Our Idea Conquers the World

belec lab 3000s

The star of the new desktop spektrometer class:

BELEC LAB 3000s:

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The introduction of the new desktop spectrometer class:

With the new **BELEC LAB 3000s** it is our intention to provide a compact, top grade spectrometer that is exceptionally economical for metal analysis in small- and medium-sized enterprises. It comes with inert-gas breathed spectrometer optics and is configured for the most-wanted analytical applications. The new, small-sized analyser achieves low detection limits and excellent precision which has only been known in larger stationary spectrometers until now. Photomultipliers have been implemented for signal-to-noise detection levels, which has not been exceeded by other technologies.

An innovative Argon flushing system inside the measuring chamber means very low Argon flow requirements. This contributes to very low operating expenses.

The small shelf area of **BELEC LAB 3000s** and its low weight of 49 kg enables installation even in a restricted space, e.g. on a desk. Special lab arrangements are unnecessary.

The **BELEC LAB 3000s** is highly recommended for metals analysis.

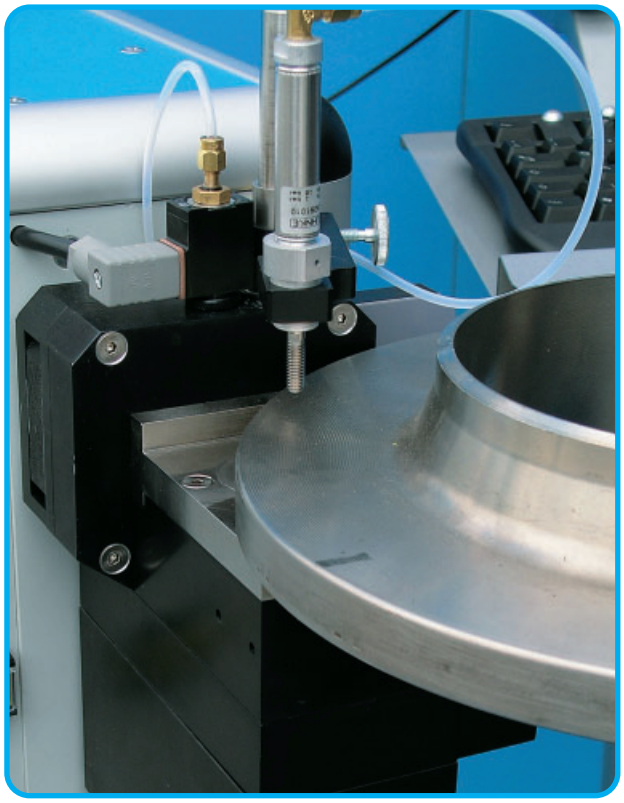
The universal solution for different applications:

The sparkstand of the **BELEC LAB 3000s** is open and freely accessible from all sides. This has the enormous advantage, that huge and bulky specimens can be analysed without having to cut or destroy them.

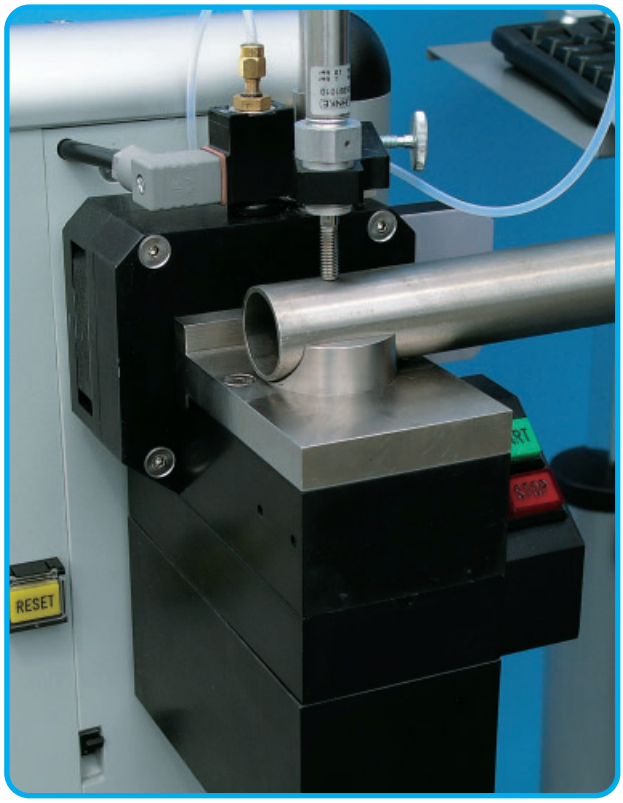
A sample has to seal the hole of the Argon flushed measuring chamber to prevent air contamination. A small or difficult shaped sample needs an appropriate adapter to seal it.

With contact to electrically insulating ceramic insert, even very small specimens can be analysed without danger of electric shock for the user. For such application the small part adapter guarantees the grounding and fixing of the specimen.
For analysis of ball bearings, a special **small part adapter** with its own vacuum system enables the sample to be held in position whilst performing the analytical task.

BELEC offers plenty of adapters for your special requirements.



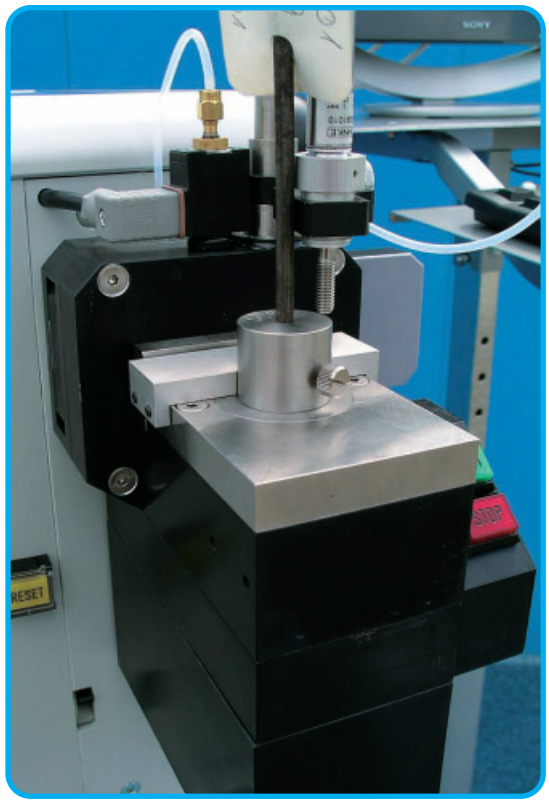
Without special preparation the analysis of small pieces with different forms, e.g. metal splinters, screws, washers, is possible with utilization of a **ceramic insert.**



BELEC offers special **adapters for** analysis of **tubes and pipes.** The adapters fit precisely to the standard diameters in metric and imperial sizes.
Also adapters can be supplied to suit customer-specified applications and dimensions.
Using the precise adapter shape avoids the need for any non-durable rubber sealing, eliminating the expense of a consumable item.

Also a "quick-check-mode" multiplies the possible number of comparison measurements.

The analysis of the cross sectional area of wires requires an appropriate adapter. With help of a **centering prism** the wire gets the correct position above the centre of the electrode. Cross sectional **wire adapters** are available from Ø 2 mm to Ø 12 mm in steps of 0.5 mm.
The simple design, with limited moving parts, is easy to use and gives excellent durability.



For **surface area** analysis of small wires up to Ø 0.5 mm and from Ø 0.5 mm to Ø 2 mm Belec can provide surface area **wire adapters.** Several wire cuttings clamped in the adapter give a proper measuring area.
Our development department will gladly prepare special adapters for practically any type of samples.
These can be used in conjunction with the normal calibration of the unit.

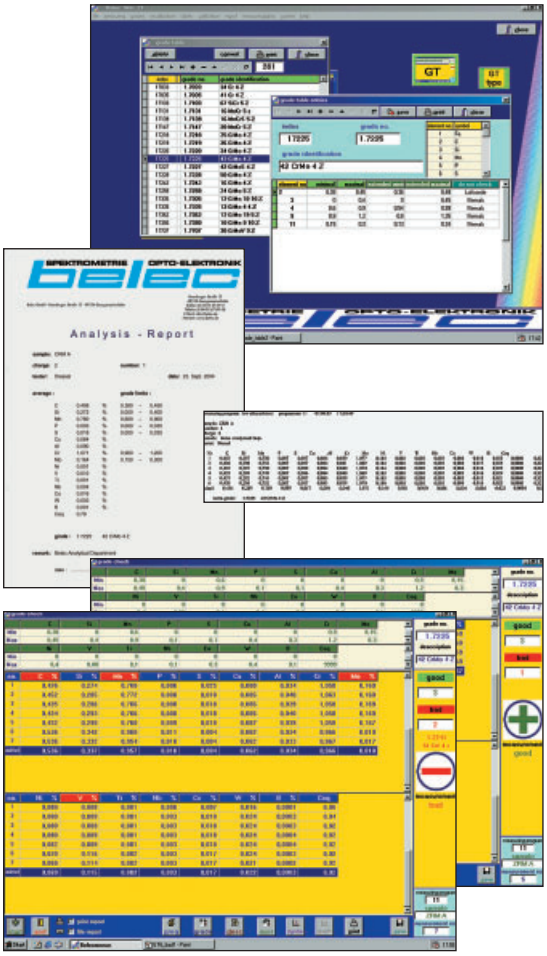
belec win 21

The Spectrometer Software with experience:

Using the spectrometer you can ascertain day by day the excellent relationship to practical use of the **BELEC WIN 21** software. It is user-friendly and easy to understand. By direct choice of measuring programs, routine jobs become noticably easier and can be performed in seconds.

You can rapidly edit the sample description in one line, or give full details according to the standards. Sample descriptions become automatically saved, can be loaded later on and modified for the next sample in no time.

During the procedure of average calculation, the exact quality description becomes classified. Software shows it and indicates if several qualities apply to the element concentration. You can list the qualities and select the ones wanted for subsequent documentation purpose.



For classifying of the grade description the **BELEC WIN 21** software goes to an integrated alloy data bank. Here 100,000 and more grades are storable. Easily you can add further grades to this data bank or adjust entries to changed specification and standards.

You have various easy-to-use possibilities for documentation of measuring results. Print- as well as hard disk protocol can be generated by pressing a button. Data just shown can be stored in the same way. You can create analysis reports, store them and print out directly or pass the data file via Ethernet to your local net work.

Measuring results and statistics can be graphed in a simple way.

Special measuring programs for type measurements and sorting application, can be used quickly and extend the application range. For example, the grade test enables the user to take measurements and compare the results against stored limits and quality files.

Technical specifications for BELEC LAB 3000s:

Optics
- spectrometer in Paschen-Runge mounting
- Rowland circle diameter 300 mm
- Usable wavelengths 175–430 nm
- groove 3600 lines/mm
- reciprocal dispersion 0,9 nm/mm (1st order)
- shock resistance
- for excellent longterm stability the Photomultiplier detector systems are ± 0.1°C temperature stabilised
- 1 base module completely calibrated, possible to upgrade for two additional base modules.
- possible to upgrade for a maximum of 24 element channels
- "Inertgas breathed" optical chamber with purifier system
- optionally configured as vacuum spectrometer instead of "Inertgas breathed"

Source
- spark generator with maximum 400 Hz frequency
- unipolar discharge
- separate parameter for presparking and integration selectable via software
- ignition frequency program specificly selectable via software
- discharge power program specificly selectable via software
- ignition voltage 20 kV

Measuring stand
- Argon flushed for exact analysis
- spark stand grounded with ∅ 10 mm analysis opening, optionally with 4 mm insert disc made of ceramic
- adapters for wires, pipes and small parts are available
- low-wear Tungsten electrode
- pneumatic sample clamping
- Argon flow 0,1 l/min in stand by mode and 2 l/min during analysis
- almost maintenance-free operation

Electronics
- stabilised high voltage
- zero stabilised analogue amplifier
- 6-decade dynamic A-D converter for each channel
- 24 channels with digital integration with configuration possibility for up to 3 bases

Dimensions
- width 17.4 in. (440 mm)
- height 16.4 in. (415 mm)
- depth 22.5 in. (570 mm) plus 7.3 in. (185 mm) for spark stand

Weight
- Analysis unit 108.0 lbs. (49,00 kg) plus. Screen/Display and keyboard

Power supply
- 220 V/50 Hz; optional 110 V/60 Hz
- 100 W in standby
- 600 W during analysis with optional vacuum system
- 600 W in standby
- 1100 W during analysis

Computer-Hardware
- system integrated industrial computer system
- At-compatible CPU card with real time clock
- 128 MB RAM minimum
- 3.5" disk drive 1,44 MB
- 2.5" Hard disk 20.0 GB minimum
- 15" screen, optional other size and displays
- complete external keyboard
- parallel port
- serial port RS 232
- USB port
- Ethernet interface, optional

We reserve the right to alter our technical specifications

Software
- Belec WIN 21 analysis and quality control program
- Operating system chooseable
- display of analysis values at each measurement
- as many analysis programs to customer specifications as required
- individual analysis parameters for each program
- automatic program selection, optional
- analysis computation with: background correction, curve position correction, additive and multiplicative inter-element correction
- automatic correction with standard types
- easy and simultaneous recalibration of several programs
- mix-up checking by comparison with reference measurement
- grade checking by comparison with analysis regulations
- type calibration and type measurement
- tolerances for every analysis program and element in absolute and relative weight percentages, individually adjustable
- average and standard deviation from chosen measurements
- warning signal, when calibration curve is exceeded
- automatic reminder of regular recalibration
- recalibration of analyse programs almost with two samples only
- automatic display of grade
- description or material number
- alloy data bank, 100,000 and more grades are storable (only limited by the computer storage capacity)
- text size on monitor variable for optimum legibility
- protocol storage function
- report memory function for later evaluation, printing and archiving
- several statistic functions with graphical representation

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