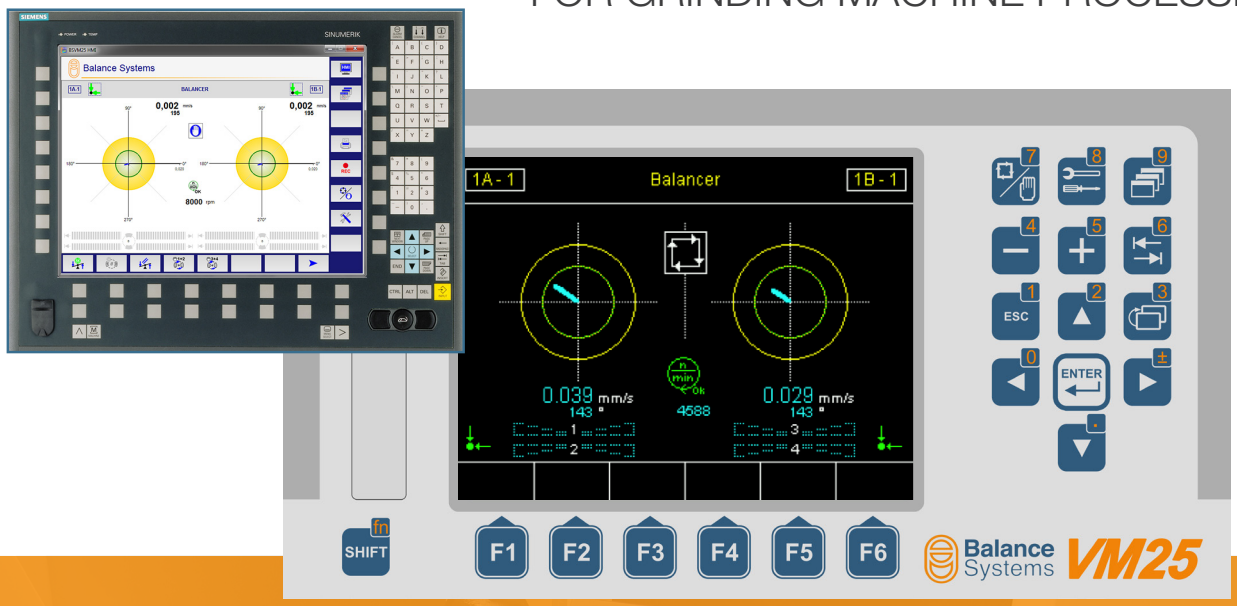
Balance Systems

VM25

MODULAR MULTI-FUNCTION SYSTEM FOR GRINDING MACHINE PROCESSES



The VM25 is a modular fully programmable system designed for high performances applications on grinding machines. It is able to provide solutions for:

- One and two plane automatic balancing of the grinding spindle
- Touch detection to control the grinding wheel-work piece and grinding wheel-dresser contacts, by using acoustic emission and/or power sensors
- In-process and post-process gauging (absolute or comparative)

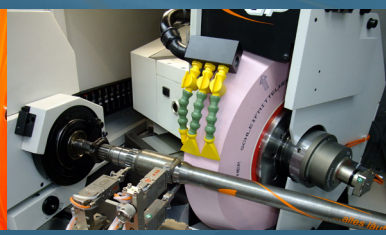
Features

- Modular setup fitted to the machine architecture on which it is installed
- It is available in several configurations: table or remote control unit
- User's graphic interface based on ISO symbols
- Total integration with the machine controller (commands and remote programming)
- TCP/IP connectivity for service operations and remote diagnostic
- It is delivered with the "VM25 Service" software application for backup, restore and software upgrade
- Each installed function is fully independent. In case that a function is temporarily not available, it can be disabled and the remaining system can continue to operate
- A functional upgrade can be made at any time

Benefits

- Ergonomic and easy to setup
- Decisive in optimizing the production process and the quality of the machine
- Extends lifetime of the machine components (spindle, grinding wheel and dressing tool), reducing the environmental impact
- Does not require surveillance
- Can be installed on any type of grinding machine, both new and retrofitting





System features

Each system is able to manage in one application:

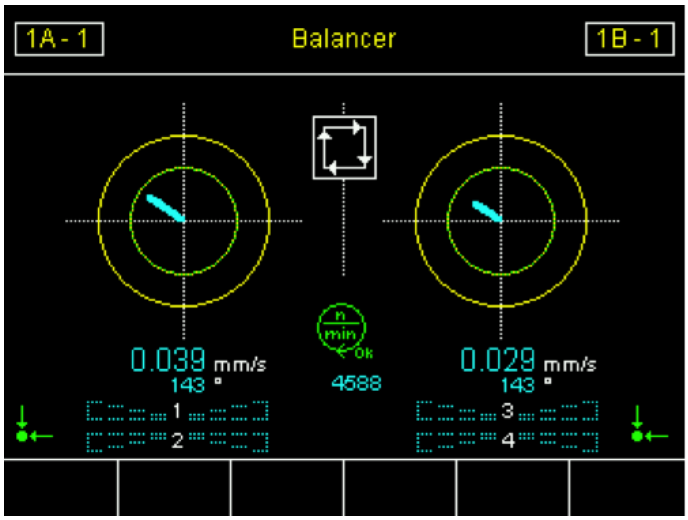
- Up to 4 1 and 2 plane balancing functions
- Up to 4 touch detection functions
- Up to 4 in-post process gauging functions (absolute or comparative)
- Profibus DP or profinet interfaces

The VM25 control unit is provided with a panel with color display and a VM25 HMI software application for PC ®Windows. Both of them can be used by the operator to configure the application through menu and to manually control the entire device.

The PC ®Windows VM25 HMI software package includes graphic libraries, allowing the integration of the user panel into the HMI application of the OEM machine.

Moreover, the VM25 HMI is homologated and certified by ®Siemens PCU50 Sinumerik Advanced and operate with ®Windows XP and 7.The interface with the machine controller can be realized both by traditional digital I/O and by fieldbus “profibus DP” and “profinet”.

Automatic Balancing function



Two plane automatic balancing

Features

- 1 and 2 plane automatic balancing for high speed spindle, with high performances
- 1 and 2 plane pre-balancing with guided procedure (optional)
- Automatic cycle for neutral positioning of the balancing head (weights at 180°)
- Fully programmable and controllable by PLC

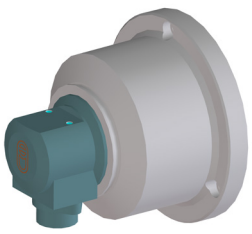
Benefits

- Essential to optimize the surface finish quality
- Excellent results are obtained in the most critical grinding processes, such as gear or by super-abrasive
- Constantly controls the spindle vibrations with status and warning signalling
- Extends lifetime of the spindle, grinding wheel and dressing tool, reducing the environmental impact
- It can be integrated in any high speed process

Compatible balancing heads

SDx balancing heads are the first devices in the world which have been specifically designed by Balance Systems with moment-free architecture. This solution gives the benefit of no dynamic-influence on the grinding spindle which improves the surface finishing. All the balancing heads can be controlled both via cable and contactless (NoLink). An acoustic emission sensor (AE) can be embedded in order to implement the touch detection control (optional).

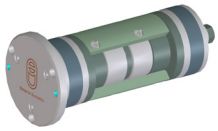
- Complete SDE and SHE range of HIGH PERFORMANCE heads for external mounting with flange. It is suitable for retrofitting application.



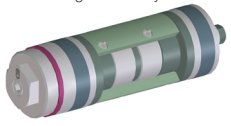
Fitting diameter [mm]	Max compensation capacity [gcm]
95	1700
114	6500
130	12000

- Complete range of heads of the ABSOLUTE BALANCER® series for built-in spindle assembly for 1 and 2 plane balancing.
- Complete range of HIGH PERFORMANCE heads for built-in spindle assembly by flange or by self-lock system.

Diameter of the spindle bore [mm]	Max compensation capacity [gcm]
28	80
30	170
32	250
38	580
42	1200
50	2000
55	4400
60	5000
63, 70, 81	8700



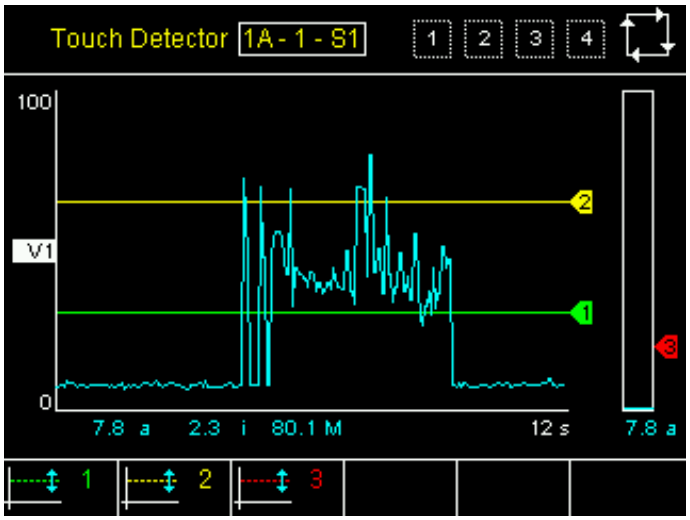
SDI for flange assembly



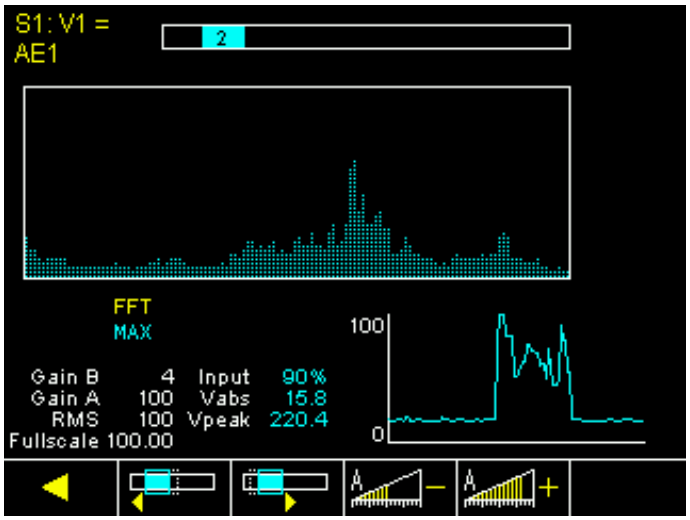
SDI for self-lock system assembly

Customized solutions with different dimensions and capacities are available upon request.

Touch Detector function



Typical process signals touching conditions



Frequency analysis during the system setup

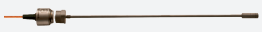
Features

- Up to 4 channels for acoustic emission (AE) sensor
- 1 channel for a network up to 8 power transducers
- Up to 4 simultaneous processes
- Up to 16 part program to control the touching conditions (e.g. grinding wheel-work piece and grinding wheel-dresser)
- Selective digital filtering based on the frequency analysis

Benefits

- Essential to reduce cycle times
- Gives a perfect control of the tools shape (e.g. the grinding wheel profile)
- Improves safety and reduces maintenance costs
- Extends lifetime of the tools (i.e. grinding wheel, dressing unit)
- Can be installed on any type of grinding machine, both new and retrofitting
- Does not require surveillance

Compatible acoustic emission sensors (AE)

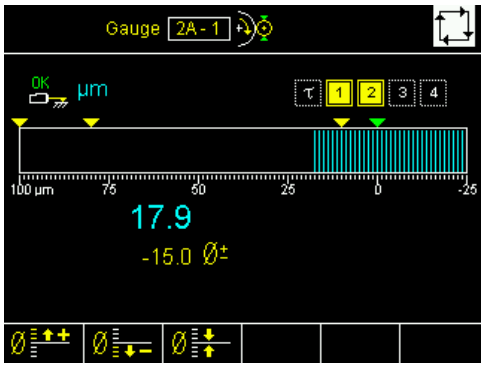
Type		Mounting
	AE Ultrasonic	Static (machine table, work head body, tailstock body, dresser body, spindle body, etc.)
	AE Single Point	Static (machine table, work head body, tailstock body, dresser body, spindle body, etc.)
	AE nose (contact less)	Spindle nose (OD and ID grinding spindle, dressing spindle, etc.)
	AE Built-in (contact less)	Built-in spindle (OD and ID grinding spindle, dressing spindle, etc.)
	AE Ring (contact less)	Outside coaxial device to rotor (OD and ID grinding spindle, dressing spindle, work head, tailstock, etc.)
	AE Embedded (contact less)	Embedded into the body of the balancing head (grinding spindle external or internal side)
	AE Fluid	Static and crossed by coolant (grinding area, dressing area, etc.)

Customized solutions with different dimensions and shapes are available upon request.

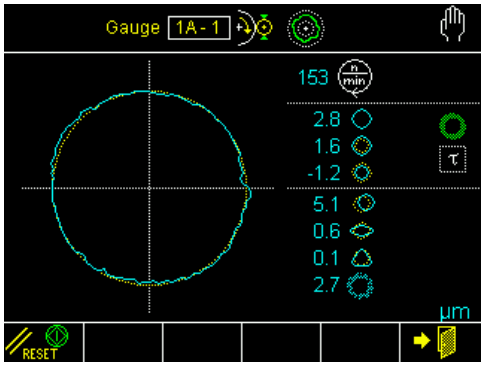
Power transducer

Type		Mounting	
	Power transducer	Installed in the machine cabinet. It is mounted between the drive and the motor of the spindle to be monitored. The digital value of the instantaneous power is transferred to the VM25 control unit by optical fiber.	

In-Process Gauge function



In-Process Gauging



Roundness analysis and shape control

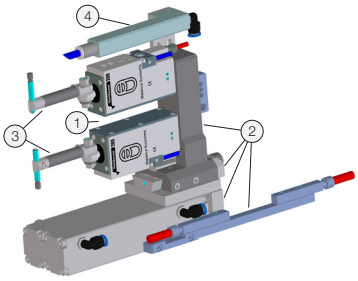
Features

- 4 channels for gauge heads "plug & play" (e.g. two diameters simultaneously)
- 2 simultaneous processes with comparative or absolute measuring
- Wide measuring range in comparative mode (master) for multi-diameter application. Up to 25.4 mm with a resolution of 0.1 µm without retooling
- Absolute measure (w/o master) of diameters from 4 to 1000 mm
- 32 part-programs (external diameter, internal diameter, thickness, taper, active and passive positioning, etc.)
- Measurement of smooth and interrupted surfaces by hardware or software synchronization
- In-process roundness and shape analysis
- Up to 6 commands to control the feed rate (roughing, finishing, super-finishing, dwell, end of cycle, under-size warning)
- Anti-crash solutions
- Process diagnostic

Benefits

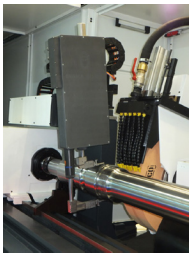
- Makes production stable and consistent with tight tolerances
- Compensates for the grinding wheel wear
- Can be installed on any type of grinding machine, both new and retrofitting
- Easy to use
- Does not require surveillance
- It reduces down-times in case of accidental damages to the equipment

Range of gauge heads and accessories



ID	Type	Description
1	Top Gauge 200	TG200 modular gauging heads: • TLN – universal small range, w/o retraction • TLF – universal small range, with retraction • TLR – universal wide range, with adjustable retraction
2	Brackets and slides	• Complete set of fixed and re-toolable brackets • Pneumatic and hydraulic slides with stroke of 50mm, 75mm, 100mm, 144mm, 188mm
3	Fingers and contacts	• Complete set of fingers with different shape and length, fixed or re-toolable, with anti-crash option (exclusive Balance Systems's design) • Threaded contact in chemical diamond or carbide • Roll bar contact in carbide
4	Thermal stabilization	Kit of systems for thermal stabilization based on "showers" of coolant liquid

Range of TGA absolute gauges



Top Gauge Absolute	TGA90	TGA200	TGA300	TGA400	TGA700
Range [mm]	90	200	300	400	700
Measurable Ømin [mm]	4	10	10	50	200
Measurable Ømax [mm]	120	250	450	550	1000

All solutions are professionally designed and customized according to the range of measurement, the center height and the type of surface to be measured.

UNI EN ISO 9001

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