SpectraAlyzer

GRAIN

ZEUTEC

EN

1

2

3

ZEUTEC
Home
Results
Back
Wheat: Sample-05
Protein → %
12.8
Moisture → %
14.3
Sedimentation → ml
68.4
Gluten → %
12.7
Test weight → kg/hl
80.3
Hint: Lower arrows indicate min/max subsample
SpectraAlyzer

What it does for you

The SpectraAlyzer grain is a Near-InfraRed spectrometer which is dedicated to analyze the composition of samples using the near infrared absorbance characteristics of the sample spectra. It is suitable for the compositional analysis of a wide variety of food products like grains, cereals, oil seeds and flour. All possible parameters of e.g. grain products, such as protein, moisture, oil, ash, hardness and water absorption can be analyzed simultaneously. The sample is top filled directly into the sample cell of the SpectraAlyzer grain, there is no need for grinding or other sample preparation at all.

The sample will be fed through the sample chamber via a robust feeding device and automatically discharged. In order to analyze powder samples e.g. wheat flour an optional Flour Module is as accessory available. Each analyzer can be fitted with a Test Weight Module (Bushel weight, hectoliter weight) to determine the volume to weight ratio of the sample. An automatic path length adjustment enables the user to quickly analyse a multitude of whole grain and oil seed samples.

The instrument is controlled with an easy-to-use icon driven software, using a modern interface glass panel slider called COS "Central Operation Slider", and a color TFT display with 640x480 pixels. The innovative graphical user interface and its functions has a similar operability as e.g. the Apple IPod®. The user interface is made out of glass for easy hygienic cleaning and years of maintenance free operation.

A web server operating on the instrument allows the direct connection to the www (world wide web) – so results and maintenance can be done directly from Internet browsers e.g. MS Internet Explorer, Mozilla Firefox and others. The web front end allows remote browser based instrument supervision. No PC application software is necessary.

How it works

The SpectraAlyzer grain is designed for the analysis of solid bulk materials in diffuse transmittance. The instrument takes spectra of the samples in the short-wavelength range of the near infrared (SW-NIR) radiation. In this spectral range, the absorbance of the sample material is much lower than at higher wavelengths, so that there is still sufficient light intensity left for detection even when the radiation has passed several centimeters of sample. This technique is especially of interest when inhomogeneous samples like whole grains or bigger particles shall be analyzed. In case of grain, it is essential to obtain spectral information from inside the kernels and to make sure that this information is sufficiently representative.

When a grain sample is illuminated/ transmitted with NIR light (NIT – Near Infrared Transmission), the radiation is partly absorbed, partly scattered and partly reflected by the grain kernels. As a result, the beam is no longer well defined in terms of geometric optics (like the transmittance characteristics of water or other clear liquids); this is why the measuring principle is called diffuse transmittance.

The amount of light absorbed by the sample at different wavelengths is directly related to the concentration of chemical functional groups, such as C-H; O-H, and N-H. As these concentrations are in turn related to concentrations of the parameters of interest, for example protein, moisture or oil, property values can be determined.

The SpectraAlyzer grain is shipped with preinstalled standard calibrations for many products, parameters and countries where typical applications are:

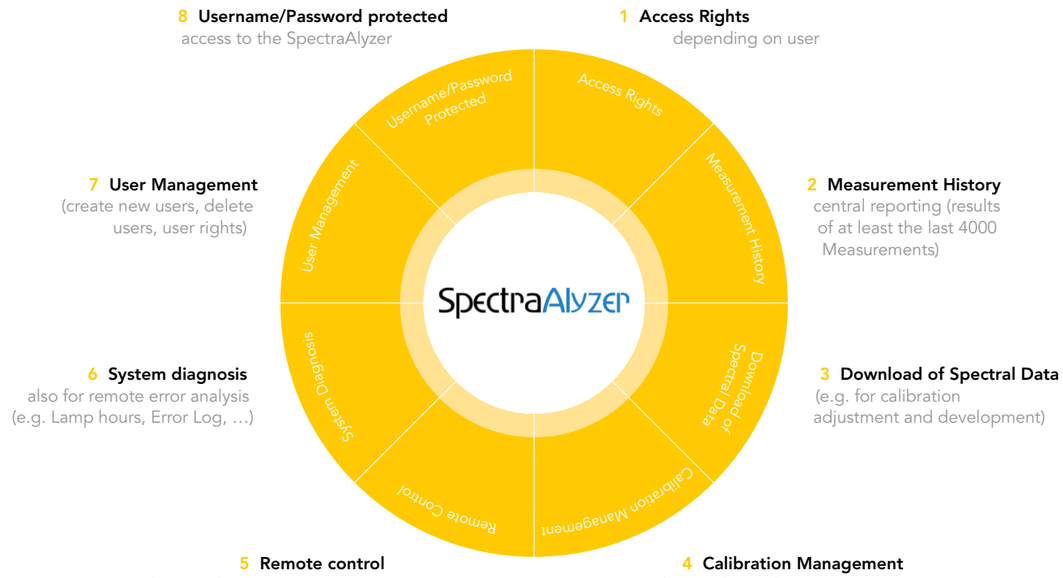
- **Grain reception/trading/malting**
  wheat, durum wheat,rice, barley,corn, soy, malt, green malt, rye, oats, triticale, sorghum/milo, lentils, beans, green and chick peas and others
- **Flour milling**
  wheat and rye flour, semolina, ground wheat, rice meal and flour, soy meal, corn meal and flour and others
- **Oilseed crushing**
  soybean, canola/rapeseed, sunflower (ground) and others

All calibrations provide accurate analytical values and are 100 % transferrable between instruments!

Network, Remote access functions calibration/ chemometrics software

The remote web browser based supervision allows the monitoring and maintenance of each SpectraAlyzer grain from anywhere in the world, it just needs to be connected to the Internet. Each SpectraAlyzer grain has an embedded PHP/MYSQL enabled web server and can be accessed with any web browser (e.g. Internet Explorer, Firefox), even from your mobile phone. This remote access allows instrument diagnostics, calibration updates/maintenance, if necessary bias and skew adjustments as well as central reporting. With the ZEUTEC Application worx software the user can expand the existing and proven calibrations and create new calibration models if needed. By having all the software tools at hand an innovative Calibration Wizard and simple to understand workflow allows even unskilled users to adjust existing and create new calibration models. The Application worx software package uses database and PLS statistic functions to create the calibration model. In routine use Application worx can be used as direct operating software, giving full access to the instrument while retrieving high resolution spectral data for extended calibration work.

THE WEB INTERFACE FEATURES THE FOLLOWING FUNCTIONS



ZEUTEC

Home

Results

Back

Wheat: Sample-05

Protein → %

Calibration: 8 - 22
Bar range: 5 - 25

12.8

Moisture → %

Calibration: 8 - 22
Stand. range: 8 - 21
Bar range: 5 - 25

14.3

Sedimentation → ml

Calibration: 35 - 75
Bar range: 30 - 80

68.4

Gluten → %

Calibration: 7 - 14
Bar range: 5 - 15

12.7

Test weight → kg/hl

Stand. range: 61 - 88
Bar range: 60 - 90

80.3

9:01 AM

Hint: Lower arrows indicate min/max subsample

5

SpectraAlyzer

Technical features overview

made in Germany

Design	NIR monochromator
Spectral range	(570) 850 - 1100 nm
Verification of wavelength	Automatically during start-up
Optical bandwidth	4 nm
No of datapoints	1000
Measurement	Transmisson
Sample presentation	Automatic
Optical path length	Automatically adjusted, range 6 - 30 mm
Measuring time	45 s, 200 - 300 g sample

Display	
Screen	TFT 640 x 480 pixel, colour
User Interface	Glass, COS "**C**entral **O**peration **S**lider", multi language GUI

Software	
Software	Integrated, stand-alone operation, fail-safe
Software / database storage	Flash disk 16 GB, USB memory stick
Interfaces	RS232, USB, Ethernet
Printer	Printer as optional accessory
Input voltage / rated current	90 - 260 V, self-detecting / 200 VA
Protection	Dust and humidity

Dimensions	
Measurements	Height: 370 mm / width: 400 mm / depth: 440 mm
Weight	27 kg

Modules	
Flour module	For flour, semolina, soy meal and other ground samples
Test Weight Module	For determination of volume to weight ratio of the sample

Options
Bluetooth, WLAN , Application worx, wavelength standard, barcode reader, keyboard

ZEUTEC Opto-Elektronik GmbH
Kieler Str. 211, D-24768 Rendsburg
T (+49) 4331 - 136650
E moreinfo@zeutec.de
www.spectraalyzer.com

ZEUTEC

an ISO 9001:2008 certified company

SpectraAlyzer GRAIN Item No. 10006 ISO 12099 compliant NIR