

# Sensor-based Process Control



**Since the introduction of modern sensor technology FORCE Technology has been developing customized sensors for industry and today is able to put a large "bank" of sensor technologies at the disposal of any companies wishing to use sensor-based process control.**

#### **What is sensor-based process control?**

Customized sensors for process control will replace traditional product control. When control is moved from the product to the process the company obtains an efficient tool for minimizing faults and waste pro-

duction. This can be a decisive parameter for companies to retain their competitive edge in the global market.

The focused application of sensor-based process control is a be-all and end-all for production companies competing on price and quality. The ability of companies to detect faults at the precise moment and place they occur ensures a constant level of quality and production stability, while minimizing waste production and avoiding resource intensive troubleshooting. The use of sensor-based process control provides companies with fully automatic documentation of production sub-processes.

## Customized systems

At present, many production processes are not subject to systematic control. This is often the result of there being no ready-to-use systems in the market. When special systems are to be built the use of standard systems is often a requirement in order to ensure that maintenance can be carried out. But often the sensors needed to track the process are not available. Many commercially available sensors are general sensors which do not meet the special requirements of a particular process.

However, the potential financial benefits are often so great that it pays off to use company customized sensors because of the short payback times. Moreover, these solutions offer a unique opportunity to stand out from one's competitors.

Most companies need sensors which have been developed specially for precisely their production facilities. Basing such systems primarily on standard components will result in simple maintenance and simple integration as well as them being individually tailored.

## Sensor-based process control

- Guarantees constant high product quality
- Reduces troubleshooting costs
- Increases productivity and profitability
- Boosts competitiveness
- Provides opportunities for full product documentation
- Facilitates maintenance and integration
- Is individually tailored.

## FORCE Technology offers

- Problem analysis
- Advice on sensors, measuring techniques, automation, process management and process control
- Development of sensors and measurement systems
- Provision of ready-made test presentation equipment, sensors, actuators and data management systems
- Design of automation, management and control systems
- Interface to de facto industry standards for handling mechanisms, such as e.g. robots
- Assistance with the commissioning of total systems
- Assistance with control, calibration and verification of measurement systems.

## Examples of the innovative application of sensors

### Product control

In order to produce flexible products with as many applications as possible manufacturers of wood fibre boards (chipboard and MDF) require surfaces to be suitably hard while the inner core remains softer. Previously it was necessary to halt production regularly in order to take random samples and send them for analysis at a laboratory. With FORCE Technology's specially developed X-ray sensors today the manufacturer can measure the most important quality parameters online without taking samples and without hold-ups, thus providing considerable savings in production costs and ensuring high uniform and documented fibreboard quality.

### Process management and control

A manufacturer of engine components for civil space rockets wishes to mount concealed cooling grids inside an extremely light metal structure. Laser welding guided by an advanced combination sensor is used for attachment. By the unique application of non-hazardous X-rays and invisible laser beams welding can now be carried out to a tenth of a millimetre accuracy, while at the same time producing documentation automatically. This type of interior mounting represents a technological breakthrough which has boosted the producers reputation in the sector.

### Sensor built into the product

An engineering works specializing in the production of equipment for preventing slippery roads wished to optimize its use of salt and gravel on roads and paths. After initial project work there was a choice of several different technologies but the final choice fell on microwave technology, which is both effective and economical. As a result inductive sensors were developed which, as it were, examined the spread salt layer or gravel flow and then documented that the right amount had been spread in the right place. The sensor was designed to withstand extremely harsh environments at temperatures well under zero and highly corrosive conditions.



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