



Safety at the highest level

Highly complex processes are not uncommon in the process industry – and often involve the use of hazardous substances. Malfunctions in processing systems can therefore have serious consequences for people, machines and the environment. Functional safety is thus all the more important, as it is intended to minimise the risk of malfunctions within automation systems. One important, internationally recognised classification is the Safety Integrity Level, or SIL for short. Like numerous other VEGA instruments, the radar sensor **VEGAPULS 6X** fulfils the strict safety requirements as per the corresponding series of standards for functional safety.

What is SIL?



SIL stands for Safety Integrity Level: But it is also sometimes referred to as Safety Requirement Level. In process automation, there are two important standards

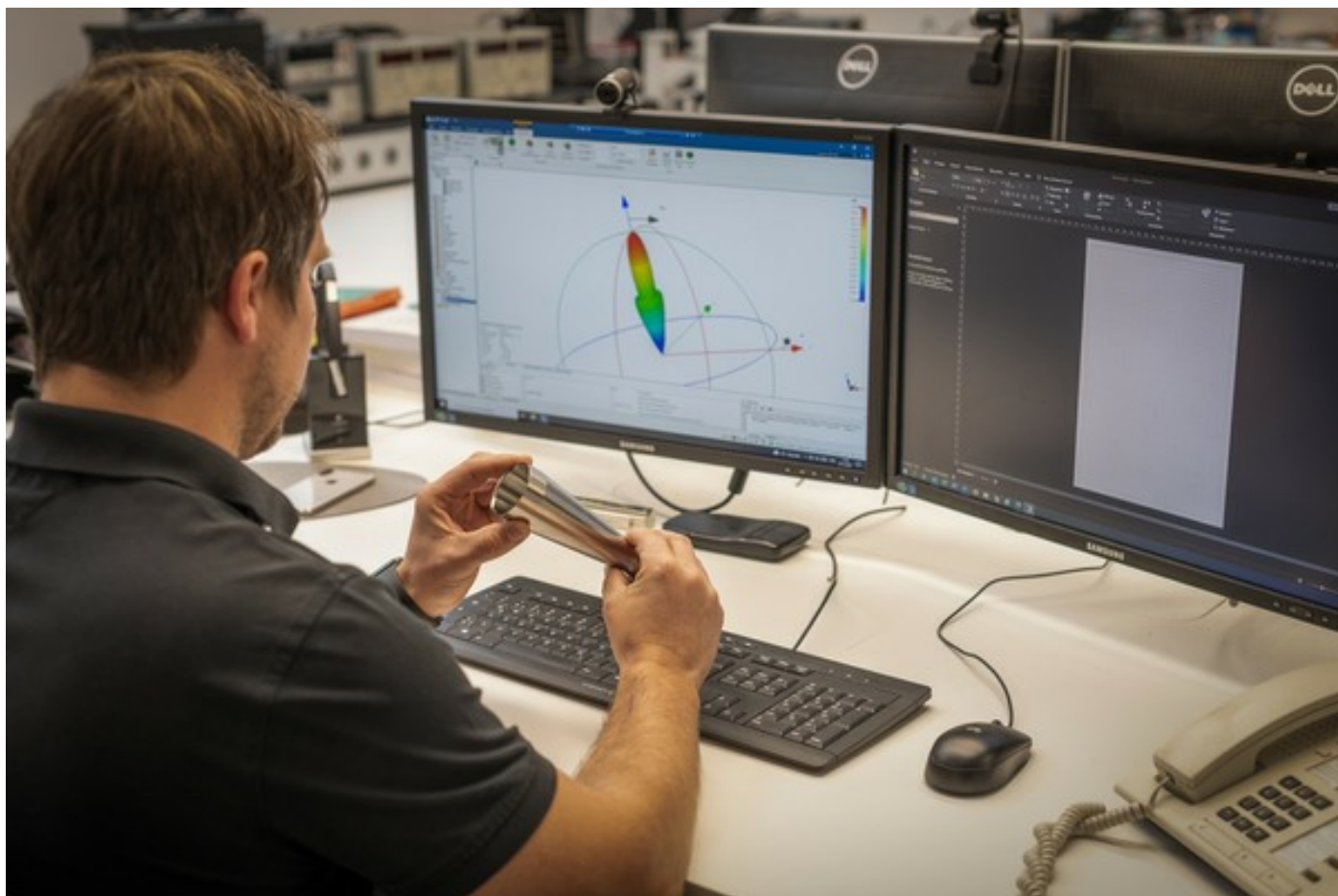
- Basic standard for functional safety: IEC 61508
- Sector standard for the application of functional safety in the process industry: IEC 61511

They set the standard for uniform and comparable assessment of devices and process engineering systems. The SIL level is determined by means of a risk assessment, for example by taking the following aspects into account:

- Possible extent of damage
- Length of time people spend in the danger zone
- Options for hazard control
- Likelihood of occurrence

The required SIL level defines how extensive the individual measures must be in order to reduce the risk posed by the processing facility to a tolerable residual risk. Depending on the degree of risk reduction required, users can choose between four different SIL levels: SIL1, SIL2, SIL3 and SIL4. In principle, the following applies: The higher the SIL level of a system, the lower the probability of dangerous faults occurring in the system that would restrict the required safety functions. All components of the safety chain – including the field devices for level, switching and pressure measurement – must meet the specifications for the processing system as a whole.

VEGAPULS 6X and SIL – a perfect match!



Numerous diagnostic functions in the instrument continuously ensure that dangerous faults are detected by the instrument at an early stage. In the rare event of an instrument malfunction, the [VEGAPULS 6X radar sensor](#) automatically switches to the safe state and thus provides maximum safety in systems that require SIL-qualified sensors for level measurement. The level sensor is suitable for use up to SIL2; if used in redundancy, for example two VEGAPULS 6X installed in parallel, it is even suitable for use up to level SIL3.

Applying its wealth of experience in 80-GHz technology, VEGA launched a completely new development for VEGAPULS 6X that consistently fulfils the requirements of functional safety right from the start. The instrument manufacturer has built up extensive application expertise in 80-GHz technology and exploits the key advantages in terms of

- focussing
- dynamic range

fully. The SIL version of VEGAPULS 6X is hardly affected by

- condensation
- steam and dust
- dirt and contamination
- turbulent surfaces or

foam. Also available in a hygienic version, it is suitable for both liquids and bulk solids.

Is SIL always the right choice? With VEGAPULS 6X, definitely!

When outfitting normal measuring points, operators often have to decide whether to use SIL-qualified field instruments or standard versions without SIL. It is advantageous to have as many of the same instrument type in use as possible – using both SIL and non-SIL instruments in a plant makes little sense. With VEGAPULS 6X, plant operators don't even have to ask themselves this question: They get the 2-in-1 complete solution. Because with the SIL version, the additional diagnostics can be easily deactivated via the adjustment menu. This means that the sensor then behaves like a standard instrument without any restrictions, should that be necessary. Operators can thus future-proof their facility by making the SIL version the standard and also using it for measurement in normal, less safety-critical processes. This saves storage space and further reduces the complexity of the facility.

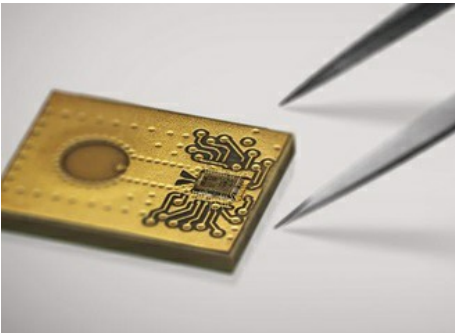
Setup made easy

Thanks to VEGAPULS 6X, the days when special knowledge was required to set up and commission a radar sensor – especially in safety-relevant systems – are over. The level sensor supports users with a menu-guided setup assistant. The advantages of 80-GHz radar technology in SIL applications are thus readily available to users now – without the need for extensive training or many years of experience. During the initial setup with all settings, the sensor is automatically tested for functional reliability directly in the application. There is also a built-in software assistant for the routine proof test that explains all the necessary steps in a comprehensible manner.



Another plus: When the initial setup or proof test is finished, the software creates a document that confirms the implementation and lists all the points tested. This means that, at the touch of a button, the operator can print out the necessary verification for the supervisory authorities – if desired, also synchronised with the operator's [myVEGA account](#).

A chip sets the pace

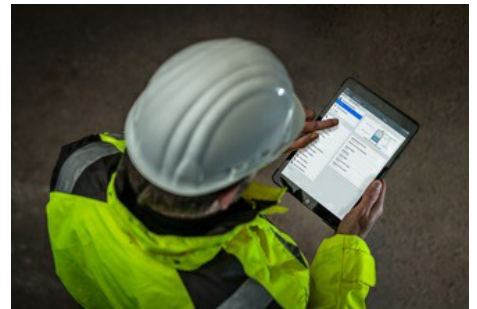


The radar chip developed by VEGA is the heart of the sensor. Its precision and reliability are primarily due to its ability to self-diagnose during operation. This function enables the seamlessly monitored accuracy and high performance of the sensor.

Armed against cyber attacks

Functional safety is just one of the level sensor's security components. VEGAPULS 6X is also armed against external attacks. This is necessary, because as digitalisation becomes more commonplace in process automation, cyber attacks increase and become more of a threat. VEGAPULS 6X also offers comprehensive protection in this area. The measuring instrument is certified according to IEC 62443-4-2. It thus meets the highest standards when it comes to cybersecurity.

In a nutshell:
Functional safety protects people from the machine, cybersecurity protects the machine from people. VEGAPULS 6X thus makes a significant contribution to safety in the process industry – at all levels.



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