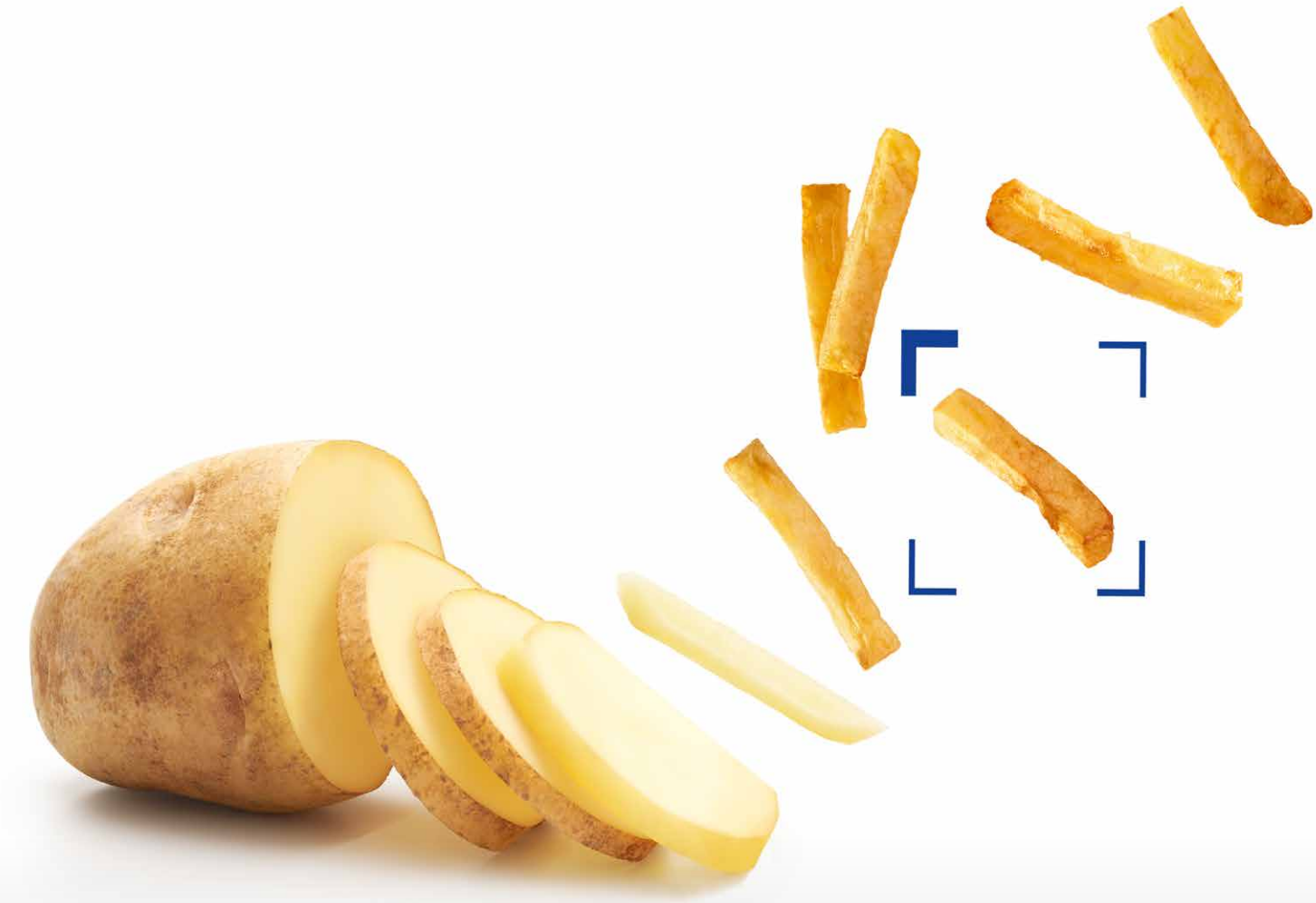
Maximum quality
Minimum loss



The new mark of quality for potato products: in-line inspection from ZEISS

ZEISS

Seeing beyond

A broad spectrum of quality

ZEISS – over 140 years of experience in spectroscopy

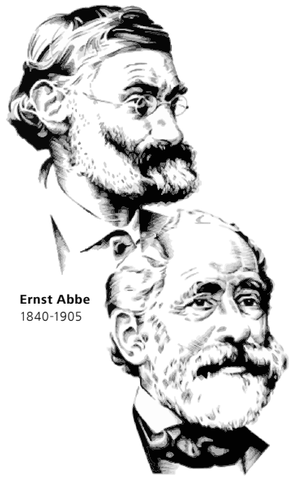
In Jena in 1874, Ernst Abbe developed the world's first spectrometer for a company that Carl Zeiss founded 28 years earlier. Today, over 140 years after Abbe's spectrometer, ZEISS is one of the world's leading technology companies in the optical and optoelectrical industry with over 30,000 employees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

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.

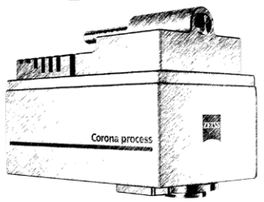
As a reliable partner for consistently high-quality food production (such as snacks, for example), we develop powerful and extremely robust solutions for industrial applications, laboratories and agriculture. We are currently the only ones who can measure snacks just seasoned with salt or the color and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



Ernst Abbe
1840-1905

Carl Zeiß
1816-1888



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

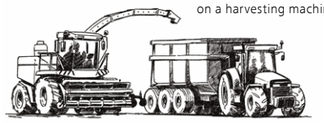


1997

The first NIR spectrometer
for the near infrared wavelength

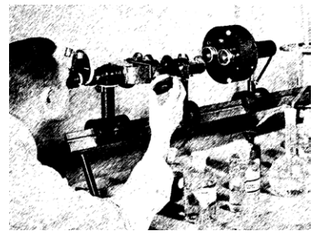
1999

The first process spectrometer
on a harvesting machine



1968

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



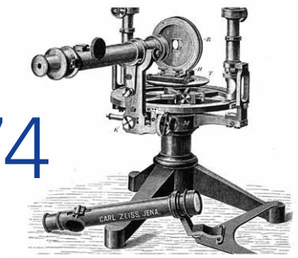
1933

The first quartz spectrograph
for spectral analyses in the ultraviolet wavelength



1924

The first photometer
for color measurement



1874

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

The perfect line up

Your ideal production assistants: ZEISS Corona® spectrometers

Less waste with a higher yield:
The full-scale ZEISS Corona® process and Corona® extreme spectrometers can capture a wider wavelength range than other spectrometers, allowing it to measure a variety of parameters at the same time. This provides not just more precise measurements, but also a higher level of reproducibility for products. This allows you to produce consistently good results, even when the quality of your raw materials varies. It doesn't matter if our system is used in the laboratory (at-line) or in an industrial environment (in-line) – it provides reliable measurements in both cases.

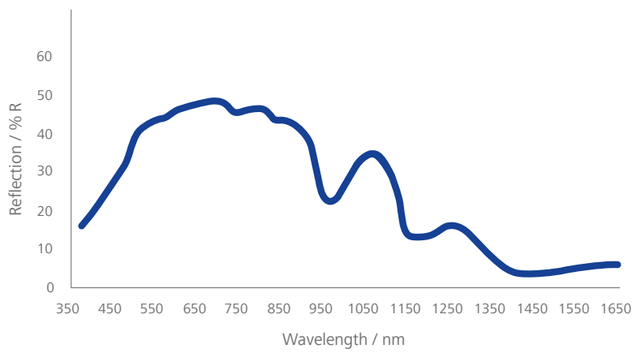
This helps you a great deal when it comes to deciding how to optimize production: you can make an important decision in real time and intervene in your process as necessary. Quickly, safely and reliably. ZEISS Corona® process and Corona® extreme play an integral part in our relationship with our clients: you've made a promise to your own customers and ZEISS is the right partner to help you fulfill it.



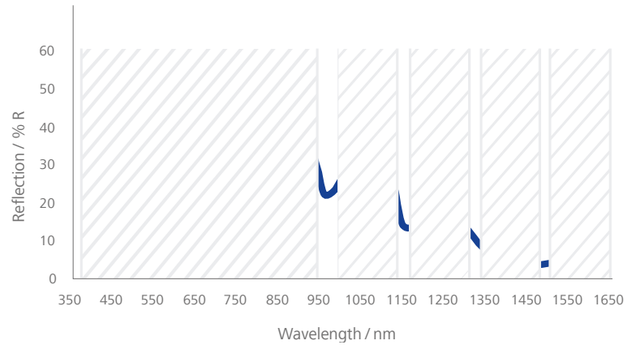
ZEISS Corona® process is directly integrated into the production line for in-line measurements. The sensor captures data about constituent elements and the color of potato products on the production line in real time.

The full-scale ZEISS Corona® process spectrometer: one device – an unlimited number of measurement parameters
ZEISS Corona® process is able to simultaenously evaluate the vast quantity of information that exists in the 380 to 1,650 nm wavelength range. With other measurement methods, the filters or even the device itself needs to be changed, whereas our spectrometer can measure parameters such as fat, color, salt, dry mass, spices and Agtron value. This guarantees fast and precise inspection of all the important quality parameters at the same time – in real time. That optimizes production costs, reduces production processes and saves energy.

French fries measured with ZEISS Corona® process



French fries measured with a filter based spectrometer



MAKE BETTER DECISIONS, FASTER

Various quality parameters are measured in real time. This allows you to make important decisions directly when you need to and intervene in your process as necessary.

SEAMLESS MEASURABILITY

You have a continuously available wavelength range of 380 to 1,650 nm (ZEISS Corona® process) or 950 bis 1650 nm (ZEISS Corona® extreme) at your disposal, where various parameters such as color, fat, moisture and many more are measurable – without having to change the device or filters.

THE HIGHEST EFFICIENCY

The spectrometer minimizes waste and maximizes your production yield. This provides more efficiency and allows you to conserve raw materials, water and energy.

SMART FACTORY

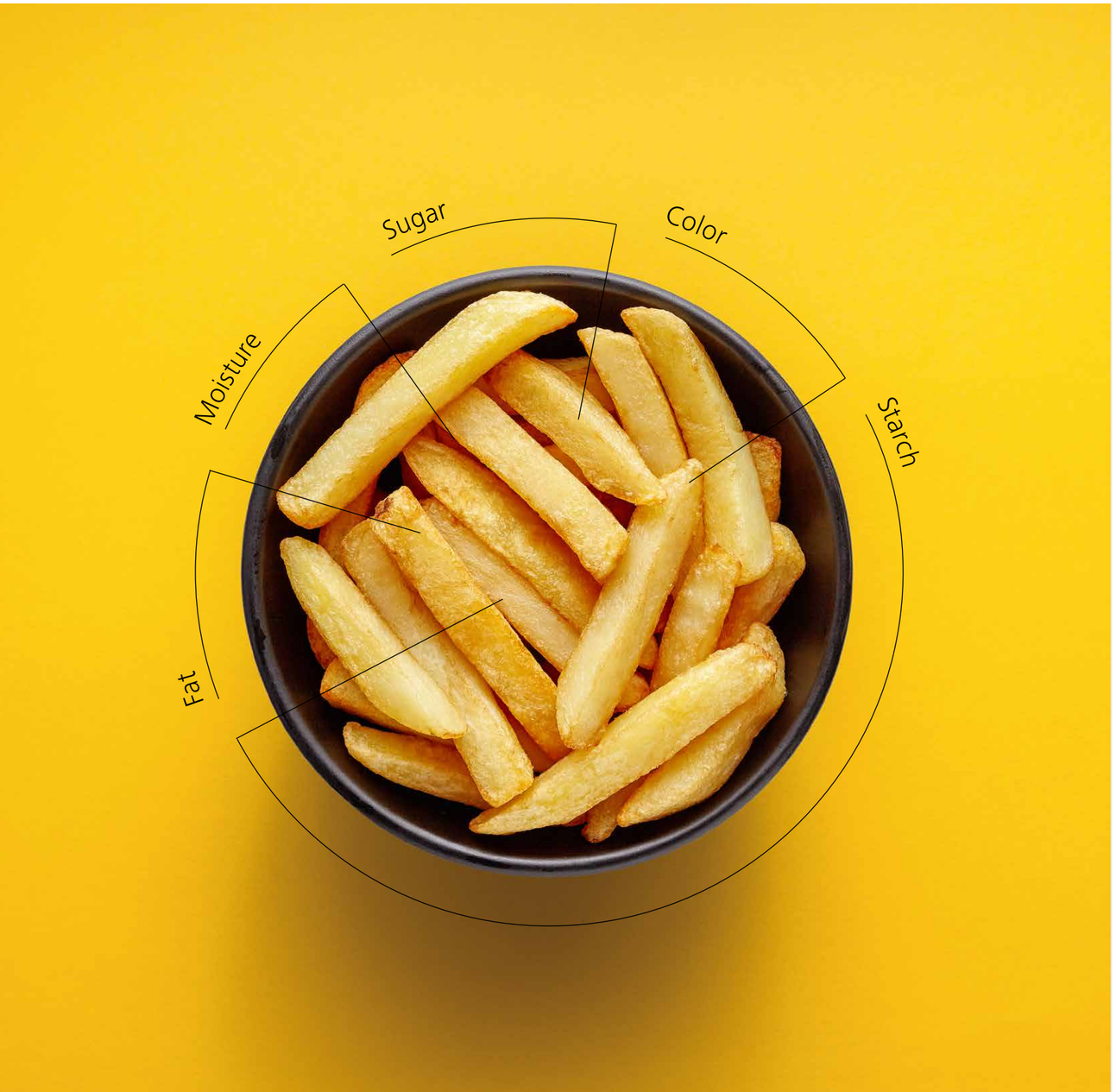
The system is integrated into your production process, takes measurement values directly from your production line and instantly makes them available. This gives you access to data and insights in real time, allowing you to reach the desired product quality even more efficiently.

ALL-ROUND USER FRIENDLY

The sensor supports you in optimizing the operation of your production line. The device is easy to use, documents everything completely, is easily integrated into the production environment and allows for data to be quickly and efficiently allocated to its source.

From raw material to snack

Complete quality control in one device



A product is only ever as good as the stuff from which it is made. Nature's raw materials can of course vary depending on factors that we cannot control, such as exposure to sunlight, increased dryness or heavy rains. ZEISS can't influence that. However, as soon as a raw material is ready for processing, ZEISS Corona® process and ZEISS Corona® extreme can ensure that the maximum amount of quality is extracted. Like guaranteeing chips have uniform moisture or that peanut flips have the perfect amount of seasoning. For us, it's clear that a product is more than the sum of its parts. That's why we've developed our full-scale spectrometers to give our clients complete control over their production – across the entire process from start to finish. ZEISS Corona® process and ZEISS Corona® extreme makes this possible by measuring various parameters at the same time in real time. So that you have a complete overview of your production the entire time and can make interventions if something doesn't go according to plan.



French fries

Measuring point	Measuring parameters
Before deep frying	Starch and sugar
Deep frying	FFA in deep-frying fat
After deep frying	Moisture and fat content, color

Potato flakes

Measuring point	Measuring parameters
After dehydration	Bulk density, moisture
Mixer	Color, salt, moisture, bulk weight
Transfer of residuals (animal feed)	Dry mass

Potato pancakes / Croquettes

Measuring point	Measuring parameters
After deep frying	Fat, moisture, color

Potato starch

Measuring point	Measuring parameters
In the drying tower	Moisture

ZEISS Corona® process
Everything is measurable

1. Perfect for difficult environments
Degree of protection: IP 67, ATEX Zone 21/22
Operating temperature: -10 – 50 °C
Storage temperature: -40 – 70 °C
Shockproof up to 25 G



2. Simple and fast installation
Flexible fastening systems and easy integration into the process thanks to support for all of the established field bus systems and industrial standards: OPC UA und DA, Profinet, Profibus, EtherNet/IP, analogue and digital I/Os, Modbus, SQL database, socket

3. LED status display for operational readiness
Comfortable monitoring of functional activity



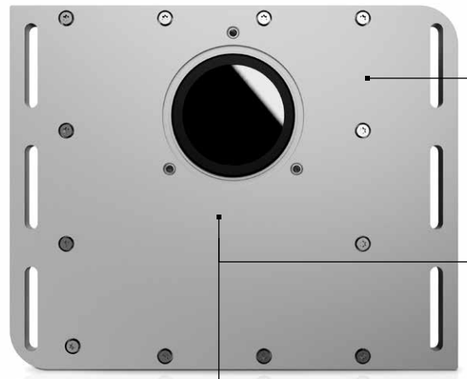
4. Full-scale spectrometer system made by ZEISS
Coverage of a wide wavelength range from 380 to 1,650 nm for fast in-line measurements and for calculating color and constituents

5. Reliable results irrespective of distance
A distance sensor ensures comparability of predicted values irrespective of the distance of the sample to the measuring window, distance: 100 – 590 mm

6. High reliability from monitoring the lamp function
Two redundant lamps with a lifespan of 10,000 hours each, including automatic switching to the back up lamp in case of failure and a warning for users

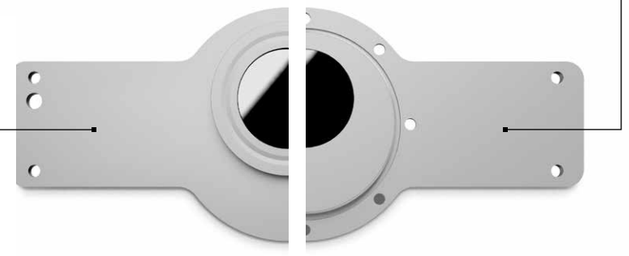
7. More safety from automatic assistance systems
Filtering of unwanted spectra and internal white referencing, for example. On top of that: protection of the measuring window from product dust, mist and grease by air purge

ZEISS Corona® extreme
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 a wide variety of 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



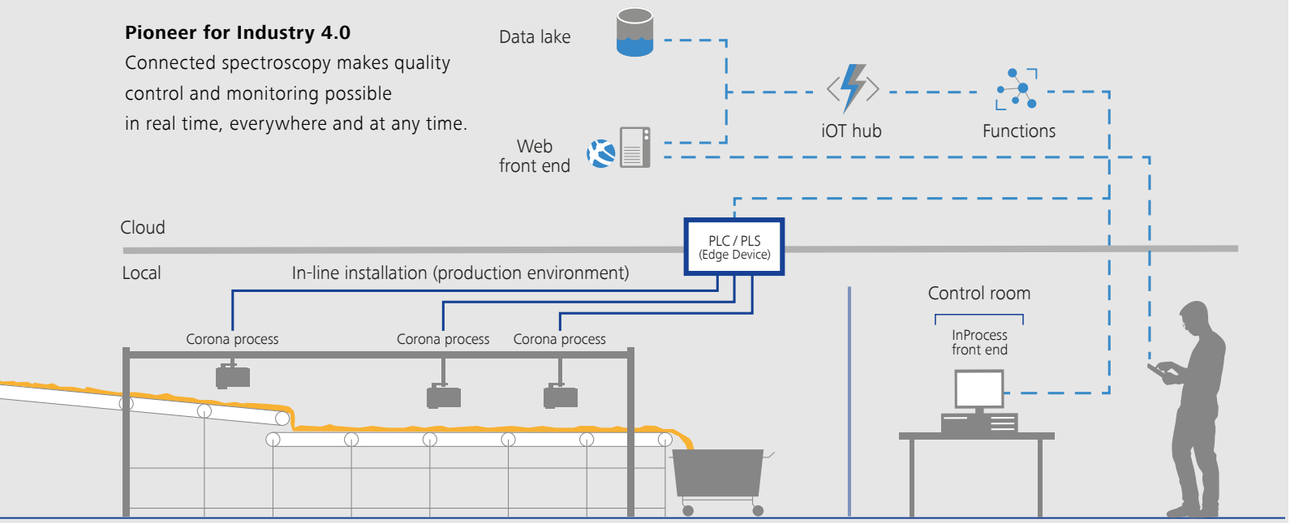
The software
Intuitive, arranged neatly, user friendly

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



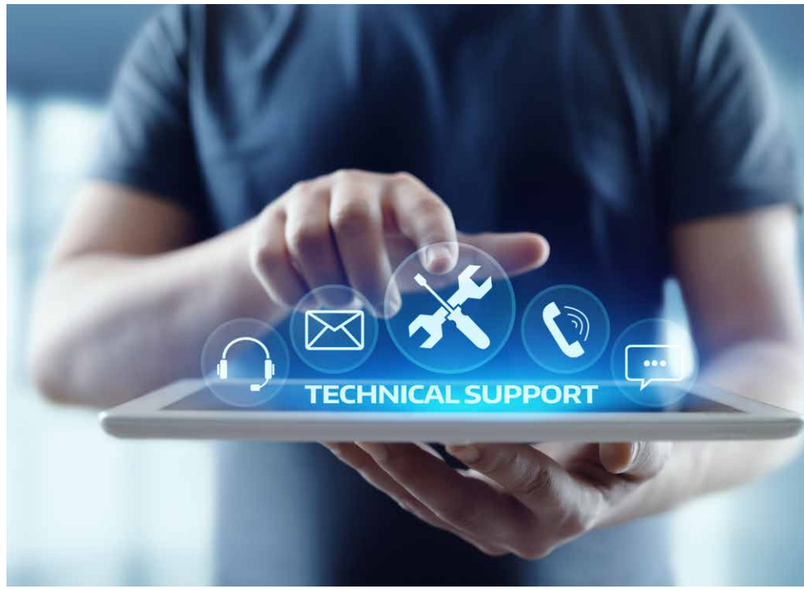
- **Calibration:** support for common chemometrics software such as GRAMS, Unscrambler, UCal or SL Predictor
- **Control:** management of more than one spectrometer is possible – with just one piece of software
- **User management:** creation of dedicated user groups with different access levels
- **Measurement:** 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

Pioneer for Industry 4.0
Connected spectroscopy makes quality control and monitoring possible in real time, everywhere and at any time.



Quality = Service²
We're there for you – for the lifetime of a device

For us, service means not just being there for you around the clock but being there for you for a device's lifetime. That's why we're by your side from first contact to final purchase and see you primarily as a partner – throughout the entire life cycle of the product.



That's our claim and that's what the ZEISS name stands for. A claim that we fulfill every day. Not just in terms of our technological soltions, but also in terms of our client-specific service conditions. This means that we don't offer you a prefabricated service contract, but rather develop an individual service package with you that's tailored to your project.

You can rely on our global distribution and service network as well. 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. Exclusive service packages guarantee optimal performance, increase service life and provide many years of reliable and precise results. The best thing about it: digitalization makes our distance maintenance service particularly user friendly, as there are no waiting times and we are able to provide location-independent solutions quickly. And if something does need to be repaired on site, then our service technicians are already on their way.

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

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