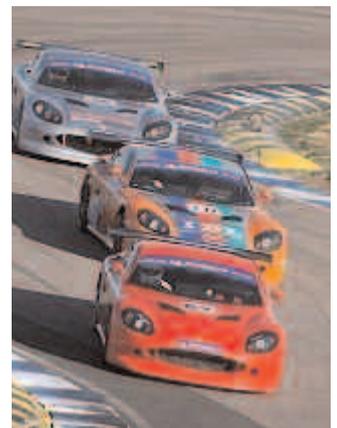


Position
Transducers and
Rotary Sensors
in Automotive
Applications



Novotechnik sensors keep vehicles safely on track, provide intelligent engine power control for environmentally conscious operation and generate signal feedback for optimum gearbox control.

Precision you can trust ... anywhere on earth.

There are countless applications for Novotechnik sensors. For example, our solutions ensure maximum efficiency of large solar and wind power plants. They enable innovative steering of the Human Transporter Segway and assume control tasks in the high-speed ICE 3 train. A large number of mobile machine manufacturers in the agricultural and construction machine industry trust on novotechnik.

Our sensor solutions have traditionally proven themselves in open and closed-loop control systems, automation and monitoring of processes in mechanical engineering and specifically in the field of plastic injection moulding technology. Novotechnik products can also be found in engine management of motor vehicles and in medical technology.

Our sensors are used extensively within the automotive industry to keep vehicles safely on track at their limits and generate signal feedback for optimum gearbox control. They also provide intelligent engine power control for environmentally conscious operation. Even Formula 1 teams put their trust in Novotechnik sensors in the chassis, gearboxes and engines.

For each application the ideal product

We offer our products in many of sizes and versions to best meet the requirements of our customers. As a result, our position transducers are available in an ex-

tremely broad range of designs and in measuring lengths from 5 to 5,000 mm. Potentiometric or contactless models, with various signal outputs, as a complete sensor, as modules or as components.

Our rotary sensors are also available in a wide variety of mechanical configurations from extremely small diameters with very low torque to sealed units in robust aluminium housings. If required we develop together with our customer individual solutions.

Reliability

Our contactless sensors are developed for high EMC protection classes which meet the requirements in automotive applications. In this process, both industry-specific and customer-specific standards are realised. In the potentiometer technology sensors (as passive systems) are very insensitive to electromagnetic influences anyway.

Depending on their technology and design, Novotechnik sensors can be used for temperature ranges from -55°C to $+140^{\circ}\text{C}$. They do not just satisfy standard protection classes up to IP69K, they are also tested for the most demanding requirements, which exceed the pure standard specifications. This also includes the simultaneous influences of temperature, humidity and fluids.

Many series are redundant and are available in SIL classes up to SIL 3. In the area of functional safety, our many decades of experience as a sup-

plier to the automotive industry are especially apparent in safety-relevant applications. The sensors are practice-oriented and are resistant to all occurring media depending on the applications. These also include oil, fuel, saltwater, etc. according to customer specifications.

A special focus is the durability of the sensors when exposed to the shocks and vibrations which occur in motor driven environments.

Quality products

Just how high our quality requirements are is documented by the fact that we were one of the first companies in the world to have its operations certified to ISO/TS 16949. Novotechnik is A-supplier of well-known automotive manufacturers. Our customer Bosch awarded us several times with the "Supplier Award".

More than 40 million sensors without field failures indicate a high reliability.

And at Novotechnik the process that begins with stringent and demanding specifications ends with a 100% inspection of every single product. That way, we can be sure that every product we manufacture works perfectly.

A worldwide network

Today, Novotechnik is represented in all of the world's major markets – be it with our own offices or by approved dealers. Thanks to this tightly-knit network we can ensure that, wherever they happen to be, our customers can rely on first-class service and customer care.

Our partners

In order to guarantee maximum quality, we develop, design, manufacture and assemble the majority of our products ourselves at our sophisticated production facilities in Ostfildern near Stuttgart. Whenever we are unable to make the required product ourselves, we can rely on the support of a selection of proven and renowned partner companies. As a result, we are in a position to fill almost every order of any size from anywhere in the world.

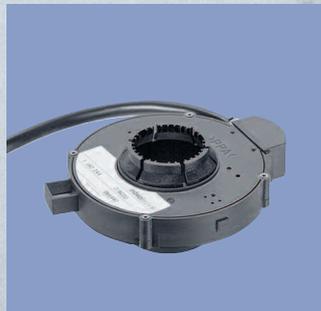


Electronic pedal Sensor

Electronic pedal sensor modules comprise an accelerator pedal, angle sensor and mechanics for simulating the traditional feeling of the accelerator pedal for the driver. When the accelerator pedal is pressed down, the pedal sensor transmits the information to the control electronics. Based on this information, the position of the throttle valve is calculated.

Throttling device E-Gas, Throttling device for idle speed control

The information detected from the pedal sensor are transmitted to the electric motor-driven throttle valve positioner via control and correction electronics. The current throttle valve position is measured by an integrated or adapted angle sensor. The idle controller regulates independent of the load the idling speed of the engine through the throttle position. This leads to an optimised fuel consumption.



Steering-angle Sensor

The steering-angle sensor basically consists of a non-contact angle-measuring device or resistive tracks and wipers. The sensor, which is designed as a hollow shaft, is normally mounted on the steering column or at the steering gear. Today adaptive control systems contribute significantly to increasing driving safety in motor vehicles. These types of control systems improve the transversal dynamic behavior and assist the driver in critical steering maneuvers, e.g. when veering quickly or passing.

Gear selection Sensor

Amongst other things, the gear selection sensor consists of a resistance element and wiper support or a non-contacting sensor. The gear selection sensor has an integrated processor and is used for detecting the position of the gearshift. Since it is a mechatronic system, this sensor comprises mechanical components as an integrated unit (electronically controlled automatic transmission). The gearshift is decoupled mechanically from the transmission. When necessary, the driver can select gears in different gear positions by tapping the gearshift sideways.



Potentiometric sensors

Compact and low cost rotary sensors with integrated connector and restoring spring. Easy mounting and adjustment via robust mounting plates.



Non-contacting and touchless sensors

Contactless magnetic rotary sensors for use in harsh environments. Available in small sizes up to robust heavy duty sensors also in a redundant version.



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Wherever positions and angles need measuring with the utmost precision, sensors from Novotechnik are the first-choice solution. The expertise in measuring technology that we have amassed in the course of 60 years is just one of the secrets behind a success story that began back in 1947:

The other cornerstones of our success include a passion for technology and an obsession with precision and reliability. Then there is our delight in devising solutions, coupled with a fascination with new materials and production methods. And of course there is our constant awareness of the importance of providing sound advice and top-class service, as we strive day-by-day to optimise our measuring systems.

But the true secret of our success has always been our passionate pursuit of the best possible solution for each individual customer application. And to ensure that we remain the first-choice partner for our customers, in future we will be staying focused on the strengths that made us the successful company that we are today.

Leading OEMs from a whole spectrum of industries put their trust in position transducers and rotary sensors made by Novotechnik: be it general engineering, hydraulics, pneumatics, measuring technology, medical technology or automotive engineering. And talking of the automobile industry, every day more than 35,000 of our sensor components are built into new cars.