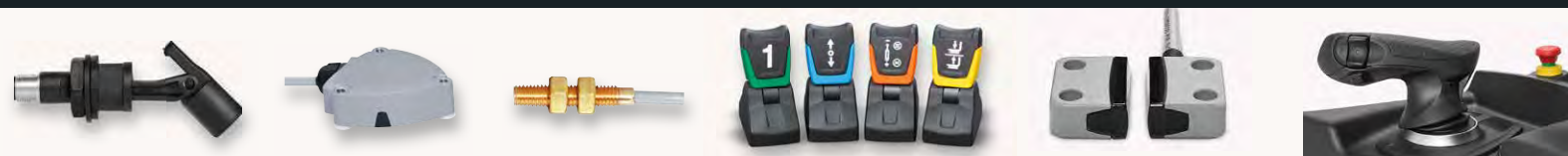


## Product overview



# The company

## Your global partner

As an expanding, globally active, medium-sized family business with more than 600 employees, we develop and manufacture sensor technology and operator interface controls for the industrial machine and off-highway vehicle sectors. Our high-quality products are characterised by a high vertical range of manufacture and are manufactured in a carbon-neutral manner in Germany.

With our innovative, non-contact sensor products, we support our customers worldwide in manufacturing industrial machines and vehicles that set standards in terms of performance, operator comfort, safety and quality.

## Facts and figures

- > Company headquarters in Leutkirch in Allgäu (Southern Germany)
- > Founded 1972
- > 3 production plants
- > 10 sales subsidiaries
- > Executive management: Michael Hetzer, Dietmar Weik, Dr. Thilo Ittner
- > Approx. 670 employees worldwide
- > Represented in 31 countries
- > 77 million euros in sales (2013)



# What makes elobau special?

We are innovative, sustainable and responsible

elobau offers innovative products as well as tailor-made, customer-specific solutions of outstanding quality on an internationally competitive level.

We achieve this thanks to highly qualified employees, in-house production content of greater than 90% with our own tool manufacturing facility and high development competence. The most important development areas are in-house (mechanical design, hardware and software development as well as testing laboratory).

elobau combines success with high ethical standards. As an independent, owner-operated family business, our focus is on people: our customers, suppliers and employees.

Our four business areas guarantee us stability across various markets:

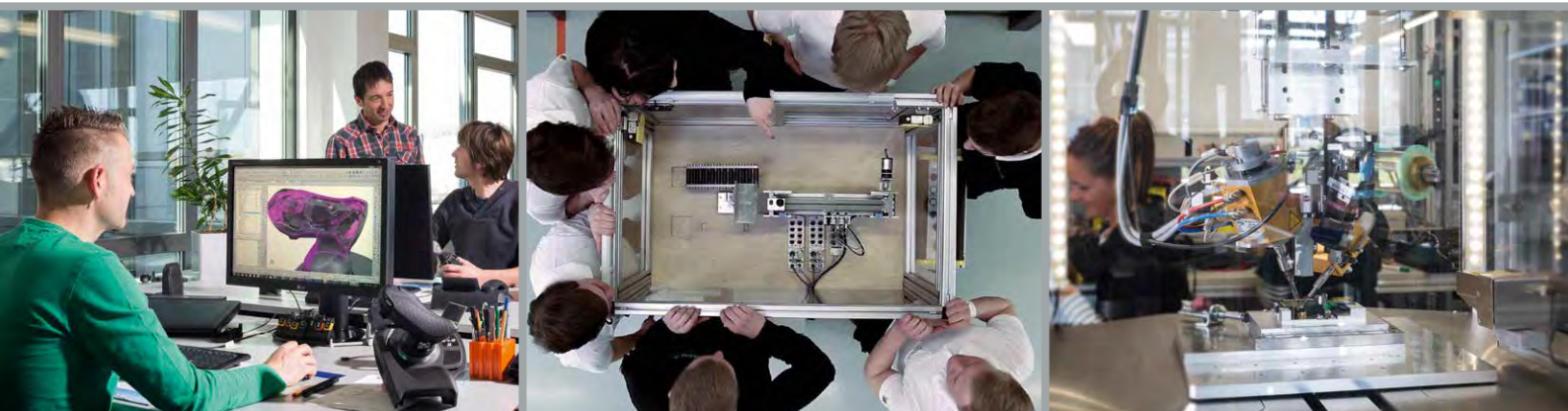
Operator controls

Sensors

Level measurement

Machine safety

We have been manufacturing in a carbon-neutral manner since 2010 and see ourselves as industry leaders in this area.



# Sustainability & ecological responsibility

## Economic success based on sustainability

**elobau goes green.** As an owner-operated company, we are fully aware of our responsibility not only for employees and society, but for the environment as well. Climate change is a fact on which we have set our goal to preserve nature and resources in order to maintain them for future generations.

For us as a company, this means that our focus is not only on immediate goals such as economic development, employment and CSR, but also on sustainability.

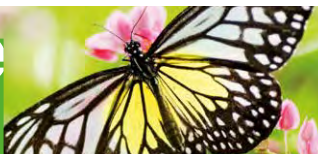
In 2009 we set ourselves the goal of offsetting the CO<sub>2</sub> balance of the company as well as the CO<sub>2</sub> generated during the production. With the "elobau goes green" initiative and the founding of elobau energie KG, we were able to achieve this goal in 2010.

A current energy use analysis is performed for our company every year by an independent assessor.

We continue to work on systematically reducing our energy consumption. The energy that we need is generated from sustainable sources. For example, we draw power from hydroelectric sources and, for heating, use locally sourced biogas, as well as geothermal energy for office buildings. Since 2012 our new buildings are energy-plus, which means they produce more energy than they consume over the course of a year.

You can find more information at [www.elobaugoesgreen.de](http://www.elobaugoesgreen.de)

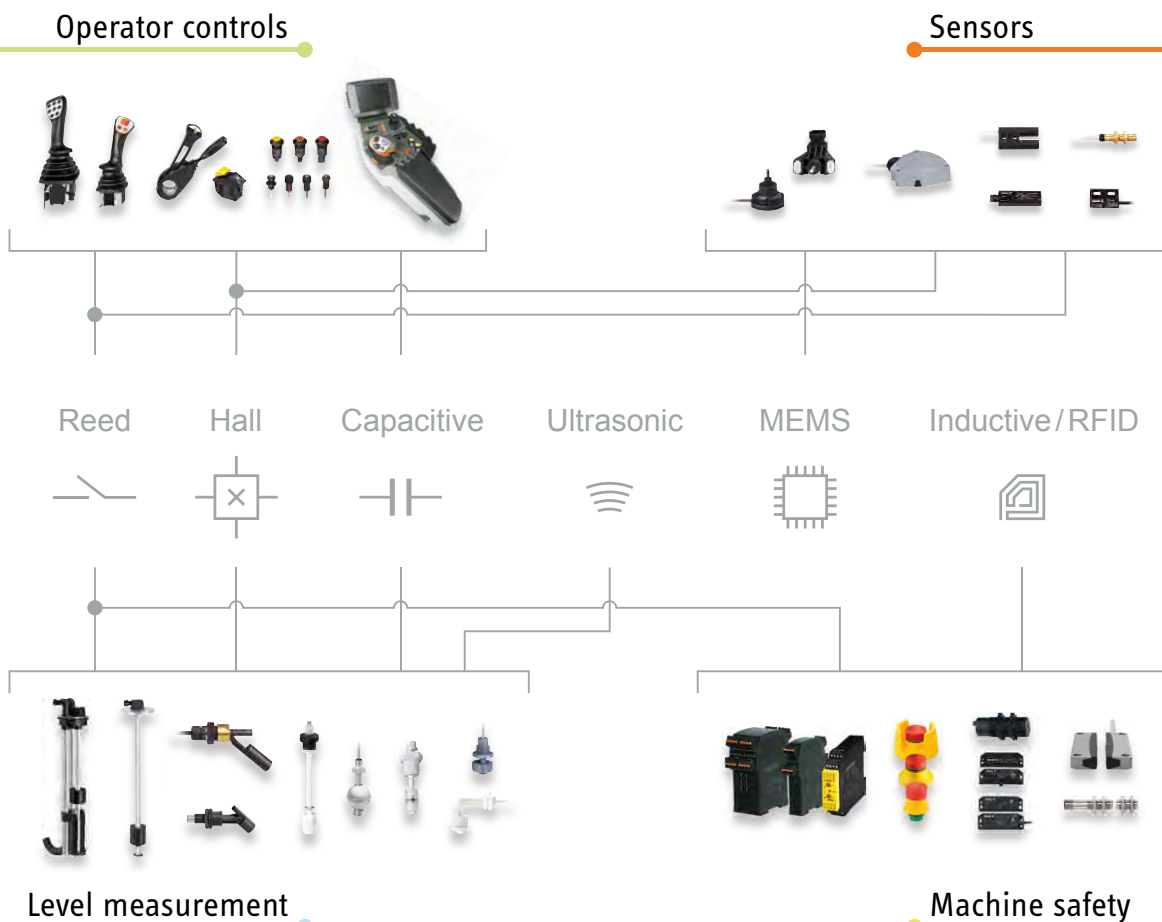
**Climate Friendly Company**  
according to SCC-Standard



# The basis of our products – non-contact actuation

## Advantages of non-contact actuation

- > Maintenance-free
- > Sealed electronics with protection class up to IP69K
- > Suitable for harsh environmental conditions
- > Extremely long service life
- > Reliable switching even at low currents
- > Wide range of materials, even for use in aggressive media
- > Flexible installation is possible as no mechanical connection is necessary between actuator and electronics
- > Maximum cost-efficiency



# Applications in commercial vehicles

## Benefit from our expertise

Thanks to years of experience in collaboration with leading tractor and off-highway vehicle manufacturers, one of our main areas of expertise today is the off-highway sector. We have a wide range of standard products that can be customised to suit individual requirements in an efficient and cost effective manner.

We develop and manufacture exclusive, customer specific solutions tailored to your respective application.

Our international customer base is active in the following areas:

- > Agricultural machinery
- > Forestry machinery
- > Construction machinery
- > Industrial trucks
- > Municipal vehicles
- > Fire-fighting vehicles
- > Lifting platforms and cranes
- > Special vehicles



# Industrial applications

## Consistent reliability thanks to non contact actuation

As one of the first manufacturers for safety technology in industrial machines, elobau has been using reed switches since the 1970s. This technology became well-established because non-contact safety switches and sensors offer greater freedom in machine design and represent an economical alternative to other technologies.

With regard to external influences, reed technology is far superior to mechanical switches. Thanks to high sensing distances and offset values, no mechanical interlocking is necessary, thereby facilitating easy alignment. Based on reed, Hall, RFID, ultrasonic and capacitive technologies, elobau offers a wide range of fill level measuring devices, proximity switches and sensors.

Our products are primarily used in the following areas:

- > Packaging machinery
- > Food processing
- > Printing technology
- > Special machinery
- > Injection moulding machines
- > Water processing
- > Medical technology
- > Environmental and process engineering



# Operator controls

With all development such as mechanical design, electronic hardware design, software design, PCB layout and tool design completed in-house we have control of the development process from design to delivery. This is complemented by our prototype development and production facilities as well as our testing laboratory.

We develop and manufacture exclusive, customer-specific solutions tailored to the respective application. We have a wide range of standard components that can be customised to individual customer requests. Nearly all components are equipped with non-contact switching elements. As a result, they are well suited to harsh environments and are consequently perfectly suited for use in off-highway vehicles.



- + Very long service life thanks to non-contact sensor technology
- + Ergonomic design with extremely compact construction
- + Simple mounting
- + Output signals: analogue, digital, single-channel and redundant  
additionally direct bus connection is possible via CANopen or SAE J1939
- + Night and function lighting
- + Adjustable actuation forces
- + Extremely rugged
- + Protection class up to IP67
- + Temperature range -40 °C to +85 °C
- + PL d / SIL 2





## >> Custom driver control systems

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- > Expert consultation during design and development of the driver control concept
- > Ergonomic arrangement according to operating logic
- > Consideration of electronic and mechanical connection even during the development phase
- > Integration of touch panels or displays
- > Highest level of quality assurance

## >> Operation and control

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### Joysticks and steering column switches

- > Modular design
- > All functions of joystick axes, buttons and thumbwheels are freely configurable
- > Various hand-throttle modules
- > Static load capacity to 2000 N
- > Actuation types: no-detent / hard detent / soft detent and friction brake
- > Various deflections
- > Fatigue-free operation through ergonomic handles
- > Soft-coated surfaces

### Push buttons

- > Sizes M12 and M30
- > Power take-off (PTO) function
- > Available in a choice of colours
- > Individual, abrasion-resistant symbols
- > Various circuit options, e.g., NAMUR
- > Various sealed connector variants
- > Very tactile behaviour over the entire service life

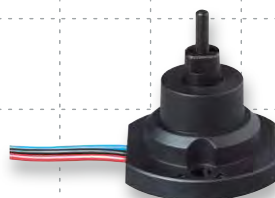


elobau sensors are contactless, wear and maintenance free as well as extremely reliable. Our electronic sensors are based on the Hall, MEMS or magnetoresistive technology. In addition to tilt, angle and proximity sensors, our product line includes proximity switches based on reed-contact technology (also for potentially explosive ATEX areas), steel-proximity switches, vane switches and plunger-operated switches.

We can quickly and cost effectively produce customer-specific modifications based on our standard product range.



- + Extremely long service life through non-contact technology
- + Protection class up to IP69K
- + Temperature range -40 °C to +150 °C
- + Large sensing distances and offset tolerances
- + Very high resolution
- + Output signals: analogue, digital, single-channel and redundant, additionally direct bus connection is possible via CANopen or SAE J1939
- + Cable or plug connection on housing
- + Rugged and compact housing designs in various materials
- + Simple, time-saving mounting



## >> Measuring angles and tilt

### Tilt sensors

- > Monitoring of up to two axes
- > Zero-point calibration via IR remote control
- > Analogue measurement and up to four switching points can be freely combined
- > Switch-on and switch-off delay
- > Selectable vibration filter and signal delay
- > High repeat accuracy, low temperature drift
- > Mercury-free

### Angle sensors

- > Analogue angle measurement of up to 360°
- > Select between plain or ball bearing
- > Available with actuation lever

## >> Position detection

### Proximity switch

- > Actuation with magnet or ferrous switching trigger
- > With ATEX approval
- > Versions available with status LED
- > Optimised versions for pneumatic cylinders

### Plunger operated switches

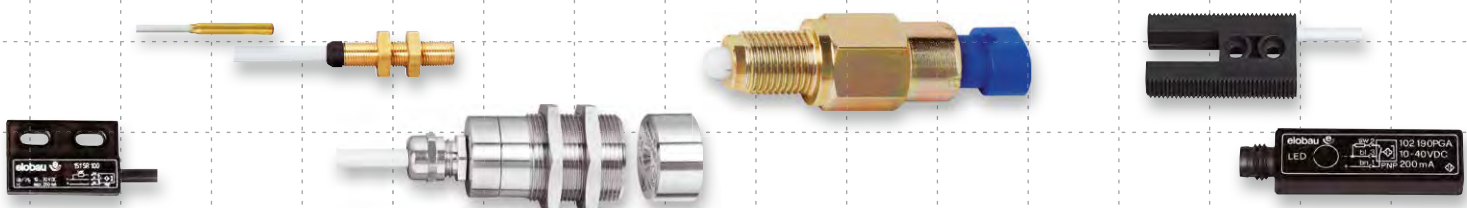
- > For end-position monitoring, e.g., of gearbox setting or seated position
- > Application-specific modification of housing design, plunger and stroke can be realized

### Steel-proximity / vane switches

- > Non-contact actuation by means of ferrous material
- > Large offset tolerances

### Electronic proximity sensors

- > Non-contact actuation by means of magnet
- > Hall / magnetoresistive measurement principle
- > Optimised versions for pneumatic cylinders



# Level measurement

Whatever your fluid level measurement needs – elobau offers the right solution for every application from a wide range of standard products with off the shelf level measurement suction pipes and level indicators. Various online configurators enable free selection from countless components from our extensive modular system enabling customers to obtain "their" individually configured level sensor in just a short lead time.

We can develop exclusive, customer-specific solutions taking into account the installation, environmental conditions and media resistance.



- + Wide variety of materials for various resistance requirements available as standard
- + Temperature range from -40 °C to +180 °C
- + Protection class up to IP69K
- + Measurement lengths up to 5 m
- + Freely select from a wide range of cable materials and connectors
- + With continuous measurement, various analogue output signals (current, voltage, resistance)

## >> Level detection

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### Float switches based on reed technology

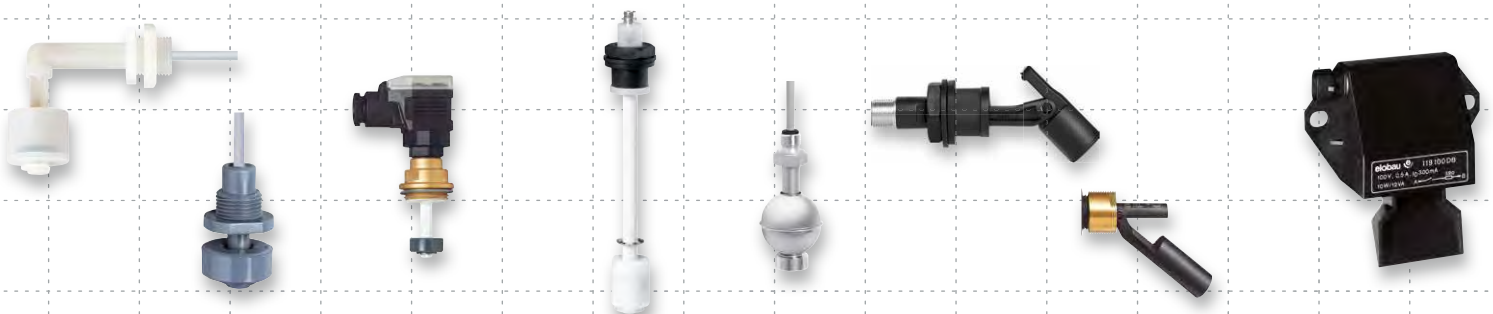
- > Modular system for creating your optimal solution
- > Customer-specific float switches with up to 20 arbitrarily definable switching points

### Broken finger switches based on reed technology

- > Simple and economical level detection
- > Versions for soiled media
- > Solutions for mechanical loading and vibrations
- > Small designs for tight installation situations

### Bulk material switches based on reed technology

- > For bulk materials (powdered media, granulates)
- > Simple and reliable level detection



## >> Continuous fill level measurement

### Level sensors based on reed technology

- > Long service life, proven technology
- > Large range of materials (stainless steel, alu., PVC, PA, PP, PVDF)
- > Programming of up to four switching points
- > Fill level calibration by the user
- > Display available for fill level and temperature monitoring
- > Measurement resolution of 5 – 35 mm

### Capacitive level sensors

- > Wear-free measurement
- > For conductive and non-conductive media
- > Fill level calibration by the user
- > Integrated temperature sensor and temperature compensation possible
- > Measurement resolution 1 mm

### Ultrasonic level sensors

- > Non-contact, wear-free measurement
- > Extreme inclinations possible
- > Measurement resolution 1 mm

## >> Liquid removal and dosing with integrated fill level measurement

### Suction pipes

- > Dosing units with empty indicator and advance warning for direct pump control
- > Suitable for a wide range of container heights by means of variable container screw joint
- > Integrated non-return valves for minimum spill when changing the containers
- > Can also be used in the most aggressive liquids due to standard materials such as PVC, PP and PVDF

### Float switch with fuel feed & return tube

- > Optimised for fuels and lubricants in the off-highway vehicle sector
- > For SCR catalyst systems (with optional heating and cooling function)
- > Measurement of the fill level with integrated feed and return
- > Various flanges available for direct mounting



# Machine safety

The machine safety products from elobau ensure the efficient use of machines and complex systems and at the same time protect man, machine and the environment. Magnetically actuated and RFID technology-based safety sensors from elobau enable individual solutions for monitoring movable guards or positions.



- + Up to PL e / SIL 3 and ATEX
- + Protection class up to IP69K
- + Hygienic versions
- + Ambient temperature range -25 °C to +100 °C
- + Space- and time-saving installation
- + Different housing designs for a wide range of applications
- + Long service life through robust design

## >> Reliable condition detection

### Safety sensors

- > All common contact types available
- > Cable or plug connection
- > Covered installation possible
- > LED display for fast diagnostics
- > Series connection can be realized up to PL e

### Compact systems

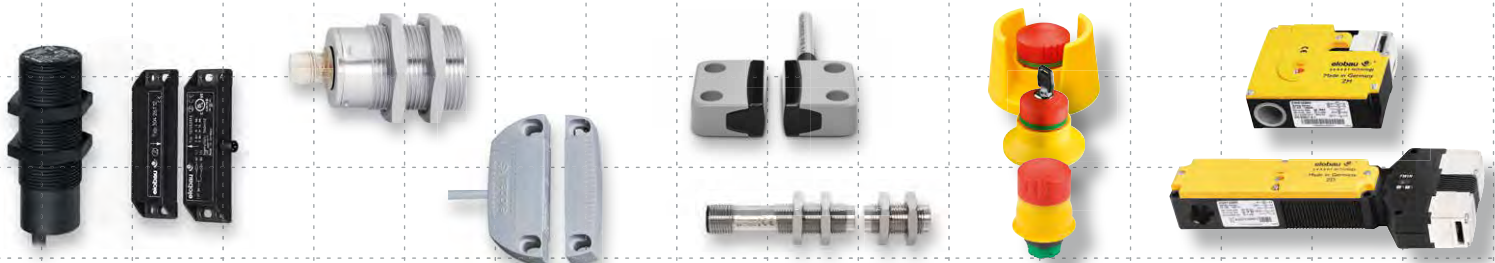
- > Safety sensor with integrated evaluation saves space and money
- > Control contact and two-colour LED for diagnostics possible
- > Especially well suited for smaller machines

### E-stop buttons

- > Safely stop machines or systems
- > Maximum safety in every situation, whether illuminated, with key release or for environments with high hygiene requirements
- > Separate mounting of contact block and button as clip system enables individual combinations
- > Very rugged design

### Safety guard locking

- > Mechanical locking of flaps, hoods and doors
- > Rugged design with metal head



elobau safety control units reliably perform safety-related functions. They are the perfect solution for safety applications of varying levels of complexity. All signals – from safety sensors, E-stop buttons and safety locking devices – are safely monitored.



- + Up to 128 safety inputs and up to 16 redundant safety outputs
- + Various compact housing designs
- + Various connection options possible
- + Up to PL e / SIL 3
- + LED displays
- + Suitable for all common contact / sensor types
- + Control outputs

## >> Reliable signal evaluation

### eloProg – configurable safety system

- > Base module can be used as stand-alone device
- > Seven different fieldbus modules for the most common industrial fieldbuses for diagnostic communication
- > Optional memory card for backing up data and configuring base modules without PC
- > Decentral positioning of I/O modules
- > Relay modules for high switching loads

### eloFlex – configurable safety system

- > Up to four safety functions in one device
- > Increased functionality with smaller footprint in the switching cabinet
- > Perfect for every application: maximum flexibility through online configuration

### Safety control units

- > Monitoring of safety sensors and E-stop buttons
- > Suitable for two-hand controls

### Input expansion module / output expansion modules

- > Cost-effective alternative to individual wiring
- > Up to 40 sensors can be connected to one safety control unit
- > Time-delayed safety outputs

### Speed monitors

- > Standstill monitoring
- > Reliable monitoring of reduced speed
- > Monitoring frequency from 0,1-99 Hz





**elobau** ®

GmbH & Co. KG  
Zeppelinstr. 44  
88299 Leutkirch  
Germany

☎ +49 | (0) 7561 970-0  
☎ +49 | (0) 7561 970-100  
[www.elobau.com](http://www.elobau.com)  
[info@elobau.de](mailto:info@elobau.de)