

Extracting value – maximizing quality



**Increasing efficiency in animal rendering
with ZEISS spectroscopy solutions**



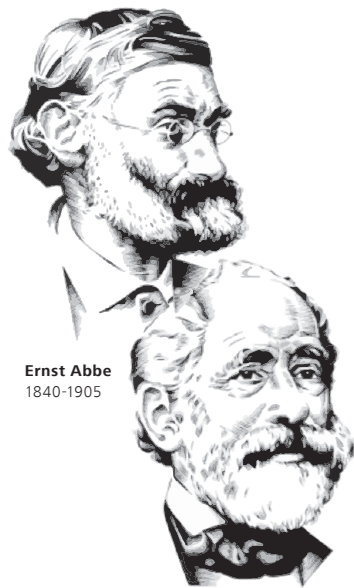
Seeing beyond

www.zeiss.com/animal-rendering

A broad spectrum of quality

ZEISS – over 140 years of experience in spectroscopy

In Jena in 1874, Ernst Abbe developed the world's first spectrometer for a company that Carl Zeiss founded 28 years earlier. Today, over 140 years after Abbe's spectrometer, ZEISS is one of the world's leading technology companies in the optical and optoelectrical industry with over 30,000 employees in nearly 50 countries and around 120 distribution, service, production and development facilities.



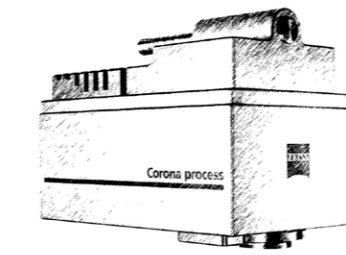
Ernst Abbe
1840-1905

From the beginning, the name ZEISS has stood for continuity and foresight as well as for passion and responsibility. Most importantly of all, the name has stood for globally leading optical measurement technology. Our vision is the perfection of spectroscopy solutions for process and quality control. We've always been the first to bring high-quality technology to the marketplace. Like in 1924, when we developed a photometer that allowed us to measure colors. Or in 1968, when we created the SPECORD series of two-beam spectral photometers for laboratory analyses. Or in 1999, when we set new standards for the agricultural industry with an NIR spectrometer mounted onto a harvester.

Throughout our history, we have always developed new technology that has made processes reproducible and minimized production losses. By fulfilling the quality expectations for products "Made in Germany", we've helped our clients to fulfill their promises to their own customers. This has led to the development of a business area specializing in material analysis, spectroscopy and process analytics, which now plays a key role in the company's global success.

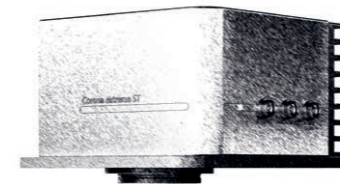
As a reliable partner for consistently high-quality food production (such as snacks, for example), we develop powerful and extremely robust solutions for industrial applications, laboratories and agriculture. We are currently the only ones who can measure snacks just seasoned with salt or the color and Agtron value of snacks.

Our solutions are not only sought after in the food industry and agriculture, but also in space: our high-performance gratings are used in satellites that monitor the air quality on earth, for example. Regardless of whether it's food production, harvesting or space travel, the use of ZEISS equipment provides a technological edge. This is also what drives us every day: maximum efficiency and sustainability as well as long-term success and satisfaction for our customers.



2019

The first connected spectrometer with real time access to data for defined product quality



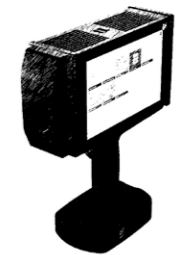
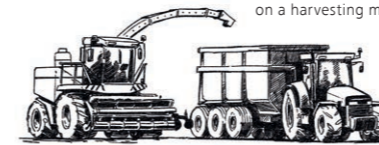
2013

The first process spectrometer with the highest level of robustness and long-term stability



1999

The first process spectrometer on a harvesting machine



2015

The first portable spectrometer for convenient quality control and measurement out in the field or on the move



1997

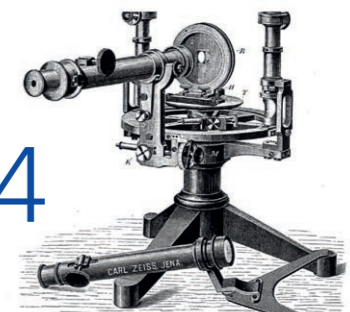
The first NIR spectrometer for the near infrared wavelength

1968

The first SPECORD series two-beam spectral photometer for analyses in the laboratory

1933

The first quartz spectrograph for spectral analyses in the ultraviolet wavelength



1874

The first spectrometer for the spectral fracture of light with a prism system

Increasing the potential of byproducts

With Corona[®] extreme from ZEISS



Corona[®] extreme mounted at GEA Varinline housing at liquid phase line

In animal rendering, all the materials you process are precious

Corona[®] extreme ensures that you make the most of these valuable commodities by facilitating the complete recycling of animal byproducts into usable products. As a full-scale spectrometer, Corona[®] extreme allows you to monitor various parameters in your raw ingredients and end products at all times – in real time. Increase the quality of your production process by ensuring that everything your work with is valuable.

When the going gets tough, Corona[®] extreme gets going

From operating temperatures of -15 °C to 50 °C and shocks of up to 50 times the force of gravity, Corona[®] extreme is at home in challenging environments. All the while providing accurate, repeatable and dependable real-time measurements results. As a full-scale spectrometer, it can measure various parameters at the same time, such as moisture, fat and protein content in the 950 to 1,650 wavelength range.

Regardless of whether you need measurements in the lab or in-line and under constantly variable conditions, Corona[®] extreme allows you to optimize your processes and maximize efficiency, no matter how tough the going gets.

A few extremely good arguments

Integrating Corona[®] extreme into your process provides you with a wide range of benefits and flexible options. For example, you can:



Accurately measure various quality parameters at the same time



React quickly to process variations and make adjustments in real time



Optimize product quality constantly by using accurate results in your decision making



Get exact, reliable and consistent results, time and time again



Easily integrate Corona[®] extreme in your process environment



Certify and classify byproducts for sale with precise, in-line determination of constituent parts



Boost sustainability by increasing the shelf life of byproducts through optimized drying



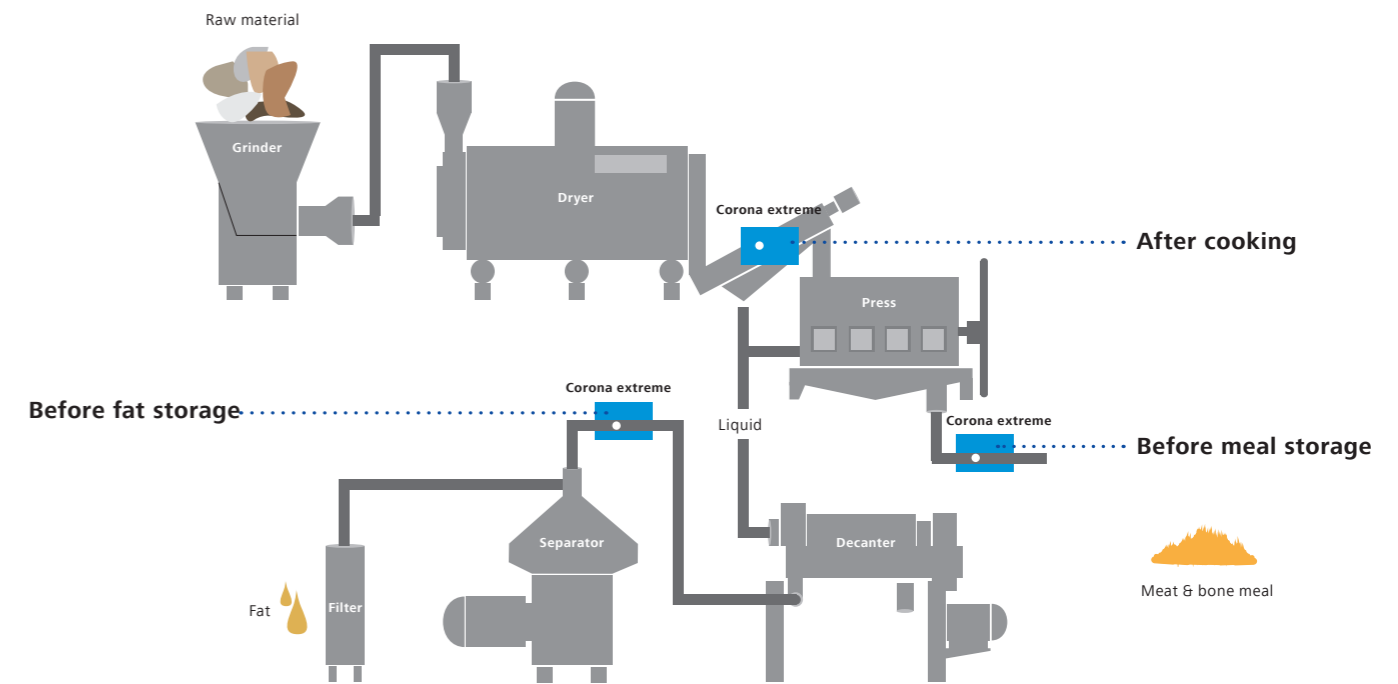
Create value by keeping quality consistent with regular monitoring of fat, moisture, residue and protein

Optimizing your process and product

Over and over again



Only the best products make the cut



From processing meat and bone meal to producing animal fats, Corona® extreme measures parameters that are integral indicators of quality, such as free fatty acids, moisture, insoluble residues, raw protein, raw fat and raw ash. This allows you to adjust production in real-time to ensure that your end products make the cut and are in line with your quality standards. Ideal for use at all stages of the process, Corona® extreme helps you to focus on using resources as efficiently as possible. This also contributes to sustainability, by taking excess biomass and waste produced by the food industry and turning it into products that can be used again.

Meat & bone meal and animal fat

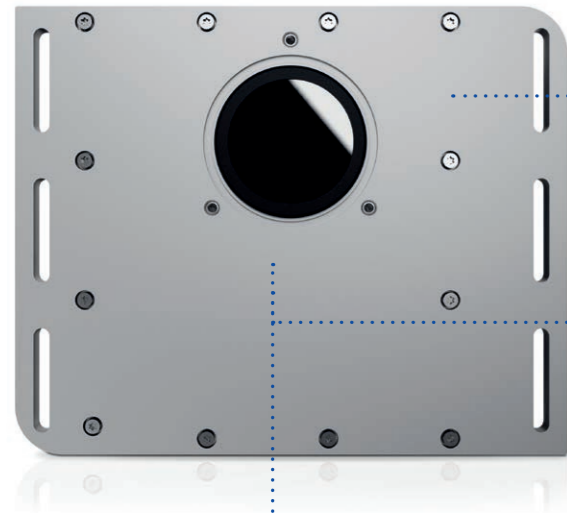
Measuring point	Measurement parameters
After cooking	FFA, moisture, raw protein, raw fat, raw ash
Before meal storage	Raw protein, raw fat, moisture, raw ash
Before fat storage	FFA, residual moisture, insoluble residues



ZEISS solutions
for animal rendering

The Hardware

Robust in any position

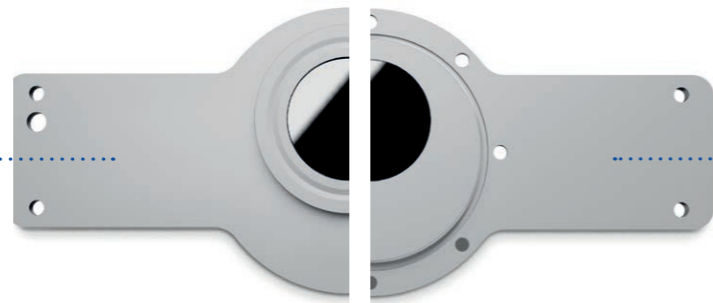


1. Robustness for extreme environments

Degree of protection: IP 66
 Operating temperature: -15 bis 50 °C
 Storage temperature: -40 bis 70 °C
 Shockproof up to 50 G

2. Simple and fast installation

Various flanges for perfect fitting on pipelines, trough chain conveyor, mixer or other transport systems



3. LED status display for operational readiness

Comfortable monitoring of functional activity

4. Full-scale spectrometer system made by ZEISS

Coverage of a wide wavelength range from 950 to 1,650 nm for fast in-line measurements and for calculating constituents

5. Easy integration into the client network

Numerous connections and industry standards are available: OPC UA and DA, Profinet, Profibus, EtherNet/IP, analogue and digital I/Os, Modbus, SQL-Database, Socket

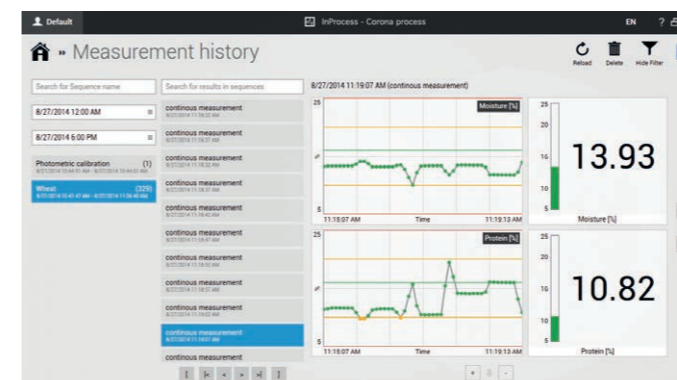
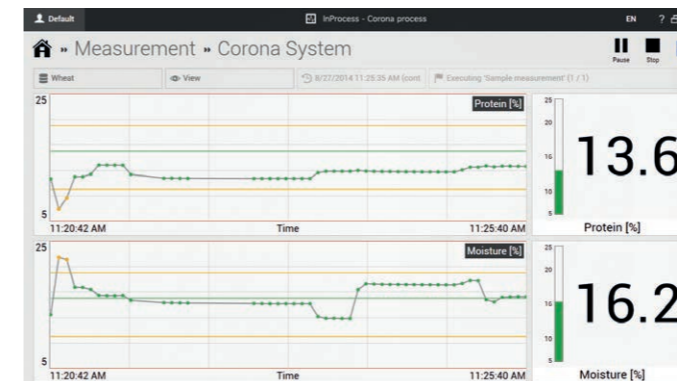


The software

Intuitive, arranged neatly, user friendly

Good software should be as powerful and versatile as it is intuitive and easy to use. Our InProcess software is designed not just to provide you with all the information you need quickly and easily, but also to fit around your specific needs, thanks to a range of customization options. InProcess is also ready for Industry 4.0 and provides the ideal platform to profit from connected spectroscopy and access your measurements from anywhere, at any time, thanks to easy cloud integration.

InProcess software enables an easy integration into production lines and intuitive usage. It can be configured according to the client-specific requirements.



- **Calibration:** support for common chemometrics software such as GRAMS IQ™, Aspen Unscrambler™, UCal™ or SL Calibration Wizard
- **Control:** management of more than one spectrometer is possible – with just one piece of software
- **User management:** creation of dedicated user groups with different access levels
- **Measurement:** display as spectrum, value or trend, automatic warning when limit values are exceeded, automatic start of measurement and elimination of implausible spectra
- **Integration:** communication with all established field bus systems and industrial standards
- **History:** access to all past measurement and reference results as well as data export of spectra, measured values and sample information
- **Diagnosis:** monitoring of spectrometer functionality with self-testing, important service information at the push of a button

Quality is measured by service. And vice versa.

We're there for you – for the lifetime of a device

Good quality goes beyond product performance – it's about the level of service you receive as well. We're more than just a provider to our clients, we're partners, which is why the service we offer is as important to us as the product we manufacture. We're with you every step of the way, from first consultation to final purchase and then for the entire life cycle of the product.

We also understand that every client is different, which is why we can develop individual service packages that are tailored to your company, facility, process, or specific project. That's what we mean by partnership and service quality: a relationship based on trust and a detailed understanding of individual needs and circumstances.

Furthermore, you can rely on our global distribution and service network. Regardless of whether it's gratings, modules, spectrometers or solutions, hardware, software, or calibration, we're the only ones who develop and offer all spectrometer components from a single source. Exclusive service pack-



ages guarantee optimal performance, increase service life and provide many years of reliable and precise results. You can also profit from our digital maintenance services, which provide you with user-friendly, location-independent solutions with no waiting times. And if something does need to be repaired on site, then our service technicians can be with you in next to no time.

Our expert service at a glance:

- Installation of equipment and software
- Application support for the whole product lifetime
- Preventive maintenance
- Customer-specific maintenance contracts
- On-site and in-house repairs
- Remote diagnostics, maintenance and repair



Rising to every challenge

Corona® extreme gives clients unparalleled performance in the most demanding and challenging conditions. This means that they can focus on extracting as much value from precious raw materials as possible, with constant information about critical quality parameters. Corona® extreme is the ideal spectroscopy solution for the animal rendering industry and the perfect tool to increase revenue, create value and boost sustainability.

»We design, manufacture and service process systems and equipment for many of today's vital protein recycling and renewables industries. That's why we need to rely on accurate, consistent results and equipment that works as hard as we do.

Corona® extreme from ZEISS plays a key role in our complete, high-performance systems and ensures that our solutions never let our clients down, no matter how hard the challenge.«

Richard Weeks, Director of Sales
The Dupps Company



Scan now to find out more about Corona® extreme from ZEISS

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