



**WITTENSTEIN**

# Intelligence in Mechatronic Drive Technology

Understand  
Monitor  
Control

# Intelligence as success factor



**Different needs.  
Individual solutions.  
Fascinating results.**

Growing together – being one with the future.

With this philosophy in mind, we develop tailor-made solutions that bring you forward.

**Your reliable partner,** when you need to gather information on mechanical variables in drive technology.



**WITTENSTEIN**

Since time immemorial, the pursuit of achieving more has been the motor of life. In the field of technology, innovations are the constant driving force behind ongoing development. Today, intelligence is a crucial factor in industrial applications. In mechatronic drive technology in particular, revolutionary solutions have been developed thanks to highly innovative sensor technology.

From high-quality sensors for drive components and customer-specific sensor solutions to engineering services:

**The WITTENSTEIN Competence Centre for Sensor Technology redefines intelligence in the drive chain.**



# Cost savings in drive technology

## **Save costs in the drive configuration.**

Cost savings can be achieved wherever data on the load spectra acting on the drive needs to be recorded by means of sensors. This innovative technology makes it possible to let real values flow into the drive configuration and to thus greatly refine the selection of suitable drive components. In some cases, downsizing is even possible. This does not only save costs, but also enable a compact design.

## **Control the forces in the drive chain.**

Unexpected downtimes in the drive chain cause enormous costs. There are many possible causes. Sensor technology pushes the window to the drive chain wide open. Load spectra acting on the drive chain are determined, analysed and diagnosed by means of innovative sensors. Whether sensors are to be used temporarily or permanently depends on the desired machine availability.



# Increased machine availability

## **Switch to green – increase the machine availability.**

Information is gathered from real load spectra in the drive chains and unplanned machine downtimes are thus prevented. Intelligent systems constantly monitor the drive status, help to plan service tasks and reduce the reaction times for maintenance tasks to a minimum.

## **Preventative warning system for tool wear.**

With sensor technology, it is possible to draw conclusions regarding the condition of the driven tools by means of changes in the actual torque or lateral force. Tool changes at the right time result in definite cost benefits.

## **Needs-based maintenance – the future of increases in productivity.**

Productivity is increased not only by preventing machine downtimes – the ability to draw conclusions regarding the drive behaviour based on the permanent torque and/or the lateral force measurements offers great potential. With the knowledge gained, it is possible to switch from planned machine maintenance to needs-based maintenance.



# Efficiency requires knowledge



## **Efficient drive control.**

Thanks to online recording of the torque and lateral force, load-dependent process control is possible. Innovative sensors used as active control elements not only increase the quality of the procedures, but also make it easier to understand and improve the process.

## **Quality assessment in the drive chain.**

Of course the highest priority is to avoid errors. But it is equally important to be able to precisely analyse any errors that occurred! Thanks to sensor technology, this is possible in many cases. The resulting benefit lies in efficient process optimisation, which always leads to added value.

# Innovative sensor technology Packaging and Printing



## Packaging

For packaging machines, there are three decisive variables: short cycle times, high machine availability and good packaging quality. **WITTENSTEIN sensors contribute to achieving these machine specifications.**



## Printing

Delivering the print on time has number one priority. Therefore print machines have to be robust, reliable and offer the highest levels of process stability. **Thanks to their monitoring function, the WITTENSTEIN sensors have a beneficial influence on all three these characteristics.** Recording torques and lateral forces in the drive chain makes it possible to increase the machine availability.



# Innovative sensor technology

## Pharmaceutical and automotive industries



### Pharmaceutical industry

Filling and packaging machines for pharmaceutical products have to fulfil defined specifications. Quality assurance by means of electronic verification and traceability of the individual products has to be ensured at all times. **WITTENSTEIN sensors support meeting these requirements by providing recordings of the drive chain data at any time.** Furthermore it is possible to further optimise the machine availability.



### Automotive industry

No defective parts may be dispatched. One hundred percent quality control is required. Similarly, the availability of the entire machine is a key topic.

Most machines are designed for four-shift operation. **WITTENSTEIN sensors help to optimise the machine availability and to reduce unplanned machine downtimes to a minimum.**



# Innovative sensor technology

## Robotics and electronics



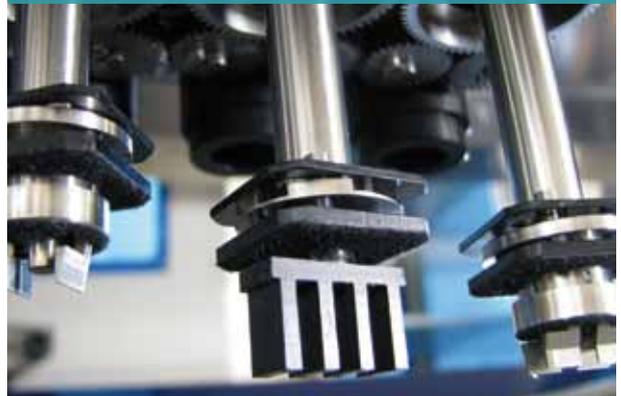
### Robotics

In application configuration, an important factor for achieving fast cycle times is efficient utilization of the working range of robots. For new robot developments, motors with high power density are required. More speed, more precision, more efficiency.

**WITTENSTEIN sensors push open the window to the process.** Thanks to simultaneous recording of torque and lateral force, the load data can be obtained directly on the output side. It provides information on the effective load spectra and thus aids in optimising the power density when systems are configured or designed.

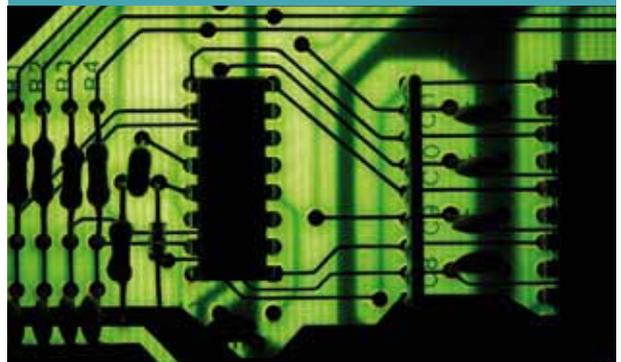


### Electronics



To achieve high production quality, many process steps on placement machines are monitored. Their drive systems also have to be monitored.

**WITTENSTEIN sensors provide information about the actual load spectrum.** Thus it is possible to obtain the appropriate drive parameters for each placement machine cycle, to then initiate the appropriate measures.



# Audience for sensor technology

## Manufacturers of test rigs and motors

### Test rig manufacturers

In the field of test rig manufacturing, precision, robustness and easy integration are of utmost importance. **WITTENSTEIN sensors fulfil all three criteria.**



### Motor manufacturers

Unconsidered lateral forces in the drive chain can cause unexpected load peaks, which could permanently damage drive components.

**The demand for higher machine availability can be met by means of WITTENSTEIN sensors.**

The simultaneous recording of torque and lateral forces makes it possible to detect load peaks. As the old saying goes: "Prevention is better than cure".



# Audience for sensor technology

## Machine and robot manufacturers



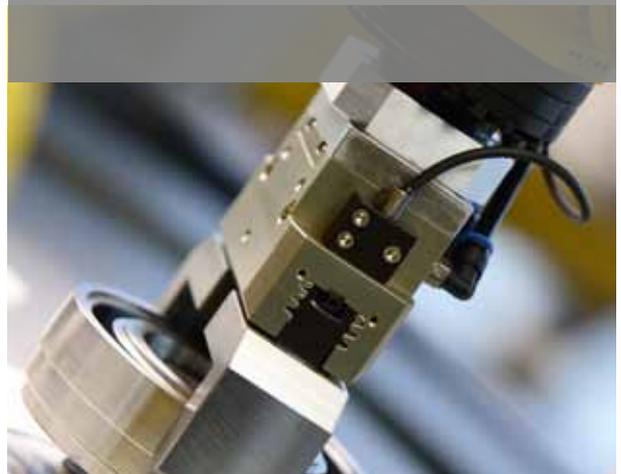
### Machine manufacturers

Today, extensive simulation programs for drive chain configuration are available. **WITTENSTEIN sensors offer clear advantages when it comes to making verification of configurations during prototyping more efficient.** The compact size, the robust design and the simultaneous recording of torques and lateral forces are absolute plus factors.



### Robot manufacturers

In robot development, the power density of the drive components is the main focus. **WITTENSTEIN sensors are particularly suitable for achieving power optimisation in the configuration of drive components.**



# Audience for sensor technology

## Drive component manufacturers and universities



### Drive component manufacturers

With WITTENSTEIN sensors, the internal testing and calibration laboratories for drive components can simultaneously verify the permitted torques and lateral forces. The sensors furthermore help to perform efficient analyses during troubleshooting in the case of service and warranty claims.



### Universities

Sophisticated drive technology requires innovative sensor technology. In the field of torque and lateral force measurements, WITTENSTEIN sensors are unique. Easy integration and simultaneous recording of 4 measurement variables (M; Fx; Fy; T) are top-notch product properties. Connectivity is available via USB, analog interface and field bus – thus there are no limits to creativity.



# Sensor use in different production processes

## Shaping, cutting and joining



### Shaping

The various shaping procedures involve process forces that have to be stable on the one hand and reproducible on the other hand.

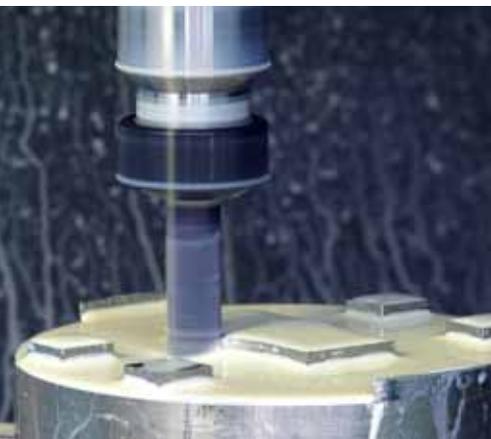
**WITTENSTEIN sensors can simultaneously record and monitor torques and lateral forces. This provides constant quality control of the process forces and thus permanently high quality for the respective process.**



### Cutting

The quality of the cutting process has enormous influence on the quality of the resulting products. Stable manufacturing processes are required.

**WITTENSTEIN sensors support the quality of the cutting process by monitoring the torques and lateral forces that are present.**



# Sensor use in different production processes

## Shaping, cutting and joining



### **Joining**

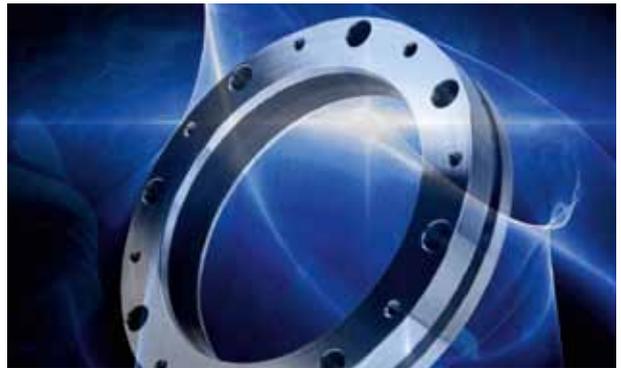
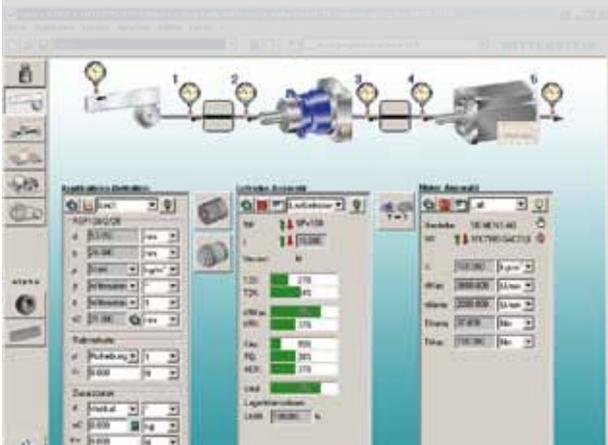
Active load spectrum monitoring by means of WITTENSTEIN sensors enables full documentation of joining processes and thus ensures constant quality.

# Drive configuration and measurement service



## Drive configuration

Thanks to the simultaneous recording of torques and lateral forces, WITTENSTEIN sensor systems are an innovative tool for redesigning systems or verifying drive configurations.



## Measurement service

Your requirement is our challenge. You want to know more about your drive chain – we provide you with customer-specific solutions. Whether you want to increase the machine availability or require quality assurance for your drive technology, our Competence Centre for Sensor Technology will be able to find the optimal solution together with you.





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