

# ZF AND PARTNERS – CREATING THE FUTURE TOGETHER

PURCHASING CORE STRATEGY





The collaboration principles described in this brochure apply generally to all suppliers: for the procurement of production materials such as components, assemblies, and systems as well as non-production materials and investment goods. We classify our suppliers, and only those we consider of strategic value for certain commodities are included in the Strategic Supplier List.

**OUR VISION** ZF Purchasing is a worldwide benchmark thanks to its strategic and international orientation. A global network of competent and highly motivated employees and the most efficient suppliers assure an outstanding and continuous contribution to the company's success.

**OUR AIM** is to concentrate on few suppliers to ensure the most profitable conditions considering TCO (Total Cost of Ownership). Order processing is handled electronically and deliveries are made directly to the customer. In this way, we hope to clearly cut inventory costs as well as administration activities for purchasing.



# CODE OF CONDUCT

The collaboration between ZF and its suppliers is based on partnership. Our "Purchasing Core Strategy" brochure lays out the basic principles for this. The goals of our customers are extremely challenging. To achieve these goals and be competitive in the long run, we pursue tough but fair cooperation. ZF has joined the Global Compact and supports international efforts to combat corruption.

Correct, responsible, and sustainable business management as well as compliance with all statutory requirements in the countries in which we operate are indispensable components of ZF's success. Compliance is thus an important element in ensuring the long-term success of our company.

That is what compliance is all about. All employees are called upon to contribute to ZF's success through their own actions. At all times and worldwide. To this end, the ZF Code of Conduct establishes binding principles for all employees of the ZF Group.

This entails the task of preventing misconduct and ensuring that risks to the integrity and lawfulness of our actions

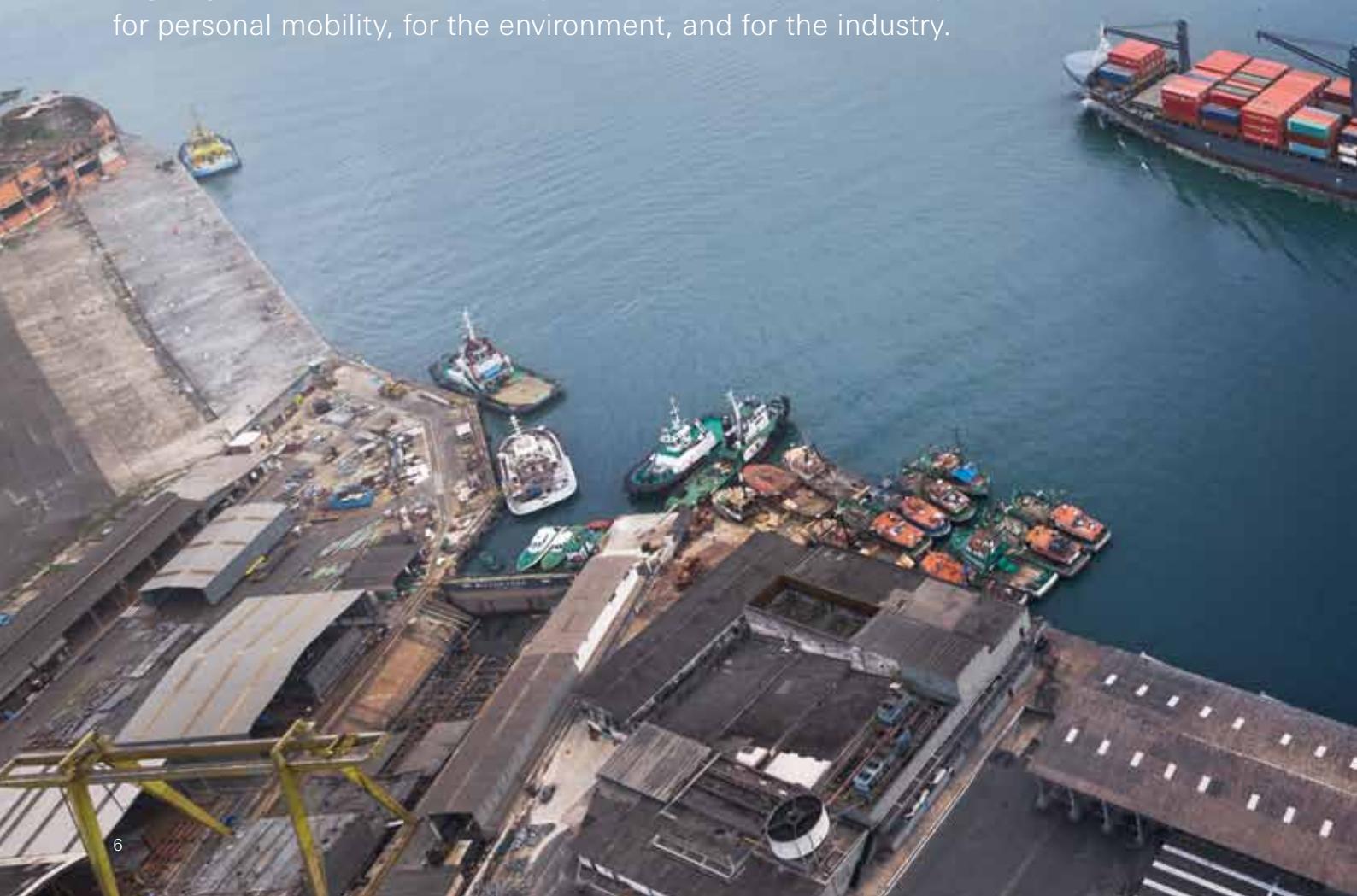
- are identified in advance and in time,
- are prevented through suitable measures,
- are correctly responded to in case such risks materialize, and, subsequently,
- the task of identifying the causes in order to prevent recurrence.

The ZF Compliance Management System creates the framework for meeting these requirements. The ZF Group's Compliance Organization supports employees in case of questions.

ZF also expects its business partners to act according to these principles and has therefore developed a code of conduct for business partners.

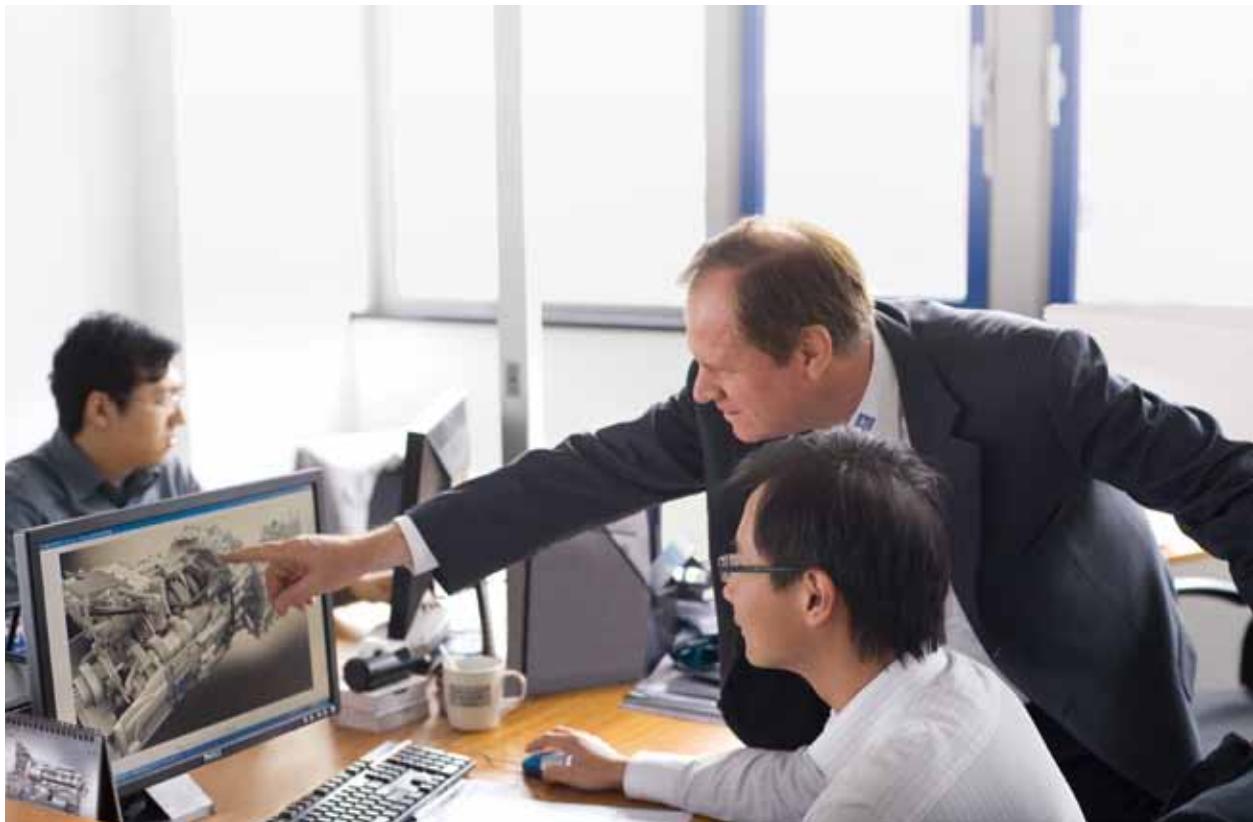


Global megatrends have a considerable influence on today's businesses. As a responsible multinational company, ZF is today aligning itself to what will be important tomorrow – for society, for personal mobility, for the environment, and for the industry.





# DEVELOPMENT



The supplier is an integral part of our development team. Early supplier involvement will help shorten development times and reduce costs. A further goal is the development of system suppliers.

ZF products are in demand worldwide and must therefore meet the requirements of the respective regions. Our design-to-market approach takes conditions on the market and at the suppliers' into account to ensure that products are designed which facilitate procurement and production.

As part of early supplier involvement, our suppliers are involved in the development of our products already during the design phase. Purchasing as link to the suppliers assumes an increasingly strategic position when it comes to promoting innovations. For this reason, one task is to manage the suppliers' innovations and to make them visible to the company on demand. It is our objective to involve the supplier in the product creation process at an early stage in order to sustainably influence the procurement costs and to increase the company's innovativeness.

Pursuing the approach of Simultaneous Engineering, we avoid work redundancies and preserve valuable capacities. The supplier is expected to bring to the table

his know-how and to take charge of detailed design and engineering work. This will help shorten development times and significantly reduce the costs for development, modeling, tools, and materials.

The purpose of long-term or lifecycle agreements is to ensure that the development supplier supplies the entire volume production series, thus enabling a complete exchange of expertise.

We will be defining the strategic suppliers for our parts families on a worldwide level and will collaborate with them to shape the future. In making this evaluation, however, cost is not the only important consideration. Performance in terms of quality, development, and logistics along with management capability and financial strength of the suppliers are all equally important. About 80 percent of the costs are determined by product design. Together we must establish optimum cost structures to achieve the target prices determined by the global market.

# STRATEGIC COST MANAGEMENT

Cost transparency is necessary to identify cost-driving factors and to optimize cost structures.



We make our decisions based on competitiveness and always consider the total costs within the supply chain. For existing products, ZF will work with the suppliers in interdisciplinary value analysis teams. We want to change from annual price negotiations to on-going, open cost discussions. In doing so, the objective is not to challenge the suppliers' profits, but to identify and eliminate the cost-driving factors caused by both sides in the product and process design and therefore jointly achieve the best cost level.

To choose the right suppliers for Early Supplier Involvement, it is important to understand these suppliers' cost structures and, as far as possible, have an overview of the entire supply chain. Sufficient cost transparency is a prerequisite for determining which suppliers are able to achieve the target costs.

This requires a team environment with the readiness and ability to openly discuss existing and possible cost structures while also creating new ones. We are ready to further bundle our requirements and make long-term

commitments, when possible, to one supplier for each parts family.

The goal is to also maximize the profitability of our suppliers in relation to the global market cost level.

# QUALITY MANAGEMENT

Quality to us means both product quality and the quality of business activities. The common objective is: zero errors.



Our requirements regarding quality management are described in our current QR83 and QR83B Quality Assurance Directive for Purchased Items. The directives are an integral part of our purchasing terms and conditions.

Quality to us means not only delivery quality but also the quality of business activities throughout our collaboration. Within the context of this partnership, suppliers have the opportunity to take an active role in shaping quality principles. The supplier is responsible to ZF for the quality of his services and that of his subcontractors. An effective quality management system based on the guidelines of ISO/TS 16949 [19] is a prerequisite for a supply relationship with ZF. The basis in this respect is ISO 9001 whose certification has to be proven.

One requirement for strategic suppliers in the automotive business is that they are certified according to ISO/TS 16949.

The zero error strategy is realized by means of active quality management supported by a continuous improvement process. To enable this, the supplier must

ascertain the appropriate preventive measures, monitor their implementation, and then document them. We support our suppliers with quality promotion programs where required.

We expect our suppliers to assume responsibility for their products in the complete supply chain. For this reason, they shall consider the warranty agreements signed by both sides.

ZF is committed to protect the environment as well as to save energy. All ZF plants are certified in accordance with ISO 14001 for environmental management as well as ISO 50001 for energy management. We therefore expect our suppliers to voluntarily commit themselves to environmental protection and reasonable utilization of energy.

# SUPPLY CHAIN MANAGEMENT



Extremely short delivery times with great delivery flexibility and compliance with deadlines are criteria that we can meet by using transparent information processes.

In addition to innovative, high-quality products, ZF's supply chain efficiency is becoming ever more a unique selling proposition in international competition. This supply chain efficiency can be described using attributes such as high delivery reliability, very short response time to changing demands, and a high degree of process stability at competitive total costs.

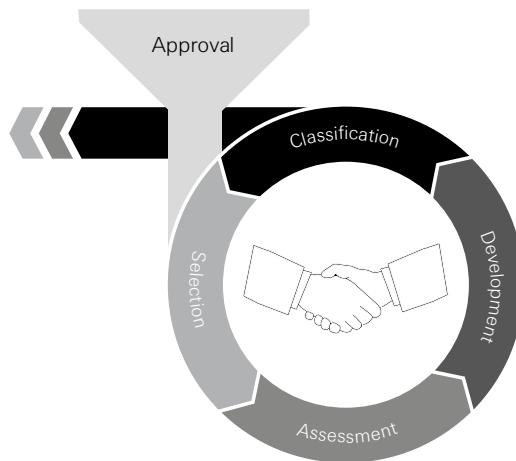
Increased demands on the delivery ability and flexibility shall be realized with minimal inventories in the supply chain. The realization depends on close networking between ZF and the supply chain partners, particularly by providing and transforming all management-relevant data and information to all parties involved in the supply chain in good time. In addition, production-critical supply chains need to be able to continuously monitor supply availability in the face of short-term fluctuations in demand. Here, modern digital communication technologies provide the answer. In its global network, ZF and corresponding supply chain partners actively shape the supply chain. For example, supply chain design and simulations are used

to determine volume and location of unavoidable buffer stocks, joint process FMEAs are done, and emergency strategies for unforeseen events and disturbances are defined.

The standardization and harmonization of ZF's supply chain processes are an important step towards achieving the above-mentioned objectives. In this context, ZF is committed to adhering to common automotive industry standards. If new standards are needed to meet the requirements, they will be introduced to the standardization bodies of the automotive industry, jointly developed, and duly adopted.

# SUPPLIER MANAGEMENT

Supplier development for the systematic optimization of technology, quality, costs, and logistics.



ZF follows a systematic supplier management process within the Group. It consists of the following core processes:

## 1. Supplier registration

A systematic and transparent registration process ensures the selection of the most suitable suppliers for the ZF Group, thus preserving and strengthening the company's own competitiveness. Suppliers are identified and qualified on the basis of their economic, technical, and logistical ability to perform. New suppliers must undergo the Group-wide uniform registration process before they are included in the Corporate "Approved Supplier List" (ASL).

## 2. Supplier selection

The following steps are carried out in order to make a decision on supplier selection:

- Project-specific preselection of suppliers
- Assessment of overall concept (technology, quality, purchasing, logistics)

If no suitable supplier from the ASL fulfills the project requirements, the registration process is initiated (see 1).

## 3. Supplier assessment

The supplier ability to perform is measured by means of a standardized assessment system in order to derive targeted recommendations for improvements. This systematic approach is intended to ensure that purchases are only made from quality-aware, reliable, and skilled suppliers at fair market prices. For an ongoing performance control, KPIs in purchasing, quality, and logistics are determined on a monthly basis. Furthermore, a cross-functional assessment is performed on a regular basis with the following modules:

- Supplier assessment module: Determination of performance in the areas of technology, quality, logistics, and purchasing based on specific criteria
- Risk assessment module: Creation of a risk profile for each supplier based on standardized risk indicators

From both modules, precise initiatives and supplier development strategies are derived according to demand.

## 4. Supplier development

Supplier development is intended to achieve a regular and systematic optimization of supplier performance with regard to technology, quality, logistics, and costs through process and product optimization of the entire process chain in order to therefore satisfy the ZF objectives.



The supplier performance is determined by using KPIs, optimization potential or weaknesses are shown, solution options are discussed together with the supplier, action plans are created, and their sustainable implementation is monitored.

## 5. Supplier classification

The supplier classification is the strategic control tool in supplier management. The classification has direct consequences for the strategic and operational purchasing with regard to the cooperation with the corresponding suppliers. The classification key valid Group-wide is determined by the supplier's class and status. This key is used for controlling all suppliers within the ZF Group.

There are the following types of classes:

- S = Strategic supplier
- A = Accepted supplier
- Z = Phase-out supplier
- U = Unconfirmed supplier

Furthermore, there are the following types of statuses:

- G = Blocked
- D = Develop
- P = Active phase-out

The objective is to assign new orders to "S" suppliers only. Suppliers with the "G" status can generally not receive any new orders.

Supplier risk management and supplier cost management are of high importance as comprehensive topics across all supplier management core processes.

Supplier risk management is the systematic recording, evaluation, and controlling of a wide variety of risks. Supplier cost management is integrated into all supplier management core processes, e.g. in the cost-related evaluation of the cost driver identification or the monetary evaluation of the improvements achieved in supplier development.

# ELECTRONIC TRANSACTION PROCESSES WITH SUPPLIERS

The objective is to use the SupplyOn marketplace to handle supplier transactions better, faster, and with more ease.



The business processes and especially the data exchange with the suppliers are subject to multiple media breaks. To date, ZF and the suppliers manually record information and data, such as calls for delivery, queries, and offers. This is a source of error which causes extra work and time expense. The aim, therefore, is to simplify, improve, and accelerate the transactions with suppliers. The basis for this is the change to an electronic communication system either via classic EDI or via the SupplyOn electronic marketplace ZF participates in.

SupplyOn AG, with headquarters in Hallbergmoos (near Munich), provides an Internet marketplace that is designed to meet the needs of the automotive supplier industry. This Internet platform provides integrated solutions, offering different modules and applications. ZF plans to completely change to electronic communication with the suppliers and has defined specific processes for strategic suppliers which always have to be handled electronically.

The SupplyOn services encompass the following applications: SupplyOn Sourcing enables the request and quotation process to be managed efficiently and provides a structured overview of all requests received and offers made.

The Business Directory is a list of suppliers, in which the current corporate data is stored centrally. Every ZF buyer sees the company data and the entire product

and service portfolio of the supplier. With WebEDI, SupplyOn offers a comprehensive solution which can help non-EDI capable suppliers handle their logistics and financial processes directly via the Internet platform.

SupplyOn WebEDI/EDI makes it possible to optimize logistics and financial processes by enabling a transparent and structured electronic exchange of information on delivery requests, distribution, and payments.

For optimal production planning and to ensure the best possible security of supply, the supplier needs information on ZF's current demand situation.

SupplyOn Vendor Managed Inventory provides this information, making it possible to take over the planning of the customer warehouse.

SupplyOn Document Management provides suppliers with electronic access to standards and other ZF documents. These documents can be viewed online and downloaded. Including all relevant procurement process documents in the pool of accessible documents will make communication with suppliers more efficient and secure.

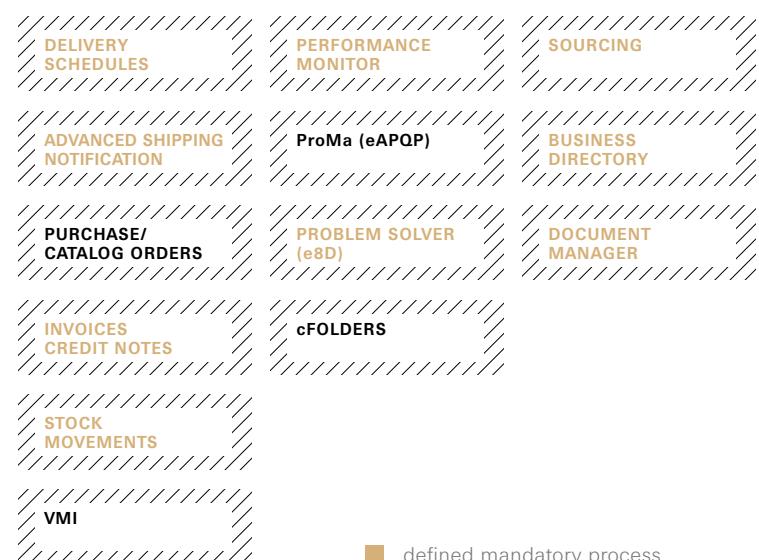
The supplier can access ZF's evaluation of his performance via the SupplyOn Performance Monitor.

Customer complaint handling is an extremely critical process which requires a structured and transparent approach. Applying the 8D Method, the SupplyOn Problem Solver supports this process.



Based on the APQP methodology, the SupplyOn Project Management supports development partnerships with an efficient advanced quality planning tool.

#### SUPPLYON COLLABORATION FOLDERS ENABLES THE SUPPLIER TO ORGANIZE HIS DATA WITHOUT ANY REDUNDANCY



# ZF PRODUCT PORTFOLIO

## Driveline Technology

### Drive Systems

Automatic transmissions and dual clutch transmissions for cars ■ Manual transmissions and automation of manual transmissions for cars ■ Electric drives for cars, CVs, and lift trucks ■ Manual transmissions for CVs, special vehicles, and off-road machinery ■ Automatic transmissions for CVs, special vehicles, and off-road machinery ■ Powershift transmissions, continuously variable transmissions, and synchromesh transmissions for off-road machinery ■ Generator/Hybrid systems for off-road machinery ■ All-wheel drive systems for cars ■ Thrusters and shallow draft thrusters for ships ■ Surface and pod drives for boats ■ Transmissions for boats, ships, aircraft; wind turbine and elevator gearboxes ■ Rotor systems for aircraft and helicopters ■ Drives for mixers, rail vehicles, aircraft, and industrial engineering

### Drive Components

Clutches, clutch systems, and torque converters for cars, CVs, special vehicles, and off-road machinery ■ Active starting systems and dual clutches for cars ■ Front and rear axle drives, bevel gearsets, and differentials for cars ■ Dual-mass flywheels for CVs ■ PTOs for CVs, special vehicles, and off-road machinery ■ Retarder systems for CVs, special vehicles, and construction machinery ■ Control systems for CVs, special vehicles, off-road machinery, boats, and ships ■ Gearshift systems and electronic components for cars, CVs, and off-road machinery ■ Differentials for off-road machinery ■ Transfer cases for special vehicles and off-road machinery ■ Propellers for boats and ships ■ Brakes for industrial engineering ■ Cargo loading system and rescue hoists for aircraft ■ Light-alloy casting control components, transmission housings and inner components

## Chassis Technology

### Chassis Systems

Front and rear axle systems for cars and CVs ■ Adaptive damping systems for cars, CVs, off-road machinery, and motorcycles ■ Tag axle systems for CVs ■ Cabin suspension systems and rear axle suspension systems for CVs ■ Corner modules for cars, CVs, and agricultural machinery ■ Axles and axle components for off-road machinery

### Chassis Components

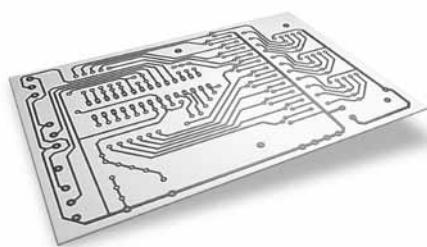
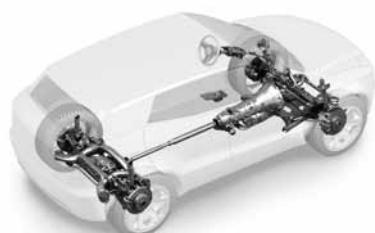
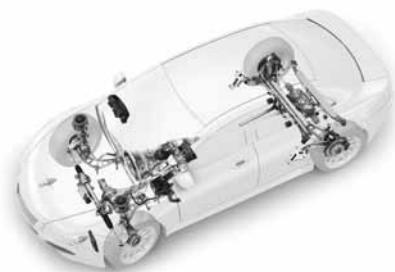
Damper modules and damping systems for cars, CVs, rail vehicles, off-road machinery, motorsports, and motorcycles ■ Powertrain suspension systems and chassis subframes for cars ■ Tie rods, stabilizers, and stabilizer links for cars ■ Links, control arms, suspension joints, and cross-axis joints for cars ■ Wheel carriers and hubs for cars ■ Leveling systems for cars ■ Crash-absorption elements for cars ■ Chassis mounts and precision plastics parts for cars ■ Cabin suspensions and cabin anti-roll bars for CVs ■ Suspension modules, 4-point links, v-links, control arms, and stabilizer links for CVs ■ Torque rods, tie rods, and drag links for CVs ■ Stabilizer supports and suspension joints for CVs

### Steering Systems

Hydraulic and electric power steering systems for cars, CVs, and special vehicles ■ Steering pumps, steering columns, and steering accessories for cars and CVs ■ Rear axle steering systems for CVs and special vehicles

### Electronics and Software

Gearshift systems for cars, CVs, and off-road machinery ■ Control systems for CVs, special vehicles, off-road machinery, boats, and ships ■ Electronic components for cars, CVs, and off-road machinery ■ Telematics systems for cars and CVs ■ Software for cars and CVs ■ Diagnosis tools for CVs ■ Test systems for wind turbines and industrial engineering



# THE ZF GROUP

## Shaping the future responsibly

Our enthusiasm for innovative products and processes and our uncompromising pursuit of quality have made us a global leader in driveline and chassis technology. We are contributing towards a sustainable future by producing advanced technology solutions with the goal of improving mobility, increasing the efficiency of our products and systems, and conserving resources.

Our customers in the automotive and industrial sectors welcome our determined focus on products and services, which provide great customer value. Improvements in energy efficiency, cost-effectiveness, dynamics, safety, and comfort are key to our work. Simultaneously, we are aiming for continuous improvement in our business processes and the services we provide. As a globally active company, we react quickly and flexibly to changing regional market demands with the goal of always providing a competitive price/performance ratio.

Our independence and financial security form the basis of our long-term business success. Our profitability allows us to make the necessary investments in new products, technologies, and markets, thus securing the future of our company on behalf of our customers, market affiliates, employees, and the owners of ZF.

Our tradition and values strengthen our managerial decisions. Together, they are both an obligation and an incentive to maintain a reliable and respectful relationship with customers, market affiliates, and employees. Our worldwide compliance organization ensures that locally applicable laws and regulations are adhered to. We accept our responsibility towards society and will protect the environment at all of our locations.

Our employees worldwide recognize us as a fair employer, focusing on the future and offering attractive career prospects. We value the varied cultural backgrounds of our employees, their competencies, and their diligence and motivation. Their goal-oriented dedication to ZF, beyond the borders of their own field of work and location, shapes our company culture and is the key to our success.

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**MOTION AND MOBILITY**