

# belec vario lab



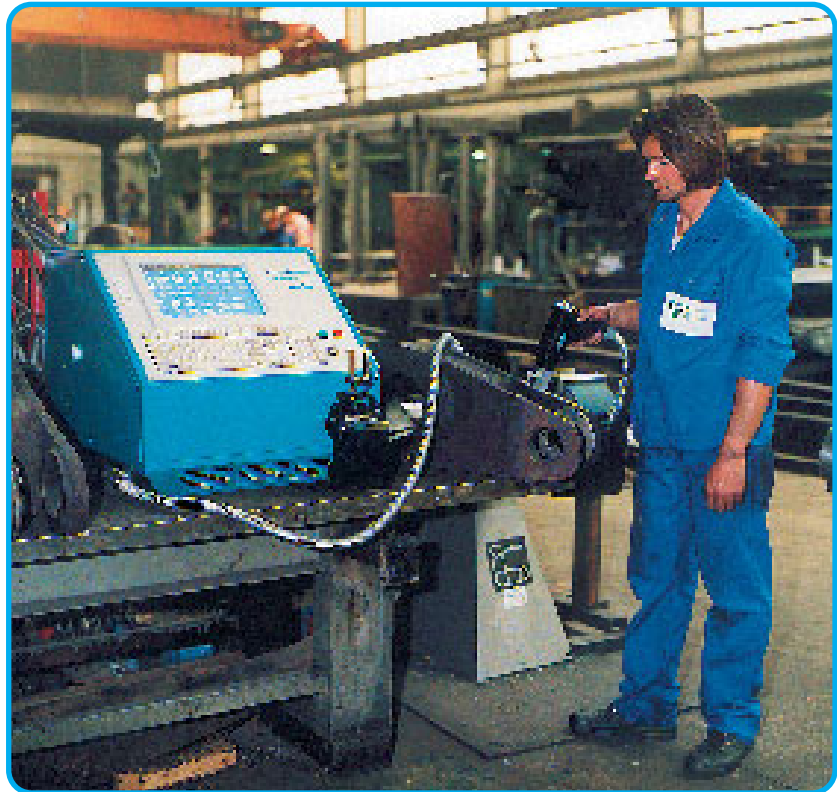
**belec**



# The introduction of the variable laboratory:

**BELEC** is introducing a new generation of spectrometers with the **BELEC VARIO LAB**. Because of its flexibility, the **BELEC VARIO LAB** is cost efficient and easily adapted to practically any possible task. This unit is very robust, reliable, easy to handle and requires only little floor space.

**BELEC's** many special developments and their long years of experience ensure long-term measuring stability and precise analyses. A special advantage of the **BELEC VARIO LAB** is its low operation costs. This is accomplished with a very low Argon flow and almost no need for maintenance. The **BELEC VARIO LAB** is one of the most advanced precise and flexible analysis system. That is unmatched and looking for its equal.



One of **BELEC's** many specialities is the additional analysis probe. Without any changes you are able to precisely analyse heavy or bulky specimens or perform quick sorting and comparison measurements.



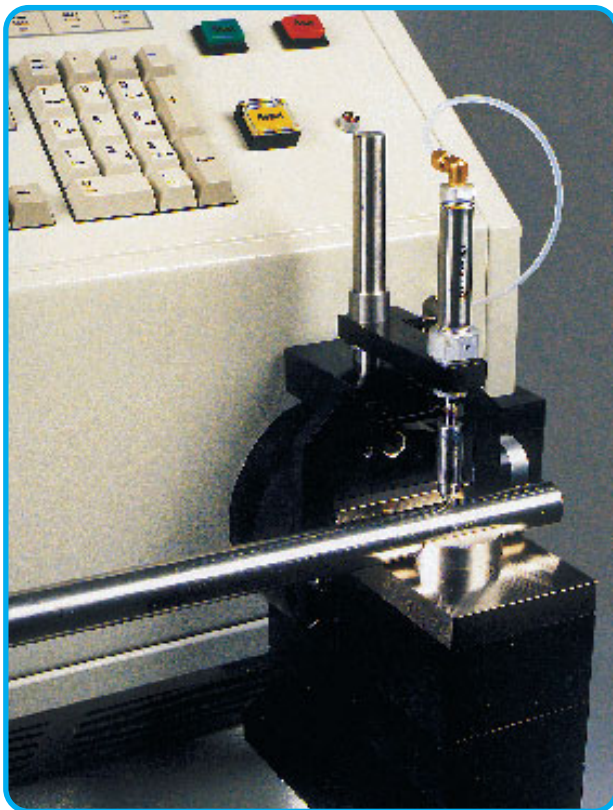
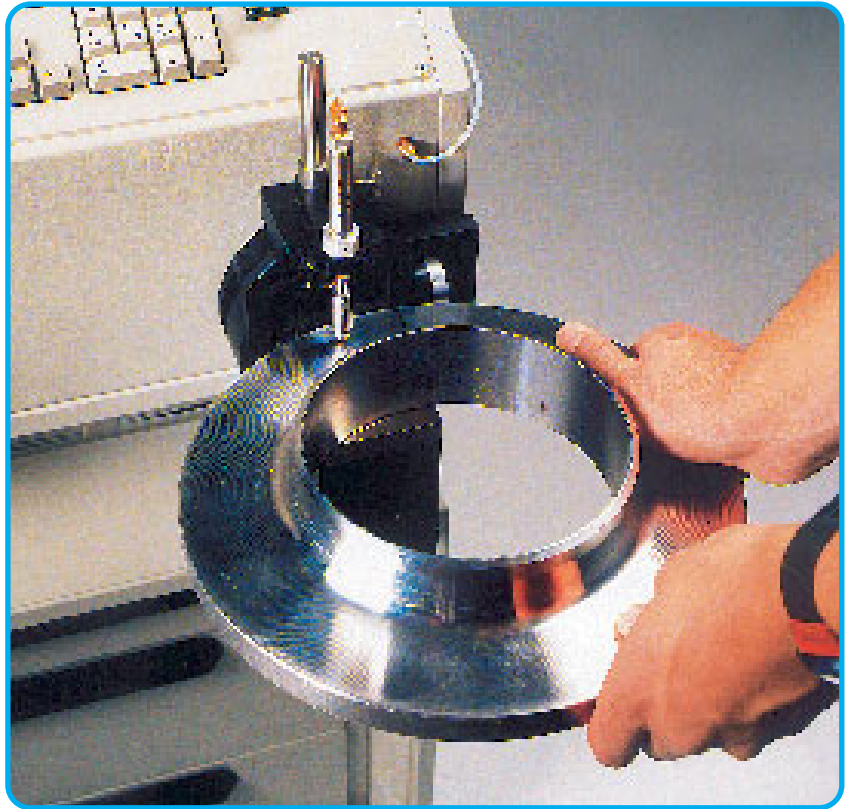
Up to three spectrometers with 36 channels each are available in same instrument. The inert-gas breathed optic hardly need any maintenance and can be used in most cases. For special applications vacuum as well as air optics are available.

Analysing programs for different bases and with complex chemical compositions can be custom made. A second sparkstand will avoid time consuming cleaning procedures when trace elements are to be analysed in different bases.

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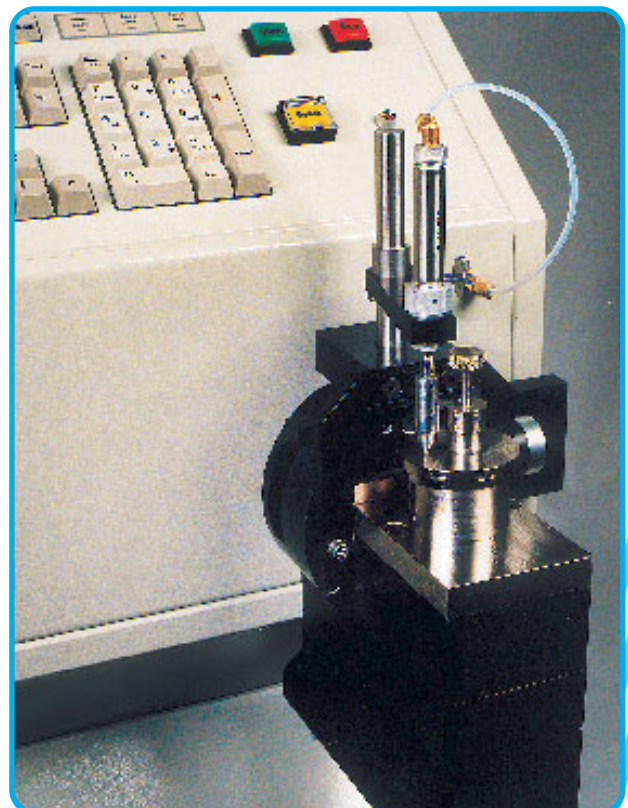
## The universal solution for different applications:

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



**BELEC** offers plenty of small parts adapters for your special requirements. Without special preparations the analysis of small pieces with different forms, e.g. wires larger than 0,5 mm, metal splinters, screws, washers or even small balls, is possible. A speciality from **BELEC** is the analysis of sinter metals, cast iron and samples with critical components such as cadmium.

Also a "quick-check-modus" multiplies your possible number of comparison measurements. **BELEC** offers special adapters for analysis of tubes and pipes. Our development department will gladly prepare special adapters for practically any type of samples. Naturally the analysis can be performed with the normal calibration of the unit.



# Technical Specifications:

## Optics

- Paschen-Runge mounting
- Rowland circle diameter 500 mm
- usable wavelengths range 120–430 nm
- shock resistant
- grating 3600 lines/mm
- reciprocal dispersion 0,52 nm/mm (1<sup>st</sup> order)
- temperature stabilised spectrometers
- optionally up to 3 spectrometer optics in the same instrument
- up to 11 bases and 108 measuring channels are possible
- inert-gas breathed optical housing with gas purifier system
- optional optics with usable wavelengths up to 800 nm

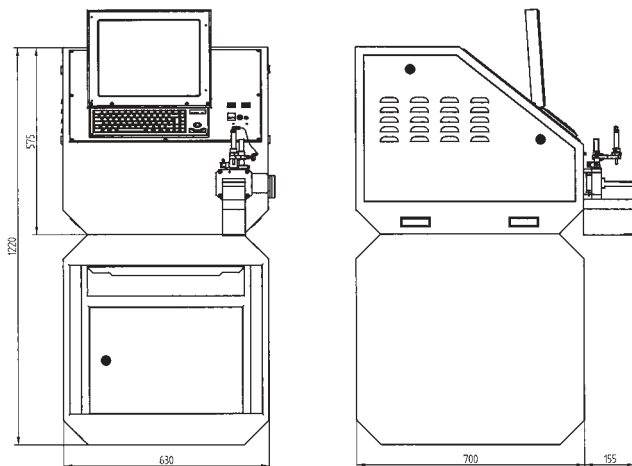
## Optional Vacuum system

- pump integrated in lower cabinet
- large oil separator
- oil vapour trap
- vacuum gauge in front panel

## Sparkstand

- Argon flushed sparkstand
- second sparkstand optional for different bases
- Argon flow 0,1 l/min in standby and 2 l/min when analysing, separately for each sparkstand
- sparkstand grounded with 10 mm  $\varnothing$  analysis opening optionally 4 mm aperture
- tube adapters and adapters for small parts are available
- adapters for wires and for balls are available
- Tungsten counter electrode with low maintenance
- pneumatic sample clamping

## Dimensions (mm)



## Source

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

## Electronics

- stabilised high voltage for phototubes
- zero stabilised analogue amplifiers
- 6-decade dynamic A-D-converter for each channel
- 36 channels with digital integration for each spectrometer

## Optional analysis probe

- various analysis probes are available
- Argon flushed sparking probe for high accuracy, including Carbon
  - Argon flushed "Special"-sparking probe for high accuracy, including Phosphorus and Sulphur optics, possibility to measure Carbon
  - very light probe housing of shockproof plastic (weight only 0.95 kg, without Phosphorus and Sulphur optics)
  - start and clear buttons on analysis probe
  - signals for finding a mix up: visual displayed for "repeat" and "mix up", start button blocked until confirm button is pressed
  - lengths 3 m or 5 m, (longer for special requirement, optional)
  - Tungsten counter electrode with low maintenance

## Power Supply

- 220–240 V / 50–60 Hz
- 100 W in standby
- 600 W during analysis

- with optional vacuum system
- 600 W in standby
- 1100 W during analysis

## Weight

- spectrometer system 100,00 kg
- argon probe 0,95 kg
- argon "Special"-probe 1,15 kg
- lower cabinet 66,00 kg (without spectrometer)

## Hardware

- modular computer system in Euro-Card format
- At-compatible CPU card AMD K6/2 450 MHz with real time clock
- 128 MB RAM minimum
- Hard disk 4.0 GB minimum
- 3.5" disk drive 1,44 MB
- 15" TFT display
- full PC keyboard internal or external
- parallel port
- serial port RS 232
- USB port
- Ethernet interface, optional

## Software

- Belec WIN 21 analysis and quality control program V 2.02
- Operating system Windows 98 and MS-DOS
- display of analysis values from each spark
- as many analysis programs as required by customer specification
- individual analysis parameters for every analysis program
- Automatic Sorting Program (ASP), optional
- analysis computation with: background correction, drift correction, multiplicative and additive interelement correction, matrix correction
- automatic analysis correction with standard types
- mix up checking by comparison with reference measurement
- grade checking by comparison with stored limits
- separate tolerances for every analysis program and every element in absolute and relative weight percent
- The average and the standard deviation from several relevant measurement can be chosen
- automatic display of the quality description or material number
- text size on the monitor adjustable for optimum legibility
- alloy library, 100.000 and more qualities can be saved (limited only by memory of computer)
- protocol and report memory function
- report process software for later analysis, print out and archiving
- control signals for fully automated testing systems

We reserve the right to alter our technical specifications

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