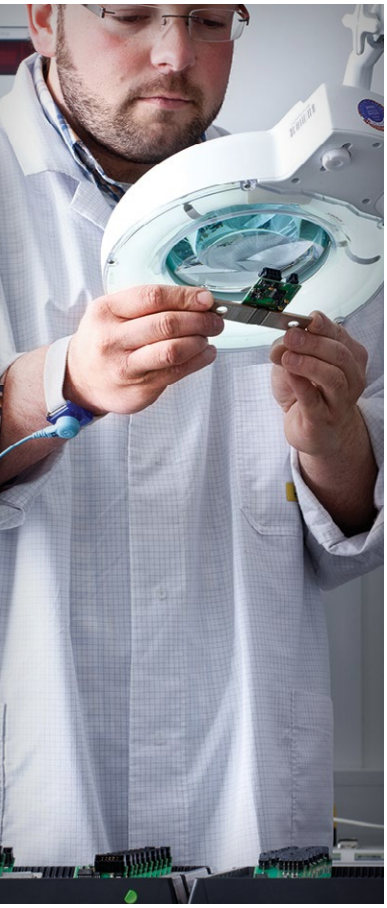
SOPHISTICATION IN SMALLER SPACES

You need to continuously accommodate more technology into smaller spaces, without compromising performance.

These are requirements with which we can help. We've been pioneers in the automotive market, nearly since the invention of the car. You can find Isabellenhütte resistors in every European automobile on the road.

WE ONLY DO A FEW THINGS.
BUT WE DO THEM BETTER THAN ANYONE ELSE.





Our product range may not be as comprehensive as some of your other suppliers, but there's a reason we are still a preferred partner to so many companies. Our products perform. And our support is unmatched. We offer the following:

LOW-OHMIC PRECISION AND POWER RESISTORS

The accurate detection of flowing current by means of precision and power resistors is indispensable today. The application range of precise current sensors has increased significantly due to the demand-controlled decentralized control and monitoring of individual vehicle components. In addition to the functional reliability over the entire service life, the requirement of accuracy and stability has been given a high priority due to increased demands for reliability.

The components from our ISA-PLAN® or ISA-WELD® family provide an extensive answer to these requirements. Process and material knowledge gained over decades is incorporated here and offers a solution for almost all measuring tasks in the automotive sector.

ELECTRICAL RESISTANCE ALLOYS FOR CURRENT MEASUREMENT

The optimal design of the components and the resistance material used form an ideal interplay. This allows for optimal performance with very high load resilience and stability in the ppm range with the smallest design at the same time. Our in-house manufactured precision resistance alloys ZERANIN®, MANGANIN® and NOVENTIN® provide the basis for this with the desired properties.

The advantages of our components are fully utilized in the high-temperature range, such as in engine and transmission applications.

PRECISION MEASUREMENT SYSTEMS FOR CURRENT, VOLTAGE AND TEMPERATURE MEASUREMENT

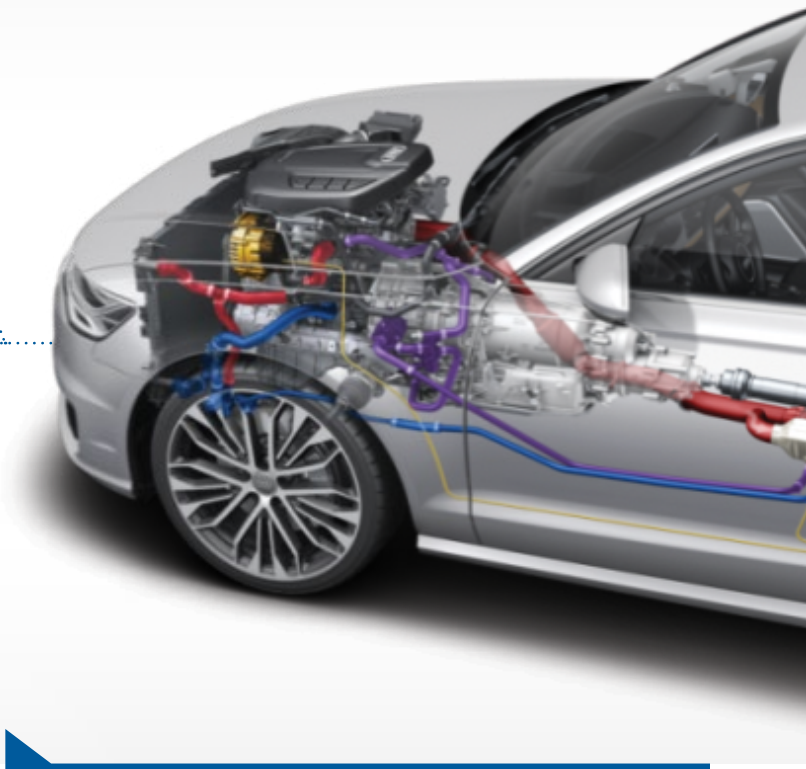
An electric drive for vehicle applications consists of the following components: electrical converter, HV box / power distribution unit consisting of pre-charge circuit, fuse, protection in the negative and positive poles of the battery as well as the traction battery or mobile electric energy storage unit, including the battery management system (BMS). Due to the additional voltage measurement, our IVT-SERIES also allows for the monitoring of the total battery voltage, the pre-charging circuit, the circuit breaker and the fuse.

The highly integrated sensors not only capture the raw data for current, voltage and temperature measurement, but also determine the power, energy and ampere-hour values on the software side as integrated values and transmit these directly to the BMS via CAN bus. Our customers thus receive a dynamic, stable, calibrated and compact current and voltage measurement system that also offers real advantages in terms of the total system costs.

OUR SOLUTIONS CAN BE FOUND IN SEVERAL IMPORTANT AUTOMOTIVE SUBSYSTEMS.

Whenever highest reliability, precision and longevity are required, your choice should be low-ohmic precision and power resistors from Isabellenhütte. We have been supplying high-precision resistors to the automotive industry for more than thirty years – always meeting the toughest industry-wide and customer-specific quality standards.

- ABS (ANTI-LOCK BRAKING SYSTEMS)
- TRACTION CONTROL
- ACC (ADAPTIVE CRUISE CONTROL)
- ELECTRIC POWER ASSISTED STEERING (EPS/EPAS)
- ELECTRIC PARKING BRAKE
- ELECTRONIC CONTROL UNIT (ECU)
- BATTERY MANAGEMENT SYSTEMS (BMS)
- FUEL CELLS
- SELECTIVE CATALYTIC REDUCTION (SCR)
- FUEL INJECTION (DIESEL AND GASOLINE)
- CLIMATE CONTROL
- TRANSMISSION CONTROL UNIT (TCU)



DID YOU KNOW?

Every car in Europe has at least one of our resistors on board. Also, our measurement modules are an integral component in the battery management system of the biggest electric vehicle producer in the world.

SOME OF THE PROBLEMS WE SOLVE.

We're the right partner for precision measurement where space is at a premium. Our advanced shunt technology is specifically designed for this type of application. Our products meet the highest requirements in terms of temperature coefficient (TC), thermal EMF, long-term stability, inductance and load capacity. In addition, they comply with RoHS directives and AEC-Q200 standards.

LONG-TERM STABILITY

Long-term stability is an extremely important characteristic for a current sensing resistor. Even after many years of service, it is essential that users can rely on the original calibration. Resistance materials must therefore be stable against corrosion and invulnerable to any metallurgical change in structure or state.

Our MANGANIN®, ZERANIN® and ISAOHM® alloys have a homogenous mixed crystal structure, which makes them the ideal material for these applications. The alloys are carefully annealed and stabilized, and are therefore supplied in their thermodynamic ground state. As a result, they all have resistance stability ratings in the range of ppm per annum. This is why our alloys have proved themselves for decades in current sensing resistors worldwide.

TEMPERATURE DEPENDENCE

The temperature dependence of our resistors is mainly determined by our precision resistance alloys MANGANIN®, ZERANIN® and ISAOHM®. In many cases, however, low-ohmic resistors suffer from significant influences of the termination, which is why the sense voltage should be measured via a four-terminal measurement.

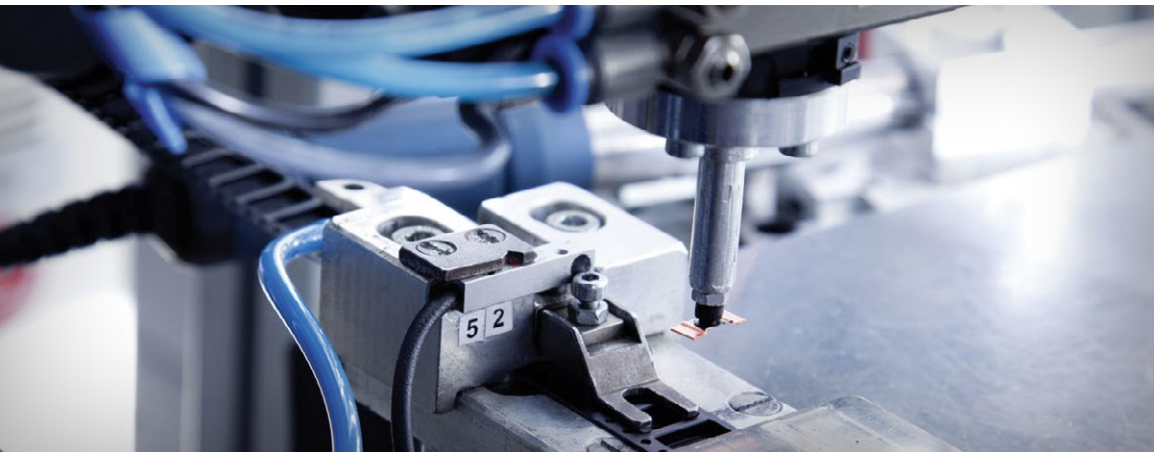
HIGH-LOAD CAPACITY

Due to the fact that the thermal conductivity of resistance materials is relatively low compared to copper and the resistor foil thickness is small (in the region of 20 to 150 µm), it is not possible to conduct the heat out of the resistor via the resistance material into the terminals.

For this reason, the resistance foil on our ISA-PLAN® resistors is bonded to a metal substrate with good thermal conductivity (copper or aluminium) using a thin adhesive that is also thermally conductive. This enables effective discharge of dissipated heat via the substrate and terminals. The result is a very low internal heat resistance, typically in the region of 10 to 30 K/W.

Our resistors can therefore be used at their full rated power up to a very high terminal temperature. That is, the derating point on the power derating curve is very high compared with other products. At the same time, the maximum temperature in the resistance material is kept low, thereby significantly improving long-term stability under load.

YOU CAN EXPECT MORE FROM US.



Perhaps you haven't heard of us, but Isabellenhütte is one of the most trusted partners to the automotive industry. Because of our extensive experience and performance history, OEMs and tier-one suppliers utilize our solutions to help solve their most difficult electrical and environmental design challenges. There's a simple reason why: We engineer our components and materials not just to meet your specifications, but to expand the boundaries of what's possible and exceed traditional quality limits. What's more, they are backed by the expert technical support required to ensure successful implementation.

WHAT DRIVES US?

We believe that imagination and innovation are the fuel for forward progress. We are intensely focused on our customers and their challenges. Always looking for new possibilities and ways to help you win. We remain undeterred by the barriers that stop others. Relentless in our effort. Aiming to continuously take technology to the next level. Supplying products that perform beyond expectations. Also applying our expertise to help people whenever and wherever we can. And defining ourselves by our customer support as much as by our products. Trust, ultimately, is the byproduct.

ISABELLENHÜTTE.
A NAME YOU SHOULD REMEMBER.

Isabellenhütte has a 500-year history. Seems impossible, right? But it's true. There are records that take us back to 1482. The company became Isabellenhütte in 1728 and has been owned since 1827 by the Heusler family. This exceptional history makes Isabellenhütte one of the oldest family-run industrial companies in the world. But at the same time, we're one of the most modern – by always keeping ahead of customer needs. What began over 500 years ago with the smelting of copper has developed into a high-tech provider of international importance.

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