

Corona extreme


The New Spectrometer System for Agribusiness from Carl Zeiss

Start



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Version 1.0



We make it visible.

Experience creates trust. Today as in the past.

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The new spectrometer system for agribusiness from Carl Zeiss

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With over twenty years of experience in process technology, Carl Zeiss is one of the world leader in the measurement and analysis of continuous process applications.

Through continuous collaboration with our customers, we have developed solutions which meet the highest performance demands, for which our customers can depend on in any process oriented situation.

With acknowledged Carl Zeiss competence in hardware, software and engineering, we are able to produce complete systems which can withstand extreme conditions with results that superior to lab measurements

Extremely resilient, extremely precise and extremely reliable – the new Corona extreme.

Successful agriculture production has always been a question of experience and commitment. Wrong decisions can have serious consequences. In today's ever changing environment, nature cannot be fully planned and accurate results cannot always be determined. However, through targeted examination of the process, it can be analyzed better.



High time for a solution. The new Corona extreme.

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The quality of natural products is subject to natural fluctuations. Despite the inconsistency in the construction of the sample, consistent quality must be maintained in the final product. In addition, industry standard requirements for processing the materials and related documentation must be maintained. For this to be achieved accurate process control is essential. Process time and raw materials cost can be optimized so that production control can be maximized and waste can be minimized.



Continuously monitoring of samples can deliver much more information about the process. When the measurements are carried out in real-time with the precision of lab results, the process can be precisely optimized to maximize output. The seamless integration of data into the information streams (traceability) also increases product safety.

With the introduction of the Corona extreme, we are offering our customers a complete solution comprising a spectrometer sensor and intuitive software – which can be tailored to each customers' specific needs.

Applications specific calibration and calibration support can be provided upon request.

Customers applications to date. Corona extreme.

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Field testing/ seed cultivation

Application analysis on plot harvester

Products full maize plants, grass, unripe rye and wheat, grains such as wheat, rye, rapeseed, grain corn

Parameters determination of dry matter content and protein

Result determination of quality, yield measurement, evaluation of cultivation success during field harvests, cultivation of new varieties



Cereals trade

Application inspection at transshipment points

Products grains such as wheat

Parameters measurement of moisture, protein, gluten, hardness, determination of quality

Result sorting, drying and storage, sale in accordance with specification



Grain processing

Application measurement on delivery

Products grains such as wheat

Parameters measurement of moisture, protein, gluten, hardness

Application measurement during processing

Parameters measurement of moisture, color, protein content, ash content and starch for process control

Result guarantee of quality



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Bioenergy

Application	measurement on delivery
Products	maize silage, grass silage, whole plant silage (renewable resources), liquid manure, residual materials
Parameters	evaluation based on potential gas input – gas generation potential
Application	measurement during process
Parameters	stability of fermentation based on individual acids
Result	process control and optimization (room load, retention period)



Feeding stuff / animal feed

Application	measurement on delivery
Products	feeding stuff / animal feed
Parameters	measurement of energy content (proteins, fiber fractions such as ADF, NDF, lignin, cellulose, hemicellulose)
Result	process control and optimization (mixing processes) for the production of concentrated feed



Fertilization

Application	measurement during or before spreading
Products	farmyard manure
Parameters	measurement of nitrogen, ammoniacal nitrogen, phosphorous, potassium
Result	process optimization, compliance with legal stipulations, process optimization, saving the cost of chemical fertilizers and targeted spreading in order to influence the quality of the harvest



Precision decides. Every day, in real-time.

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Start Animation

Few other spectrometer system from Carl Zeiss incorporates as much application-related experience as the new Corona extreme.

This compact system is easy to install and may be used immediately after a short warm-up period.

The Corona extreme system can be operated independently using the embedded controller which enables a direct evaluation and output of the predicted data.

The spectrometer features fiber free, high energy illumination with outstanding optical properties and internal referencing.



READY FOR EXTREMES

Thus, reliable measurement results are provided for each sample. Within the Corona product family, the instrument calibration may be transferred from one measurement system to another. The instrument data communication are designed for a customer or user specific interface: ISO Bus, Ethernet, Digital IO.

Reliability creates safety. Today, tomorrow and in the future.

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The idea for creating the Corona extreme was for the measuring sensor to become a core component of the process.

In order to accomplish this the extreme conditions under which processes run are regarded as a normal environment for the spectrometer system in practice – and not just for short term use, but for the entire product life cycle. For the Corona extreme, this concept was so successful that it gave the system its name.

The integrated measuring head and the compact design incorporating a sapphire flange guarantees protection of the sensor at the interface with the material flow. The Corona extreme is designed to withstand shock values which exceed governmental standards. With 50 g shock resistance, it exceeds all other systems by far and is ideally suited for daily use in the field.

The layout of the other environmental parameters has also been designed in accordance with the possible applications.

This means that Corona extreme can precisely produce measurement data in temperatures ranging from -15 to $+50^{\circ}\text{C}$ in both moist and dusty conditions.

The spectrometer system is protected from supply voltage fluctuations and may be easily connected to a vehicle's on-board power supply. Due to its excellent optical design, the Corona extreme can also be used in labs.

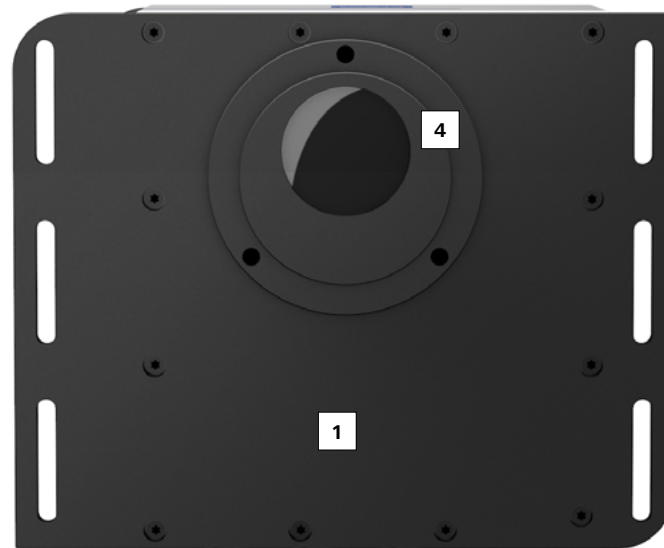


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- 1 Spectrometer**
 - plane grating spectrometer (PGS)
 - internal b/w referencing
 - two versions (with and without embedded PC)
- 2 Housing**
 - IP 66 housing
- 3 Interfaces**
 - innovative plug design
 - Ethernet interface, optional ISO BUS (CAN BUS)
- 4 Measuring head**
 - low voltage halogen lamps, longer service life 20.000 hours
 - robust sapphire flange for connection to harvesting machinery and closed systems

User-friendly and powerful. InProcess.

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The InProcess software was developed specially for Corona extreme.

This software enables the user to control several spectrometers at the same time. In addition to performance, ease of use is the primary purpose of the software strategy. Thanks to its clear organization, it is intuitive to use for all levels of operators.

The graphic user interface is comprised of icon menus giving it a familiar feel of operation at first sight. In addition, users may configure sequences, calculations and display formats based on their individual requirements.

Simple, intuitive, efficient.

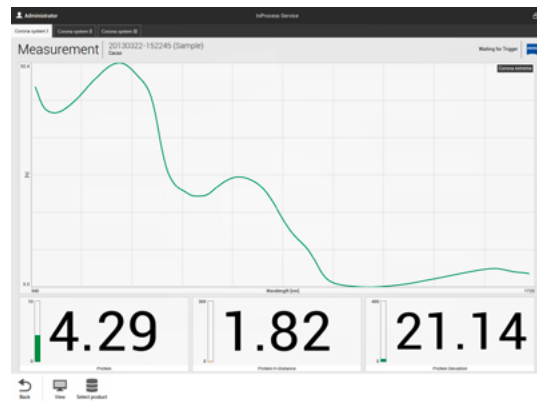
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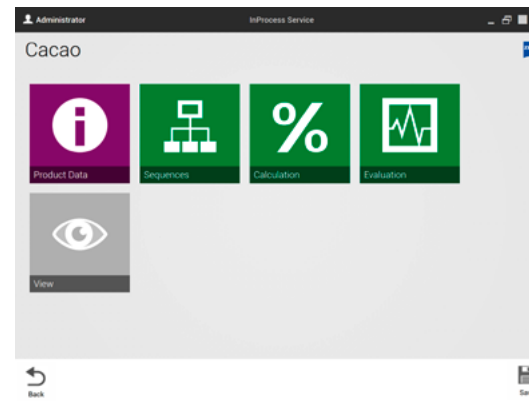
Measurement menu

- access to “defined products”
- immediate start of measurement
- display of measurement as value, graph or spectrum
- display of limit values



Product set-up menu

- creation of “defined products”
- creation of measurement sequence
- calculation, evaluation and integration into higher-ranking process environment
- adjustment of views
- support of calibrations (chemometric models) which are produced using standard chemometric software e.g. by GRAMS, UNSCRAMBLER, UCAL
- control of events via Digital I/O



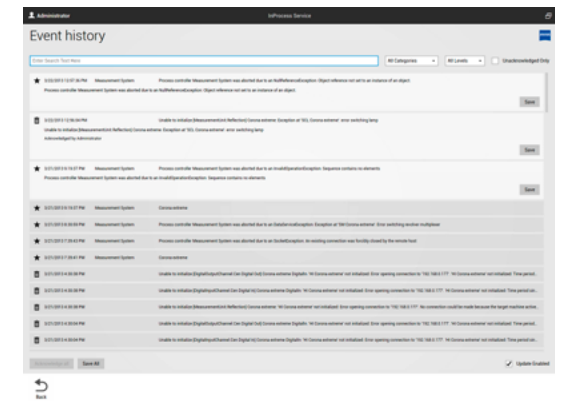
User management

- setup of various user groups with different access levels

Measurement history

- access to previous (completed) measurement runs
- file export

Event history



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Take the time. Allow us to present the Corona extreme.

In terms of their functioning, the Corona extreme system's components have to meet very demanding requirements. The compact spectrometer system is extremely low maintenance and easy to service. The system's functionality is described in detail below.

First steps

- installation of the system
- measurement with an available product

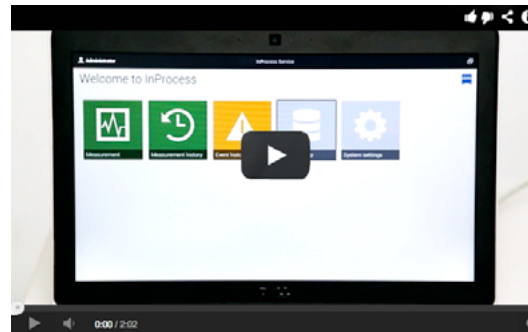
[Watch it at youtube.com](#)



Manufacturing a product

- creation of a measurement sequence
- calculation (import calibration)
- display of the results
- display of limit values

[Watch it at youtube.com](#)



Technical Specifications

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Spectrometer	diode array spectrometer
Polychromator	PGS
Measurement range	950 – 1650 nm
Mean spectral pixel pitch	3 nm
Spectral resolution (half width at 1/10 max)	≤ 10 nm
Wavelength accuracy	≤ 1 nm
Wavelength reproducibility	≤ 0.1 nm
Light source	halogen
Protection standard	IP 66
Dimensions W x H x D in mm	256 x 190.5 x 253
Weight	10 kg
Range of operating temperatures	-15 °C to +50 °C
Power supply voltage	9–36 V --- SELV

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