



# **AUTO**MOTIVE

**FOR MANUFACTURERS AND SUPPLIERS  
FROM RESEARCH TO SALES**

**SGS**

# ONE BRAND – ONE COMPANY



SGS is the world's leading inspection, verification, testing and certification company.

SGS is recognised as the global benchmark for quality and integrity. With more than 70,000 employees, SGS operates a network of over 1,350 offices and laboratories around the world. SGS provides solutions across all industries. Through a unique global network SGS delivers independent results tailored to the precise needs of the industry or sector. Founded in 1878, the company is headquartered in Geneva. Since 1920, SGS has been operating in Germany.

SGS Group Germany provides inspection services for international trade, industrial goods, agriculture, the extractive industry and the consumer goods industry. The company works for producers and traders, governments and businesses, for suppliers and consumers alike.

**INSTITUT  
FRESENIUS**

As one of the leading providers of chemical laboratory analysis in Germany, **SGS INSTITUT FRESENIUS** has a strong reputation among manufacturers, consumers and retailers in particular with regard to the security and quality of food, beverages and consumer products.

**SGS  
TÜV  
SAAR**

SGS Group Germany and TÜV Saarland e. V. support the industrial progress in Germany. United in the joint venture SGS-TÜV Saar, they represent technical competence, productivity and speed to market.

The services of **SGS-TÜV Saar** focus on ensuring quality and uncompromising security of facilities, vehicles, products or processes as well as providing new solutions for the future: functional security, homologation or e-mobility.

**ONE BRAND – ONE COMPANY**

**WHETHER WORKING WITH SGS OR ONE OF ITS SUBBRANDS SGS INSTITUT FRESENIUS AND SGS-TÜV SAAR, YOU WILL ALWAYS BENEFIT FROM THE ENTIRE NETWORK AND EXPERIENCE OF SGS. SGS: THE SYNONYM FOR RELIABILITY, SECURITY AND QUALITY.**

**YOU CAN FIND A COMPLETE OVERVIEW OF OUR RANGE OF SERVICES FOR THE AUTOMOTIVE SECTOR AT [WWW.AUTOMOTIVE.SGS.COM](http://WWW.AUTOMOTIVE.SGS.COM)**



## **SGS – GLOBAL AND LOCAL YOUR EXPERIENCED BUSINESS PARTNER ALONG THE ENTIRE VALUE CHAIN**

SGS – an experienced business partner for the automotive sector. Worldwide, SGS is the leading global company and international business partner for many companies in the areas of inspection, verification, testing, and certification. Our unrivaled expertise in this core business is based on more than 130 years of experience. Since 1878, we have been testing and evaluating all types of raw materials, products, and services for our customers worldwide.

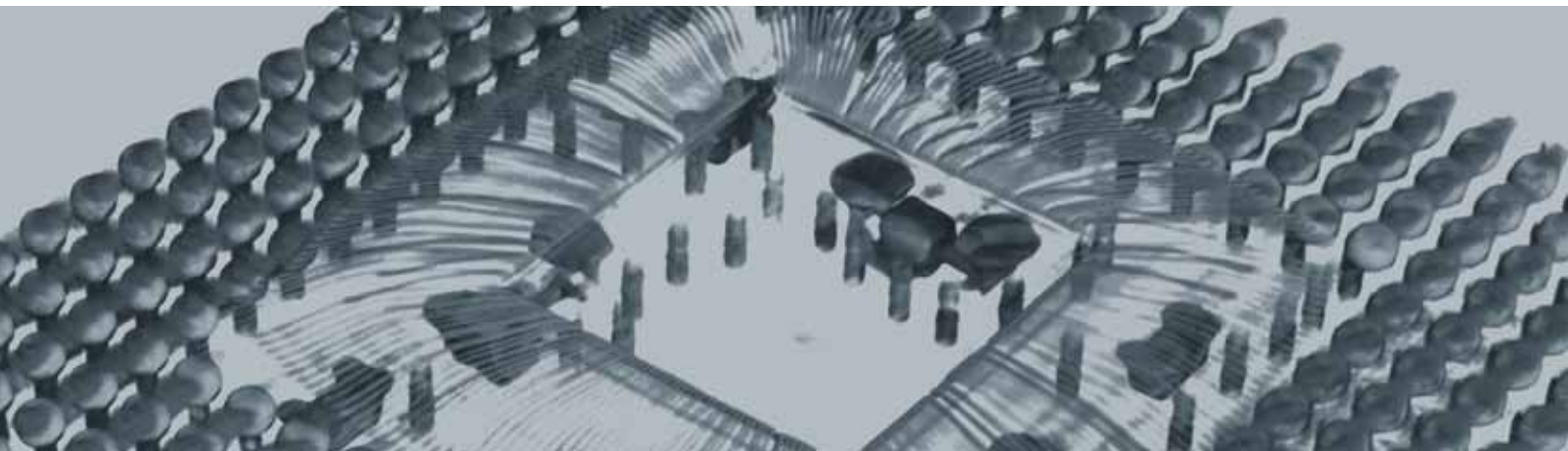
We support our customers by optimising every step, from technical processes to business management systems.

As such, we set globally accepted benchmarks for quality and integrity. With over 70,000 employees, we operate a global network of more than 1,350 offices and laboratories. When you work together with a business partner who supports you along the entire value chain with a wide range of specialised services, the results are outstanding and you can concentrate on your core business.

### **AUTOMOTIVE SERVICES**

- From raw materials to end products
- From research to sales
- From the production line to the showroom

**VERIFICATION, TESTING, CERTIFICATION – NEUTRAL AND INDEPENDENT**



## R & D SUPPORT / FAILURE & DAMAGE ANALYSIS

Quick model changes, complex production processes, the application of modern technology, and new types of materials and their combinations are factors that characterise the automotive and supplier industries. Due to the innovative pressure placed on the manufacturers and suppliers, safety and quality requirements are permanently on the rise. Hence, your company's competitiveness depends significantly upon how you fulfil these requirements during development and production.

Manufacturers and suppliers trust our team of experienced engineers and scientists from various disciplines to solve these complex technical issues.

### SOLUTIONS

SGS provides you with support during the development stage. We investigate the causes and address the actual origin of the failure. We also analyse latent deficiencies and errors that may lead to potential damages.

With our experience, we meet your individual requirements for the development of new verification, testing, and analytical procedures.

Our approach to quality assurance in the research and development of vehicles and components is: Prevention instead of recall.

### INTERDISCIPLINARY FIELD

- Materials science
- Damage simulation
- Physics, chemistry, mineralogy, biology
- Engineering
- Surface technology
- Electrical engineering, electronics
- Process technology
- Materialography
- Surface analysis
- Test engineering
- Physical and chemical material analysis

### DIVERSE TESTS AND ANALYSES

We offer individual and routine inspections of material, media and component for chemical composition, structure and microstructure, topography, coatings, surface chemistry and contaminations, mechanical parameters and 3D dimensions, as well as numerous other analyses. These are based on the norms and standards and/or delivery specifications and the non-standardised special methods of the automotive sector.

Your business partnership with SGS will give you access to all modern preparation, testing, and analytical procedures.

For example

- Materialographic preparations including thin sections and microtome sections of material, and components of all types
- Practically all light microscopy methods in incident and transmitted light
- Environmental Scanning Electron Microscopy (ESEM) with energy dispersive X-ray microanalysis (EDX)
- Optical Emission Spectroscopy (OES)
- Glow Discharge Optical Emission Spectroscopy (GDOES)
- Time of Flight Secondary Ion Mass Spectroscopy (TOF-SIMS)
- Additional surface analysis techniques such as AES and XPS
- Laser profilometry (UBM)
- X-ray diffractometry (XRD)
- Infrared spectroscopy (FT-IR, ATR, and Micro IR)
- High resolution 3D computed tomography and radioscopy
- Ultrasonic microscopy (SAM) and immersion technique
- Different types of mechanical tests

These analyses and procedures safeguard you and your products in research and development, and in fault and damage analysis.

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## MATERIAL & COMPONENT TESTING

The automotive industry places high demands on the safety and quality of the modern material it uses. Manufacturers want to continuously improve products and components and, ultimately, end consumers expect the same. The prerequisite for this is the constant verification of parts and system components. From raw material to end product, from development to production, only the close cooperation between the automobile suppliers and qualified, independent testing laboratories can ensure that the automotive manufacturers' requirements are met.

### THE AUTOMOTIVE TESTHOUSE

SGS INSTITUT FRESENIUS provides all of the crucial sampling tests from a single source. Our range of services comprises content analysis, identification, simulations, properties and durability tests. We also offer testing and project planning during development, initial

sample tests and series monitoring up to the evaluation and interpretation of results. The Automotive Testhouse is the interface and neutral partner between the supplier and OEM. Automobile manufacturers around the world value our expertise. The numerous OEM approvals and recommendations reflect our excellent reputation.

The following is an abstract of our testing capacities

### EMISSION TEST

- Chamber tests, e.g. BMW GS 97014-2 and -3
- Tedlar bag up to 2000 L, e.g. Nissan M0402-01 and -02
- VOC FOG (TDS), e.g. VDA 278
- Odor test, e.g. VDA 270

### CHEMICAL AND PHYSICAL TESTS

- Burn test, e.g. FMVSS 302
- IR with ATR, e.g. BMW TL 9174074
- Odor test, e.g. VDA 270

### DURABILITY TEST

- Cross section adhesion test, cross cut test, scratch test, e.g. DIN EN ISO 2409
- Crock meter test, e.g. DIN EN ISO 105-X12 and Abrex tests, e.g. BMW GS 97034

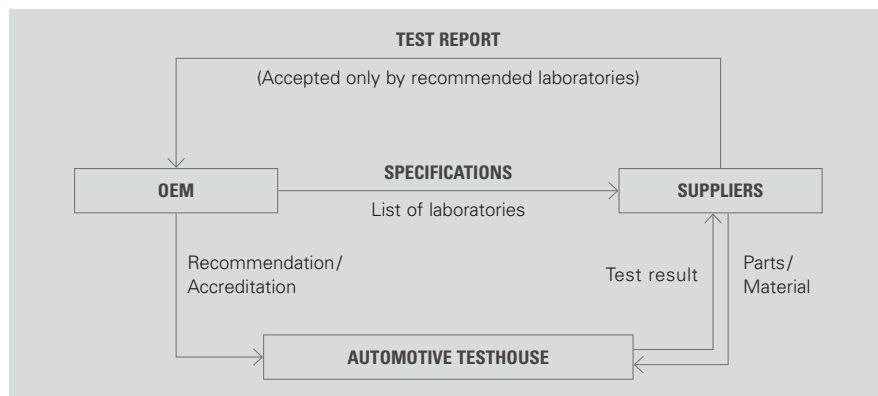
### MECHANICAL TEST

- Tensile and wear tests, e.g. DIN EN ISO 527-1 to -5, DIN EN ISO 1798
- Impact test: Charpy, Izod, Dynstat, e.g. DIN EN ISO 179-2
- Bending test, e.g. DIN EN ISO 178

### WEATHERING AND AGEING

- Solar simulation: Up to 8 m<sup>3</sup> with testing chambers, e.g. DIN 75220
- Xenon tester: Light fastness and ageing test, water and air cooled, e.g. DIN EN ISO 105-B06
- Climate tests up to 70 m<sup>3</sup>, e.g. BMW PR 303.5

We would be glad to provide you with services beyond these tests.



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## RELIABILITY & ELECTROMAGNETIC COMPATIBILITY (EMC)



### ENVIRONMENTAL SIMULATION AND EMC TESTS

In our laboratory in Munich, which spans more than 5,000 square meters, we test reliability and EMC of electronic and electro-mechanical vehicle components. We cover the entire range of requirements of the international standards (e.g. CISPR 12, 25, ISO 16750), CE requirements (e.g. EN 12895, EN 13309), and specific manufacturer standards (e.g. BMW, VW, PSA, GM).

Our laboratory is DIN EN ISO/IEC 17025 accredited and has been designated as a Technical Service of the Federal Motor Transport Authority (KBA). This enables us to carry out tests for awarding the E-/e-mark.

### ELECTROMAGNETIC COMPATIBILITY (EMC)

Our laboratory provides you with expert inspection engineers and excellent facilities. You will benefit from the 40 years of experience of our EMC testing laboratory.

In our shielded measurement cells and absorber chambers with stripline, GTEM/TEM cell, pulse generators, EM scan, time-domain measurement set-up, and CAN bus monitoring, we test

- Electrical components
- Complete vehicles up to 50 t and 12 m long
- Fork-lift trucks
- Earthmoving machinery
- Agricultural and forestry machinery
- Charging stations according to EN 61851-x (also product safety)
- Electric vehicles with their high-voltage components and charging systems
- Fuel cells
- Aftermarket equipment (EN 50498)

We provide support to manufacturers and importers of many industrial sectors. In addition to automotives, we also qualify medical technology, railway technology, aerospace (e.g. MIL, DO 160, VG), and others. As a result, you receive tests for several areas of application from a single source.



## RELIABILITY/ENVIRONMENTAL SIMULATION

We have the technology you need:  
Around 30 climatic chambers between 0.1 and 70 cubic meters volume for climate and temperature change tests in the range between -90°C and +250°C, five electrodynamic shakers with insulated cover and a thrust of up to 300 kN, and facilities for corrosion protection class. These provide for standard tests (e.g. according to IEC 60068-2-xx) and special automotive tests, such as

- Climate tests (temperature, humidity), constant or cyclical, temperature shock
- Mechanical tests (vibration and shock at temperature)
- Highly Accelerated Life Test (HALT)
- Corrosion tests (single or multiple component corrosive gas, salt spray, Kesternich test)
- IP protection class tests, leak tests
- Splash water
- Artificial sunlight
- Qualification of connectors and connection technologies (press-fit, crimp, IDC)

The SGS test laboratory creates and adapts test configurations for you. We monitor the operation of the test specimens during the individual load tests.

## CONSULTATION AND SIMULATION

In addition to development, we also provide

- EMC consultations
- Layout reviews
- Translations of abstract life cycle requirements into concrete test scenarios



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## ELASTOMERIC & POLYMERIC MEDIA STORAGE



At SGS Automotive Testhouse, we test everything that is related to elastomer and polymer analytics, from raw material to finished product, which is significant for automotive suppliers. Natural and synthetic rubbers, special products like silicone rubber or thermoplastic elastomers from the plastics sector – in our laboratory we test everything you wish to install in your vehicles. Our aim is to maximise your business success. SGS has been developing and carrying out customised analyses for many years. We devise concrete solutions for each of your requirements. We have the comprehensive technical expertise and a global network of modern laboratories.

In the field of elastomers and polymers, we specialise in media and in the testing of the compatibility of different materials with media. SGS is your partner for long-term analytics. We provide you with support for the time-consuming and intense preparation of endurance tests. All SGS laboratories in Germany are accredited according to DIN EN ISO/IEC 17025, and we always work in accordance with the principles of neutrality and independence.

### OUR SERVICES FOR YOU

- Sample preparation
- Procurement of required media
- Disposal of hazardous substances according to statutory regulations
- Immediate evaluation of intermediate and final results

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## FUNCTIONAL SAFETY

### ISO 26262, IEC 61508, ISO 25119 ETC.

Electronic systems that ensure safety are becoming increasingly important in the automotive sector. Proficiency in these systems, despite their large number and complexity, is an important factor in vehicle manufacturer and supplier success. Therefore, Functional Safety must be considered and integrated into the processes when developing components, systems, and vehicles. This is how you can ensure that your products meet the state-of-the-art technology and prevent product liability claims.

SGS-TÜV Saar trains, advises, tests, and certifies. We are your partner when it comes to assessments, audits, and complete safety analytics. We also provide you with support regarding the functional safety of ECE regulations, such as the statutory regulations for brakes and steering systems.

### TRAINING

You and your employees can benefit from the practically oriented seminars and workshops, which provide you with detailed insights into the standards and their requirements.

You can choose from

- Open training programmes, where the modular structure enables you to compile a programme that meets your requirements.
- In-house training programmes, which are customised to meet your company-specific needs.

To further enhance your training, we offer an individual programme to qualify you as an AFSP and/or AFSE (Automotive Functional Safety Professional/Expert).

### CONSULTATION

At every stage of the safety life cycle of your products, you can consult SGS-TÜV Saar for the complete range of Functional Safety services, e.g.

- Normative requirements
- Development of process and organisation structures (FSM)
- System, hardware, and software development
- Integration into the entire product
- Interface management

### TESTING / CERTIFICATION

As an accredited testing laboratory for Functional Safety, we evaluate your concepts, systems, products, and processes. We prepare concepts, technical reports, certifications, and test marks.

Tasks we can carry out for you

- Assessment of systems, software, development tools, and hardware
- Safety assessments and audits
- Certification of components, systems, and processes

### SAFETY ANALYTICS

When you develop a system aligned to safety, you undoubtedly need analyses. This enables you to discover possible weaknesses right at the development stage, to understand the sequence of effects, and to identify faults.

Our experts provide you with valuable know-how in all standard analysis methods such as FTA, FMEA etc.



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## OIL, GAS & CHEMICALS SERVICES

Fuels, lubricants, and operating liquids have a crucial influence on the function and quality of a motor vehicle.

With SGS laboratory services, you can be sure that the entire range of analyses of fuels, lubricants, and service liquids for the automobile sector is checked. This analysis spectrum also includes components such as oil filters. We can test elastomers for you as well (see page 7).

Worldwide, SGS is the right place for a detailed examination of all types of fuels, lubricants, or for the process media with which they come into contact.

Standard tests are routine for us. Nevertheless, for you, SGS experts can also work out complex solutions.

### FUELS

- Diesel Fuel (EN590)
- Gasoline (EN228)
- Synthetic fuels (GTL, BTL)
- Biofuels (FAME, bio-oils); (EN 14214)
- Automotive Gas (LPG, CNG); (EN 589)

### LUBRICANTS

- Engine oils
- Transmission oils
- Hydraulic oils

### FLUIDS

- NOx-reduction agent (ISO 22241-1)
- Engine coolant
- Windshield washer fluid
- Brake fluid

### ENGINE TEST BENCHES

On the SGS test benches for motor vehicles and engines, we can determine the condition, quality, and effect of the fuels and lubricants you are using. We offer

- Air-conditioned vehicle test benches
- Dynamic and stationary engine test benches
- Modern exhaust gas analysis technology

### YOUR BENEFITS

- High reliability of test results
- Independent testing laboratory
- Autonomous project management
- Access to the international analysis and know-how network of SGS
- Cost efficiency through complete solutions
- High flexibility

Our laboratories are accredited according to DIN EN ISO/IEC 17025.

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## CHEMICALS SERVICES FROM OGC

Vehicle manufacturers and their suppliers depend on products from the chemical and petro-chemical industries. Many products are developed specifically to meet the demanding requirements of the vehicle manufacturing industry and must be tested and certified against extremely stringent criteria.

There is a close collaboration between our two centres of competence for fuel and lubricants, as well as for chemistry. That is why we can offer you valuable services across the entire value chain: consultancy and analyses, inspections, and training. These cover everything from raw materials to finished products, from the development phase to the ongoing operation of a motor vehicle.

## R&D AND QUALITY ASSURANCE

The analyses carried out by SGS in conjunction with our consultancy services will help you with your research and development activities. Using our vast expertise, we can support you in the development of component groups, drive assemblies, components, and individual parts. By working with SGS Oil, Gas & Chemicals Services, you can reduce your time spent on research and your costs. You will also optimise the quality of your products and increase their reliability, all in the interest of your customers.

Our services include

- Comprehensive testing of chemical fibres and non-woven products, such as felts
- Chemical and physical tests relating to biodegradability, explosive properties, etc.
- SEM analyses of decomposition products, filtrates, and other constituent elements

We are one of the world's leading service providers for everything in connection with petrol, diesel, gas, and lubricants. We can

- Analyse every type of fuel and lubricant
- Take fuel and lubricant samples from all over the world and prepare global and local surveys from the data acquired
- Improve your products and their performance through failure analysis

## COMPREHENSIVE SERVICE

As a trusted partner, SGS is always there to help with complex questions regarding different sectors and products, and with the consultancy and training of your staff. As seen in the automotive industry, we also have a global network – and we're flexible too. For example, SGS operates a mobile gas extraction station for sampling petrol stations – the only one of its kind in the world.

Whether inspection services or fuel surveys for global fuel analysis; distribution networks or physical and chemical analysis; consultancy services for raw materials, component suppliers, or automotive manufacturers – SGS Oil, Gas & Chemicals Services are on your side from the oil rig to car delivery.

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## TESTING & APPROVAL SERVICES FOR LITHIUM ION BATTERIES

### BATTERY REQUIREMENTS

The battery is the key component for the propulsion of electric vehicles. The performance, safety, and durability of the high voltage storage must meet the requirements necessary for the battery's use in the automobile.

### THE PROOF

Extensive qualifications are necessary in order to be sure to comply with the performance requirements. As a recognized partner of the automotive and industrial battery industries, the Munich laboratory of SGS Germany possesses all of the necessary testing verifications. The customer benefits from the ISO 17025 accreditation of the laboratory and its long-standing practical experience with lithium ion batteries. Our over 30 years' experience in working with the requirements of automotive manufacturers is the basis for our comprehensive testing service using the latest testing equipment.

### COMPREHENSIVE TESTING FACILITY FOR HEV BATTERIES

- Characterisation/performance
- Impedance, energy efficiency, SOC, driving cycles
- Durability (fully-automated testing for BEV/(P) HEV)
- Calendric/cyclical (electrical, thermal, combined)
- Comprehensive facilities for environmental assessment
- Temperature, humidity, condensation
- Vibration, shock (300kN shaker, also across different temperatures)
- Immersion, salt mist, corrosion
- IP tests, spray, splash, wave water, dust
- Transport with height simulation (altitude)
- EMC laboratory for EV and HEV-batteries
- Safety/abuse tests in five special rooms
- Nail penetration, crush
- Drop test/stack test
- Crash, rollover
- Overcharging, over-discharge, rapid charging
- External short circuit
- Thermal stability, simulated fuel fire
- High-voltage safety, isolation (ISO 6469, UN ECE)

### FROM THE CELL TO THE BATTERY SYSTEM

Whether cells, protection circuits, battery-management systems, modules, or battery packs, SGS provides testing to the OEM's specifications and established standards.

- ISO (ISO 12405, ISO 26262, ISO 16750, ISO 62660, and others)
- IEC (IEC 62133, IEC 60086, IEC 61960, IEC 62281, and others)
- UN ECE (ECE R 10, ECE R 100) from the current status to the latest revision
- UN 38.3 (UN 3480), ADR
- SAE (SAE J2464, SAE J 2929 and others)
- SANDIA, FreedomCAR, BATSO
- QC/TT, JIS
- VDA and others



#### **DO YOU NEED PROOF OF COMPLIANCE WITH THE EUROPEAN DIRECTIVES?**

We can help you in providing the proof necessary in order to meet the

- Low Voltage Directive (LVD, 2006/96/EG)
- General Product Safety Directive (GPS, 2001/95/EG)
- Radio Interference of Vehicles Directive (Automotive EMC 2004/104/EG)
- Directive for the Approval of Motor Vehicles and their Components (2007/46/EG) and others

#### **SHOULD YOUR PRODUCT BE INTRODUCED ON THE GLOBAL MARKET?**

We can support you with economic qualification concepts and the global SGS network.

#### **MEETING THE CHALLENGES OF ELECTRIC MOBILITY**

SGS experts actively take part in standardisation. Testing and consulting services are tailored to the rapid technological changes found in the field of electric mobility. The testing standards deliver sharp increases in electricity and allow for a comprehensive diagnostic of devices. These can be quickly adapted to the device in order to meet the demanding specifications.



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## E-MOBILITY

### MOBILITY UNDER VOLTAGE

We help make electric mobility safe. We are there for you along the entire electric mobility value chain offering advice, testing, certification, or homologation of your components, systems, and vehicles from a sole provider: SGS-TÜV Saar.

We support you with our expertise at the product development stage, and we inform and advise you with regard to normative and statutory requirements. You can further benefit from our functional safety and homologation services.

Once you begin developing your products, we can assist you in this process with our testing services. We qualify components and entire systems, and test lithium ion batteries from individual cells up to the entire system. Homologation and certification services from SGS-TÜV Saar make it easy for you to bring your products to the target markets.

We provide you with advice during the entire life cycle of your products and in every aspect of electric mobility.

### CONSULTATION

- Risk analysis and risk assessment
- Normative and statutory requirements
- Individual approval and homologation
- Safety concept
- Product safety
- Work safety

### LITHIUM ION BATTERIES

We have test facilities for qualifying your battery system – from the cell to the entire system.

- Electrical safety
- EMC
- Misuse, accident, immersion
- Performance
- Calendric and cyclic life
- Environment (temperature, vibration, shock, salt spray, corrosive gas, IP)
- UN transport test (38.3)

We qualify your components, systems, and vehicles on the basis of statutory requirements and other standards.

### TESTING

- Environmental simulation
- Product safety
- Electrical safety
- EMC

### HOMOLOGATION

- Preparing technical reports
- Obtaining approvals
- Homologation management

### TESTING AND CERTIFICATION

- Functional safety
- Electrical safety
- EMC

An additional benefit for you: Our accredited services mean better protection against product liability claims, if your components and systems are certified by SGS-TÜV Saar.

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# Alternative Fuel

## ALTERNATIVE FUELS / NEW TECHNOLOGIES

In addition to our services in electric mobility, in the area of alternative drive systems we can also support you by providing services including alternative drive system concepts and new technologies. Specifically, these comprise

- Natural gas (CNG)
- Liquefied gas (LPG)
- Ethanol
- Hydrogen (H<sub>2</sub>)

For motor vehicles powered by natural gas or liquefied gas, our experienced engineers provide all of the approval-relevant services at the component, system, and vehicle level, which are derived from the applicable regulations ECE-R110 or ECE-R67. We can support you in determining the necessary testing work and its implementation for obtaining the necessary approvals.

### TESTING AND CERTIFICATION

- Components
- Systems
- Vehicles

Other alternative fuels, such as ethanol or particularly hydrogen, are considered to be promising energy sources with a potential for saving CO<sub>2</sub>. As with a conventional drivetrain, hydrogen can be converted into thermal energy by a combustion engine or converted in a fuel cell into electrical energy. In connection with an electrical drive, a serial hybrid or range extender concept is developed on the basis of the fuel cell.

### SAFETY CONCEPTS FOR HYDROGEN

- Safety considerations for liquid hydrogen storage (cryogenic) and high pressure hydrogen storage, up to 700 bar as standard
- Development and assessment of safety concepts
- Type-approval procedures of components, systems, and motor vehicles on the basis of Regulation (EC) 79/2009

Particularly in the case of new technologies, it is important to ensure at an early stage of development that the technical requirements of the target markets are met at the time the goods are brought into the market. At this juncture, the current legislation often either lags behind the current state of technology, or the requirements for the new types of technologies are not yet defined.

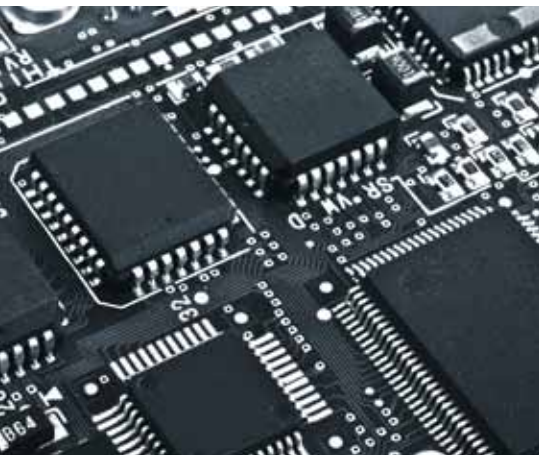
### CONSULTATION

- Identification of trends in new technological and regulatory developments through active participation in committees
- Consultation and assistance with pilot projects for subsequent approvability
- Prototype approval in consideration of the relevant regulations

With our global network and multifaceted laboratory facilities, we can provide the support you need for every stage of the processes of testing and developing your products, from concept to series production. We can also guide you through the required type-approval procedures for a successful entry into the market.



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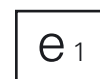
## HOMOLOGATION

Type approvals form the prerequisite for marketing vehicles or vehicle parts in Europe and many other markets around the world. As an accredited and notified Technical Service, we can support you in the acquisition of these approvals on the basis of international (e.g. EC, ECE) or national (German Road Traffic Act) legislation. We are also your partner for evaluating new vehicle concepts and interpreting or applying legislation. We can work together with you to determine the extent of the testing and to carry out the necessary tests. We would also be happy to provide support in the creation of the manufacturer documentation for your different products and markets. The international team of homologation are experts in your regional markets.

Take advantage of our competence as a notified Technical Service to optimise your international market presence.

### OUR SERVICES

- Consultation on technical and statutory requirements for specific target markets
- Interpretations of legislation from European and non-European approval authorities
- Evaluation of vehicles, systems, and components based on more than 300 national (German Road Traffic Act) and international test specifications (EC Directives, ECE Regulations, Taiwan Provisions, etc.)
- Testing for vehicles of Class M (cars, buses), N (trucks), O (trailers), L (motorcycles and light 3- and 4-wheeled vehicles) and Class T (agricultural and forestry vehicles) in the SGS laboratories, as well as in external laboratories, which fulfil the ISO/IEC 17025 requirements
- Approval service with several European and non-European approval authorities (e.g. KBA, NSAI, VSCC)
- Support in the creation of manufacturer documentation for several markets and products



Experts from SGS-TÜV Saar are members of relevant bodies and committees that drive the development of provisions or define the requirements for innovative technologies. We let our customers participate in all of the current trends and developments. In close cooperation with SGS specialists in several disciplines, we can support you in the development of

- New technologies and vehicle concepts
- E-Mobility (electric and hybrid vehicles)
- Hydrogen-powered vehicles
- Fuel cell vehicles
- Gas-powered vehicles (CNG, LPG)

In addition, we can also support you in

- Functional, chemical, and electrical safety
- Battery testhouse
- EMC and environmental simulation

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## AUDITS & MYSTERY SHOPPING, LOADING CHECKS, OFF-LEASE INSPECTIONS/VALUATIONS

In the automotive industry, success is reflected in measured values, especially sales figures, but also through customer satisfaction. Our explicit goal is to secure and promote your business success through our experience, competence, and efficiency. Besides production, other SGS services can also ensure the high quality of your products and services. You can also rely on SGS as a partner in the transportation of your vehicles or in the management of your relationships with your repair shops, dealers, and sales partners.

### REPAIR SHOP AUDITS

You define the quality requirements of your repair shops. SGS checks independently, competently, and absolutely confidentially to see whether these are complied with. You can optimise your processes, create uniform branding, and sustainably enhance the quality of your services.

Examples of criteria

- The image of your business and its employees
- The organisation of the business
- Overall repair shop technical equipment
- Services offered

### MYSTERY SHOPPING

Trust is good but control is better. Would you like to know the extent to which quality standards are implemented in the day-to-day business? Auditors slip into the role of a customer, and test scenarios

from the customer perspective, such as sales meetings or the receipt in the repair shop.

### LOAD CHECKS

We create a precise image of the condition of your vehicles both before and after loading, and at the transfer to and from the transport company – by land or sea.

### VEHICLE VALUATIONS

The leasing market keeps on growing. Its needs are particularly addressed by the SGS expertise and services, which provide, for example, independent vehicle valuations after the leasing period has expired, as well as other innovative solutions. Inspectors around the world inspect and evaluate over 4,000 vehicles daily and more than 2,000 vehicles in Europe alone. They determine the condition of the vehicle according to individual customer requirements or according to accepted standards – such as those of the association of non-captive car fleet management companies (VMF). Processes, guidelines, and evaluation standards are developed mutually by SGS and its customers.

### OUR SERVICES INCLUDE

- Vehicle valuations of an independent audit company through experienced inspectors
- Recording of the vehicle's condition with tablet PCs including high resolution colour images for documenting the condition of the vehicle and possible damage

- Standardised evaluation criteria according to customer requirements or the requirements of the association of non-captive car fleet management companies (VMF)
- Calculation of repair costs and residual values for insurance claims either on a uniform basis or adapted to the regional
- Quick overview of the vehicle's current value
- Acceleration in the marketing of a vehicle in the remarketing process
- Clear and multilingual Internet platform for globally uniform or regionally adapted inspection reports, online statistics, and feedback from your customers
- Electronic data exchange, in which workflow and remarketing software are integrated
- Reduction of your administration costs
- Improved receivables management

You can depend upon a partner with several years of experience in off-lease and remarketing services and one who possesses excellent references.

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## OUR CERTIFICATION SERVICES FOR THE AUTOMOTIVE INDUSTRY

In the automotive industry, innovation and increasing quality requirements are particularly closely connected. Consequently, company processes are becoming more complex. Therefore, it is very important for manufacturers and suppliers to create a management system, use it productively and continue its development.



SGS supports you in this task by certifying your management system. Your benefits are

- You take control of your processes
- You increase the product and service quality
- You create mutual trust between customers and business partners
- You increase the satisfaction of your customers
- You enhance your brand and company image
- You improve your competitiveness
- You penetrate new market and customer segments

SGS possesses vast experience in the certification of management systems in the automotive industry. We audit and certify companies of all sizes along the entire supply chain of this industry.

### ISO/TS 16949

ISO/TS 16949 is based on DIN EN ISO 9001 and includes the requirements of QS 9000, VDA 6.1, AVSQ, IAQF, and international quality management competitions. This standard has created a uniform, globally accepted procedure for certifying management systems in the automobile sector. Meanwhile, ISO/TS 16949 is the “ticket” for being accepted in the automotive supply chain.

### VDA 6.1

VDA 6.1 is intended for the suppliers of German car manufacturers. DIN EN ISO 9001 serves as the basis. Their requirements were enhanced by a few specifications from DIN EN ISO 9004. Furthermore, practical experiences from the automotive sector were included: product safety, corporate strategy, process planning, and financial considerations with regard to quality assurance.

### VDA 6.2

VDA 6.2 generally refers to the service processes. The main target groups are the marketers of vehicles and services in connection with the automobile. Even internal service providers (development, logistics, purchase etc.) can use this standard for continuous improvement.

### VDA 6.4

Like VDA 6.1 and VDA 6.2, VDA 6.4 is also based on DIN EN ISO 9001. It is intended for manufacturers of production equipment, such as manufacturers of tools, machines, systems, devices, and measurement and test setups. It supports the creation of a quality management system and has been the established standard for many years.





### **KBA**

This is the type-approval for vehicles and their components. Not only the manufacturers, but also the authorities in the various EU countries are demanding the introduction of quality management systems.

### **ISO 15504 (SPICE)**

SPICE (Software Process Improvement and Capability Determination) or ISO 15504 describes a model for the assessment of company processes. The main features of this model are the improvement of processes, on the one hand, and the determination of the process maturity level on the other.

### **ISO 14001**

ISO 14001 is a globally accepted standard for the certification of environmental management systems. Developed in accordance with the principles of ISO (International Organisation for Standardisation), it requires you to identify your environmental aspects and consequences and to take measures in improving environmental-relevant processes. The aim is to reduce environmental risks and costs by using energy and raw materials sparingly.

### **DIN EN 16001**

Since 2009, DIN EN 16001 has standardised the EU-wide regulations for energy management systems. Efficient and sustained energy management is a decisive factor in the future of companies, and not just due to its social contribution towards energy and climate policy. An energy management system based on DIN EN 16001 provides you with the support you need in identifying and analysing your potential for saving energy. It also assists in reducing your energy consumption systematically and continuously, and introduces suitable mechanisms for monitoring these processes. SGS-ICS certification demonstrates that your energy management system complies with the standard DIN EN 16001.

### **2<sup>ND</sup> PARTY AUDITS/SUPPLIER AUDITS**

You define the quality requirements for your company or for your dealers and suppliers. SGS checks independently, competently, and absolutely confidentially, and if required, with the help of mystery shopping, to see whether these requirements have been complied with. This ensures homogeneity and permanent quality, while you concentrate on your core business.

### **LEAN SIX SIGMA**

Lean Six Sigma is a method for continuous improvement. It is based on lean manufacturing and other methods, which in turn are based on the ISO/TS quality standard. This method helps you to better utilise the investment made in your quality management. The aim is to improve the quality of your products or services and thus reduce your costs.

**SGS IS THE WORLD'S LEADING INSPECTION, VERIFICATION, TESTING AND CERTIFICATION COMPANY.**

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**WHEN YOU NEED TO BE SURE**

