



CUSTOM SOLUTIONS

Wherever pressure sensors are needed, a solution can normally be found in the KELLER standard product catalog. However, there are often great benefits to optimising a product specifically for integration and use in existing complete systems. In addition to outwardly identifiable components such as housing parts or plugs, this also includes the inner workings of the sensor. We produce a large number of individual parts in-house and establish close working relationships with our suppliers, enabling us to make a wide variety of modifications with ease.

Shared expertise for the perfect sensor solutions



Our customers are specialists in their field: they know the requirements and operating conditions best. Since 1974, KELLER has been harnessing the potential of piezoresistive sensor technology to see numerous challenging projects through to completion. In all of these projects, a mutual exchange of expertise was essential to their success. Sharing our knowledge is what enables us to find the best sensor solution.

Even applications that may appear trivial at first glance can prove highly complex upon closer analysis. By taking the actual usage conditions of the sensor into consideration right from the outset, we can achieve major improvements in effectiveness and durability. And this holds true whatever the application – from fill level sensors in rainwater tanks to ultra-precise laboratory instruments, and even rocket science.

No matter the task at hand, the expert advice from our sales engineers and developers is a vital piece of the puzzle. Whether an existing product can be used – possibly with suitable modifications – or a new development is needed depends entirely on the customer's project. Together, we look at the requirements to determine the properties needed for flawless measurement. Armed with many years of experience, we take a close look at all the factors involved and their various interdependencies.



«Thanks to our technological expertise, longstanding experience and mastery of the many processes involved in manufacturing pressure sensors, coupled with a high level of vertical integration, we can make even the impossible possible.»

Bernhard Vetterli, Technical Director





Measuring ranges & performance



First of all, we define the basic sensor specifications such as overall measuring range, accuracy, calibration to specific measuring points and units of pressure, or scaling of the output signal. Products with a digital signal output have additional factors that also need to be determined, such as sampling rate or signal resolution. The values defined at this stage form the starting point for selecting components.

Perfectly tuned to the ambient conditions



Another crucial requirement is taking the ambient conditions into consideration. Not only does this increase the service life of the sensor, it is also an essential prerequisite for correct measurements. If the pressurised system operates with a large overpressure or with dynamic loads, the sensor design must be optimised for these particular demands. With some applications or neighbouring system parts, there is a risk of signal distortion or component failure due to vibration or shock. Temperature also has a major impact on all materials and their resistance. Complications can be caused not just by extreme temperature values but also by rapid changes in temperature. Another equally important factor is chemical resistance. The materials used for housings and seals must be carefully selected, otherwise they risk being damaged by aggressive measuring media. External factors such as petrol fumes, UV radiation, salt water or even microorganisms can also cause problems. It is therefore essential that all relevant factors be considered. Of course, even finely tuned designs still have limits, and additional protective measures may be needed.



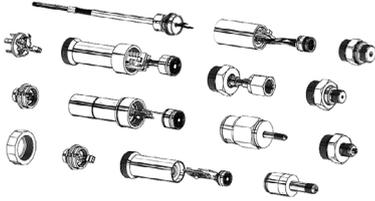
«Our experience has taught us that matter apparently knows no limits when it comes to throwing new challenges at us.»

Stefan Fehr, Head of Quality Assurance



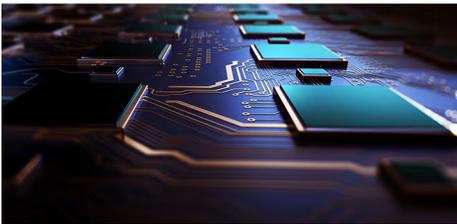


Mechanical design



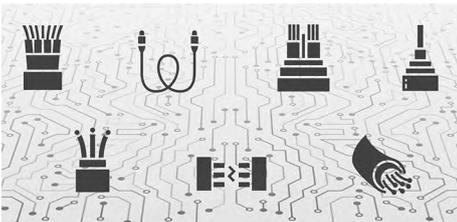
When designing a sensor, all the above points must be taken into consideration. A device's performance is heavily influenced by the sensor design, from the choice of sensor chip and coupling medium through to the materials and production techniques used. In addition, customers may have particular requests concerning shape and size, pressure connections and so on. And of course, any specific requirements pertaining to the area of application must be complied with, along with all the applicable legal regulations and standards.

Electronics & configuration



The main function of the electronics is to prepare the measurement signal, as well as possibly to save it and output it via a suitable interface. Customers can also request that application-specific calculations be integrated in the firmware, or ask for special device and software configurations. Once again, there are other requirements that depend on the environment, such as extended lightning protection, EMC or explosion protection. Intrinsically safe products can also be specially configured to match the parameters of the customer's overall system.

Electrical interfaces & connections



Digital interfaces can be configured for specific communication protocols, or modified to suit the customer's needs. Meanwhile, analog interfaces also continue to play a vital role in sensor technology. KELLER is highly experienced in developing application-specific solutions based on both of these principles, including devices with light wave and frequency outputs. For electrical connections, the necessary plugs can be integrated into the design, while cable outlets can be specified by the customer.

Labelling



In addition to customer logos, it is also possible to have functional markings applied to the product, either by means of laser inscription or by printing information on labels. These may include part codes, serial numbers, data matrix codes or guide marks. Customers can also specify a colour-coding scheme for the connecting wires. For consumer products such as manometers, a personalised design that includes the customer's logo can be applied to the front panel.

