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# LENSER i-Plate

VISIBLE CONTROL OF MEMBRANE FILTER ELEMENTS



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# SENSOR TECHNOLOGY FOR MOISTURE MEASUREMENT IN REAL TIME

The LENSER i-Plate opens up completely new insights into your individual filtration process. Reliable, digital real-time measurement provides you with a wide range of relevant data from your filter press during ongoing operation. In this way, you gain insights into your processes and can optimize them.

Process monitoring is becoming increasingly important in the field of filter presses. Countless parameters have long been recorded and evaluated before and after the filtration process. However, these methods all have one decisive disadvantage: they only allow conclusions to be drawn about the filtration processes.

The LENSER i-Plate breaks down this barrier: it allows a view into the filter chamber while the press is in operation. The integrated sensor records the filtration process based on humidity, temperature and electrical conductivity in the filter cake and makes it available visually. This means that real-time monitoring, evaluation of digital data and detailed time and cost analyses are now possible.

In this way, the entire filtration cycle can be tracked to the second and optimally controlled.

This means that the individual process steps can be traced in detail in real time in order to evaluate them. For example, it is possible to define the ideal shut-off point of the filling process for different suspension qualities, or to identify the optimum end of the filtration cycle at an early stage during the post-pressing process.

Depending on the application, significant time and energy savings can be achieved.

**“Gain an insight into your process and gather online data to boost the filtration results in your application.”**

**Peter Ohorn, Head of Product Engineering**

Your #FiltrationExperts at LENSER are convinced that the use of modern technology will increase performance in each process. We invite you to use this opportunity and take a fascinating look directly into the chambers of your filter press.



# NEW PERSPECTIVES FOR YOUR FILTRATION PROCESS

At LENSER, we think outside the box.

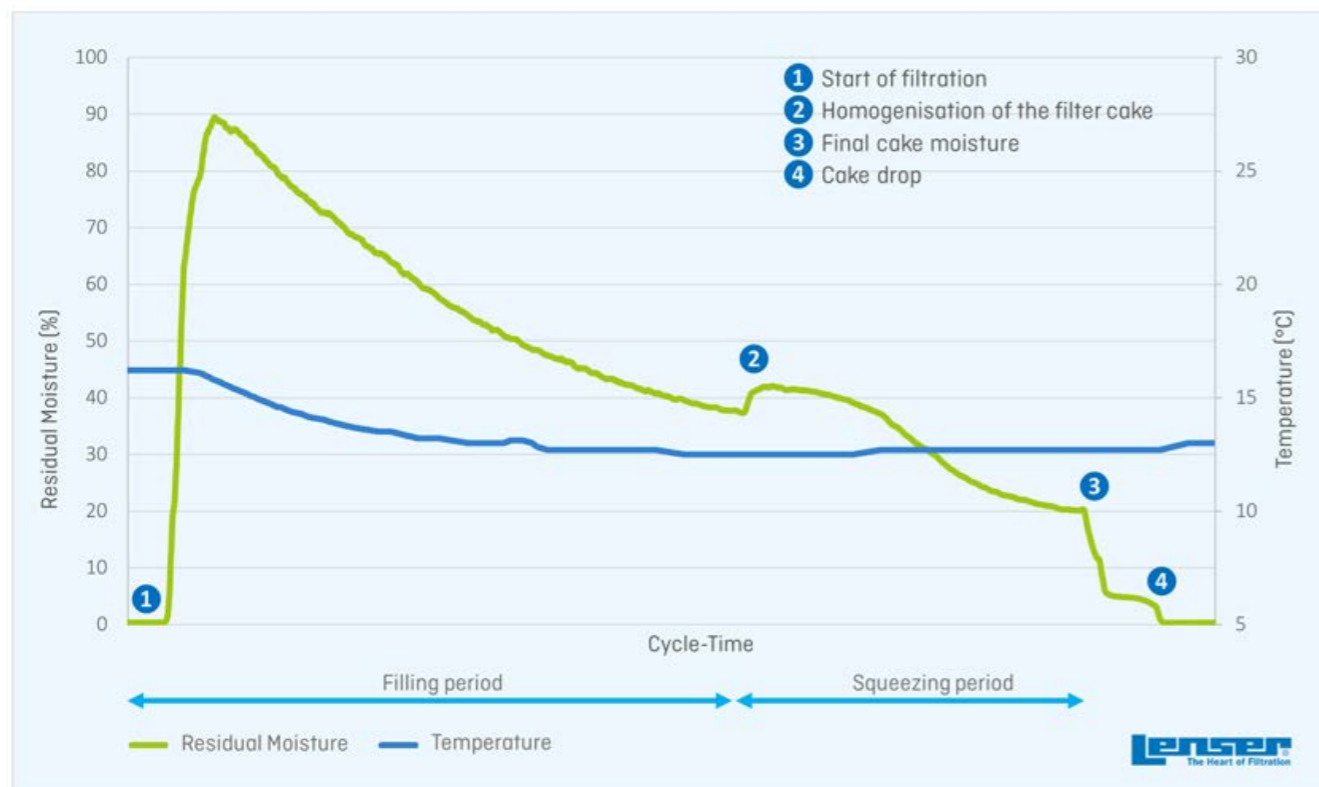
With the LENSER i-Plate you will have new process data and be able to identify parameters to improve your processes. This will accelerate your cycles and power your business more efficiently.

This measurement is made possible by electromagnetic waves in the frequency range from 500 MHz to 1,000 MHz. The sensor constantly evaluates the changes in radar wave propagation time due to varying dielectric constants in the suspension. The electromagnetic field energy is attenuated by aligning the existing dipoles in the measurement field according to their magnetic field strength.

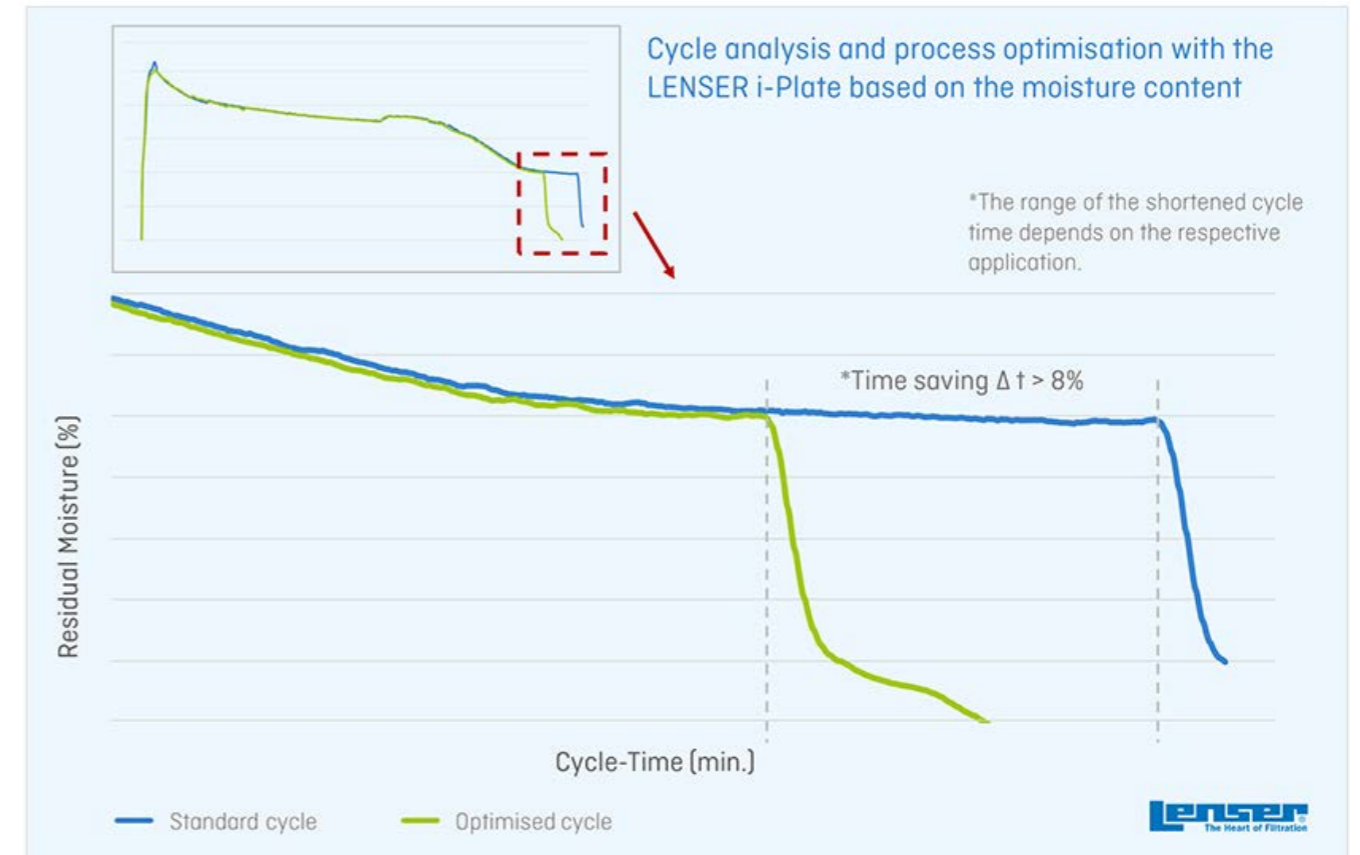
This attenuation is described by the change in dielectric constant. It is recorded by the sensors, transmitted in real time and displayed or stored directly in the programmable logic controller

(PLC) of the filter press. In the case of a filter press without PLC, the signals can be visualized on a standard monitor with the help of LENSER accessory (e.g. addIQ-Monitoring Tool Box).

Due to the combination of sensor technology with a filter plate, a view into the filter press is finally possible at any time and creates the basis to track the entire filtration cycle and thus to control it in an optimized way. Both the filling and the squeezing processes are recorded and displayed.



# PRECISE DATA FOR TARGETED PROCESS OPTIMISATION



The constant moisture content in the filter cake during the post-pressing process indicates the optimum end of the filtration cycle at an early stage. Ensuring a constant moisture content of the cake at the end of the cycle is important and decisive for subsequent process steps in countless applications. Depending on the application, significant time and energy savings can be achieved.

The measured values of the LENSER i-Plate have a high repeatability. Reference measurements in the laboratory deviate only slightly from these. This makes previous downstream laboratory tests of the filter cake obsolete.

A very typical example is provided by the diagram above. The filtration cycle was mapped, analysed and optimised using the LENSER i-Plate. The blue curve describes a conventional filtration process without taking a defined target moisture into account.

Based on the recordings of the LENSER i-Plate, the exact time of the target moisture can now be identified. The green curve thus shows a filtration process that is terminated as soon as possible after reaching a specified target moisture. In this way, each cycle can be optimally shortened without the residual moisture fluctuating.



### UNCOMPLICATED AND PROCESS-SAFE INTEGRATION

Filter press operators do not have to make any major modifications to their filter presses in order to benefit from the advantages of using the LENSER i-Plate.

This sensor technology is operated with a common voltage of 12 to 24 V. Of course, the cable is mounted in such a way that it is not damaged when the filter press is opened and closed.

### WITH A NEW LOOK INTO THE FUTURE

For the first time, the LENSER i-Plate makes it possible to take a look inside the filter chamber and display the filtration process in real time based on moisture, temperature and electrical conductivity in the filter cake. This allows the process to be controlled and optimized even during the filtration cycle.

LENSER's intelligent filter plate represents a significant innovation in the marketplace, saving not only time and money, but also tremendous resources that were previously wasted. The plate equipped with the sensor is already in use in various applications and can be retrofitted in any LENSER plate package.

### ALL FEATURES AT A GLANCE

#### PERFECT FIT

Form fitting in the milled groove with O-ring clamping, no screws required, hence best fit at all times.

#### DURABILITY

The sensor is made of high-grade steel and a durable ceramic compound that has been developed for high-pressure squeezing.

#### CUSTOMIZED SERVICE

Process optimization through online monitoring of the filtration process can be customized easily.

#### DIRECT SUSPENSION CONTACT

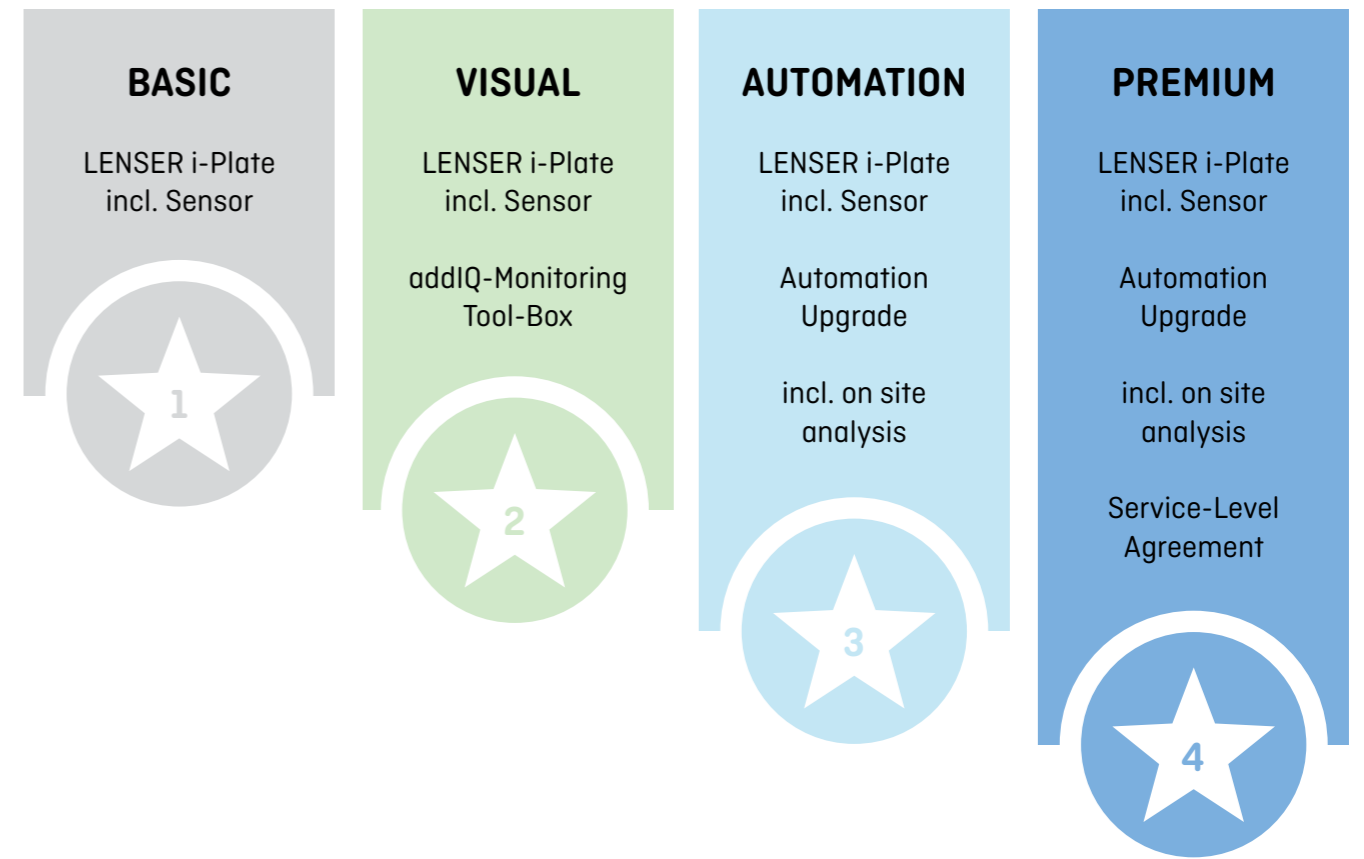
The LENSER moisture sensor is positioned directly at the filter cake. It's only covered by the filter cloth.

#### INSIGHT INTO DIGITAL REAL-TIME DATA

Precise measurement of the moisture in the filter cake for either online diagnostics or offline reviews. Insight either via a direct integration into the press control or through the addIQ-Monitoring Box for data visualisation.

# LENSER i-PLATE SERVICE PACKAGES

LENSER offers you four different LENSER i-Plate service packages which build on each other, so that the customer can choose which service support fits best. For further questions please ask your #FiltrationExpert.



### ALL CUSTOMER BENEFITS AT A GLANCE

- +** **QUALITY IMPROVEMENT**  
Setting of a defined filter cake residual moisture content
- +** **PROCESS OPTIMIZATION**  
Real-time surveillance of filtration process
- +** **PROCESS SAFETY**  
Desired moisture content will be achieved in every cycle
- +** **TIME EFFICIENCY**  
Shorter cycle times for same residual moisture
- +** **PREDICTIVE MAINTENANCE**  
Indication of potential plate blocking, deflection or breakage at an early stage
- +** **RESPONSIBLE USE OF RESOURCES**  
Less energy, water or pressure needed to achieve the same process results

# LENSER i-PLATE: TECHNICAL DETAILS AT A GLANCE

## LENSER i-PLATE – TECHNICAL DATA

Measurement range for moisture	0 to 100%
Measurement range for temperature	0 to 70°C
Measurement range for electrical conductivity	0 to 20 mS/m
Material	V4A High-grade steel and ceramics
Applications	Chemicals, minerals, mining and environment
Sizes (filter elements)	From 470 mm to 2440 mm
Maximum filtration pressure	According to the specification of the recessed filter element
Maximum wash pressure	8 bar
Size (Sensor)	110 x 60 mm
Outputs	2 analog outputs and 1 digital output
Power supply	+12 to +24 V DC, 3 W

## What are the challenges in your filtration process?

Even the smallest adjustment in your process flow can make a big difference. Filter cloths also contribute significantly to the success of sustainable filtration.

LENSER is the first port of call and a competent partner in choosing the right filter cloth for your application. Our selected supplier network guarantees optimum solution procurement for any application. Trust in our many years of expertise.



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