

HAYER & BOECKER



DIE DRAHTWEBER



**PARTICLE ANALYSIS.
DOWN TO ULTRA-FINE WITH
UTMOST PRECISION.**

HAYER & BOECKER

PARTICLE ANALYSIS

In numerous industrial manufacturing and machining processes, only a careful analysis of materials and substances can lay the foundations for achieving the best results. Based on expertise and more than 125 years of experience in wire fabric technology, Haver & Boecker provides innovative systems for particle analysis which continue to set new standards in functionality, precision and reliability, and guarantee maximum security of investment.

From sand, earth and construction materials to foodstuffs and recycling, from chemicals and plastics to varnishes, paints and special coatings, our analysis systems provide better

quality assurance. Haver & Boecker is certified to ISO 9001: 2008 and is a leading member of the International Standards Committee for Test Sieves (ISO TC 24). Our customers in industry, research and development therefore immediately have a number of guarantees that Haver & Boecker test sieves and test sieve shakers – like all products from our factory – are manufactured to the most stringent quality requirements, from the choice of wire grade to the finished product.

Users and dealers benefit from concentrated expertise and efficient service from the whole Haver Group, which also includes the world's

largest manufacturer of test sieves, W.S. Tyler in the U.S.A.

With our combined range of services, we are a one-stop shop for everything from test sieves to complete test sieve shakers.

OFFERING THE RIGHT SIEVE TO MEET ALL REQUIREMENTS.



Haver & Boecker began producing wire cloth in Hohenlimburg, Germany, in 1887. Today, we are one of the world's leading wire weaving companies with a global network of branches and manufacturing facilities.

Our work is based upon experience, continuous research and development of our products and manufacturing processes, along with the knowledge and ability of our staff. This combination of tradition and innovation allows us to meet and exceed the high expectations of our customers.



SIEVES – THE HEART OF EVERY ANALYSIS.

Haver & Boecker provides the right test sieve for every screening task. Examples include robust designs made from plates with square perforations to ISO 3310-2 for screening road-building stone, concrete additives, gravel, sand, ballast or – with slotted plates to ISO 5223 – for testing grain. Classic test sieves with wire mesh sieve bottoms are available over the entire standard range of mesh sizes from 0.02 mm to 125 µm. They are thus suitable for bulk materials of all sizes from widely differing

sectors. The particularly smooth surface of their frames prevents cross contamination, and the sieve fabric retains its tension exceedingly well even after intensive use. Test sieves with electroformed sheets are mainly used for hole sizes in the micron range from 5 µm to 100 µm. Their electrogalvanically produced nickel foils have round or square holes and are standardised up to 500 µm.

Highly accurate and extremely stable.

Haver test sieves are available in all common diameters from 76.2 mm to 400 mm. Wooden-framed sieves are available with 300 mm and 500 mm sides. Their areas of use are extremely varied. All test sieves are manufactured in accordance with current standards and are distinguished by their especially high accuracy and stability. High-quality frame materials, the extremely stable sieve structure which has been developed in-house, and careful machining guarantee long life and trouble-free operation. As well as different sieve designs, a number of matching accessories are also available, ranging from sieve covers to sieve pans.



HAVER TEST SIEVES – PRECISION IN ALL SHAPES AND SIZES.

The Haver test sieve range covers a wide spectrum of applications and materials and provides the optimum design for every operational requirement: with bottoms made of robust

perforated metal sheet to the finest wire cloth, with precision frames made from stainless steel, wood or aluminium.

IN ALL SIZES.



IN ALL SHAPES.



TEST SIEVE SHAKERS – NEW DIMENSIONS IN PRECISION.

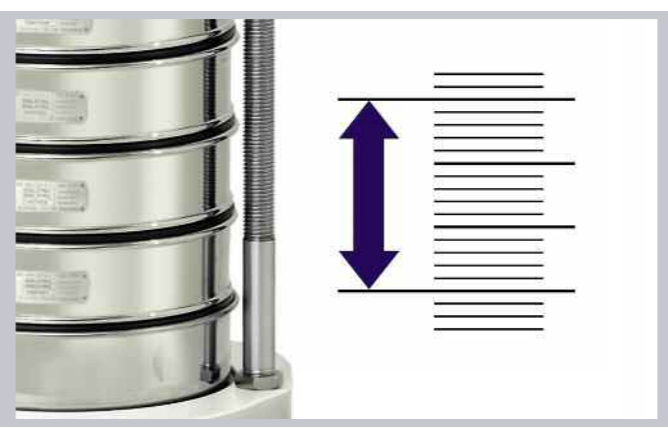
As well as high-quality test sieves, an efficient overall concept also includes modern test sieve shakers. Haver & Boecker provides a multitude of systems for widely differing applications which represent the state of the art in terms of functionality and features, and which can be precisely matched to suit your particular requirements. These provide integrated solutions for analysing product of almost every shape, size and consistency.

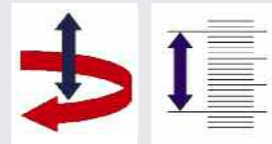


Progress in motion.

Haver & Boecker test sieve shakers generate a three-dimensional sieving action for fast and optimally reproducible sieving results. The product is accelerated vertically out of the mesh and at the same time fed over the surface of the sieve in a circular motion. This 3D process saves time and manual re-sieving which would otherwise often be required in many cases.

Haver & Boecker also uses G-Control in all electromagnetically operated test sieve shakers. G-Control is an automatic amplitude control system which continuously measures the acceleration of the whole sieve tower. This fully compensates for all natural oscillations of the sieving machine and the subsurface. A constant amplitude is therefore guaranteed at all times, regardless of feed rate and location.





Test Sieve Shaker

Haver EML 200 Pure

The new test sieve shaker stands out with its simple and rapid operation. Two specific regulated amplitudes for coarse or fine material can be selected. Sieving begins immediately once the machine is started and coarse or fine is selected.

- test sieve diameters from 50 mm to 203 mm
- three-dimensional sieving action
- two specified regulated amplitudes (fine and coarse)
- fixed interval
- digital timer
- max. weight of full sieve tower: 8.7 kg (approx. 3 kg sample weight)

Test Sieve Shaker

Haver EML 200 Premium

The Haver EML 200 Premium is much quieter than ever before. Transmission of vibrations to the base is greatly reduced utilizing an improved dampening system. The extra-large display offers operators an excellent overview and is user-friendly.

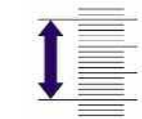
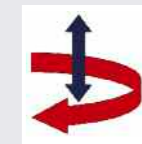
- test sieve diameters from 50 mm to 203 mm
- three-dimensional sieving action
- free selectable amplitude up to 3 mm
- dampening system
- Ethernet Interface
- extra-quiet electromagnetic drive
- extra-large display, easy operation
- max. weight of full sieve tower: 8.7 kg (approx. 3 kg sample weight)

Test Sieve Shaker

Haver EML 200 Premium Remote

The Haver EML 200 Premium Remote offers all the technological advantages of the Haver EML 200 Premium, with the additional option of wet sieving. The full cone nozzle is elegantly integrated into the cover.

- lid with integrated full cone nozzle
- separate control gear



Test Sieve Shaker

Haver EML 315 digital plus T

The design and basic functions of the Haver EML 315 digital plus are the same as for the Haver EML 200 digital plus. However, it is designed for sieves of up to 315 mm and correspondingly greater feed rates.

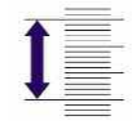
- test sieve diameters 200 mm, 8" (203 mm), 250 mm, 300 mm, 12" (305 mm), 315 mm
- three-dimensional sieving action
- self-readjusting amplitude
- digital control
- memory for ten test sieve parameter sets
- electromagnetic drive
- quiet and maintenance free
- max. weight of full sieve tower: 21 kg (approx. 6 kg sample weight)

Test Sieve Shaker

Haver EML 315 digital plus N

All EML 315 digital plus test sieve shakers are supplied with a separate control gear and splash-proof connectors. With the appropriate accessories, they can therefore also be used for wet sieving.





Test Sieve Shaker

Haver EML 450 digital plus T

As the world's first test sieve shaker, the Haver EML 450 digital plus provides three-dimensional sieving action for test sieves with a diameter of up to 450 mm. The design and basic functions are the same as those of the Haver EML 200 digital plus and Haver EML 315 digital plus.

- test sieve diameters 200 mm, 8" (203 mm), 250 mm, 300 mm, 12" (305 mm), 315 mm, 350 mm, 400 mm, 18" (450 mm)
- three-dimensional sieving action
- self-readjusting amplitude
- digital control
- memory for ten test sieve parameter sets
- electromagnetic drive
- quiet and maintenance free
- max. weight of full sieve tower: 42 kg (approx. 15 kg sample weight)



Test Sieve Shaker

Haver EML 450 digital plus N

All EML 450 digital plus test sieve shakers are supplied with a separate control gear and splash-proof connectors. With the appropriate accessories, they can therefore also be used for wet sieving.



Test Sieve Shaker

Haver UWL 400 T

Haver & Boecker's most powerful test sieve shaker is specially designed for screening coarse-grained products. It works with a robust eccentric drive that produces a three-dimensional sieving action and ensures optimum sieving motion even with high feed rates.

- test sieve diameters 200 mm, 8" (203 mm), 250 mm, 300 mm, 12" (305 mm), 315 mm, 350 mm, 400 mm, 450 mm
- three-dimensional sieving action
- driven by two rotary current unbalanced motors
- max. weight of full sieve tower: 50 kg (approx. 20 kg sample weight)

Test Sieve Shaker

Haver UWL 400 N and H

A modified form of the UWL 400 is also available for wet sieving or for use with wood-framed sieves.





**Test Sieve Shaker
Tyler Ro-Tap RX 29**

This test sieve shaker simulates the circular and tapping motion of hand sieving, but with an uniform mechanical action. It therefore ensures constant and comparable analysis.

- test sieve diameter 200 mm, 8" (203 mm)
- revolutions (278/min), taps (150/min)
- digital time switch
- operated by a vertically mounted, totally enclosed 1/4 hp motor
- max. feed quantity: 3 kg

**Test Sieve Shaker
Tyler Ro-Tap RX 30**

Identical to the Tyler Ro-Tap RX 29 in terms of basic functions and design, the larger design of this test sieve shaker accepts sieves with diameters of 300 mm and 12" (305 mm). At the same time, the maximum product weight increases to 6 kg.



**Test Sieve Shaker
Tyler Ro-Tap RX 94**

This test sieve shaker is identical to the Ro-Tap RX 29 in terms of its basic functions but can be fitted with two sets of sieves simultaneously.

- test sieve diameter 200 mm, 8" (203 mm)
- revolutions (278/min), taps (150/min)
- digital time switch
- operated by a vertically mounted, totally enclosed 1/4 hp motor
- max. feed quantity: 3 kg per sieve tower



TESTING AT HAVER & BOECKER OR ON YOUR PREMISES.

Test sieves and test sieve shakers are test and measuring devices which, according to DIN EN ISO 9000 ff, must be certified, and regularly monitored and checked in operation. For this reason, we provide comprehensive test certificates and service for all our company's products for ongoing regulation-compliant quality assurance.

Sieving with confidence.

At Haver & Boecker, test sieve cloths and test sieves are manufactured taking all the applicable standards into account, and monitored by our Quality Management System which is certified in accordance with DIN EN ISO 9001:2008. Unless otherwise agreed, we supply all test sieves with a free Certificate of Compliance with the Order 2.1 in accordance with DIN EN 10204.

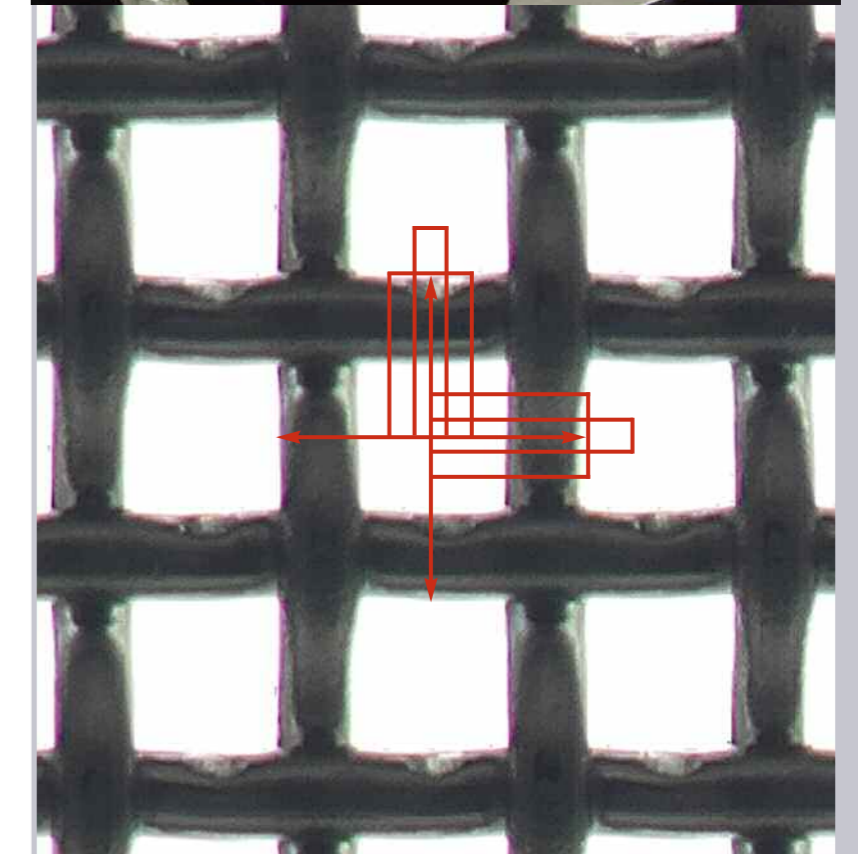
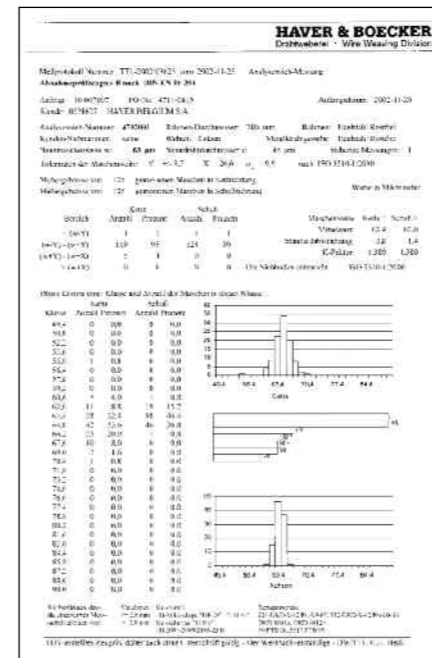
If required, we also issue Inspection Certificates 3.1 in accordance with DIN EN 10204 for test sieves. The necessary tests can be carried out at two confidence levels as a certifying or calibrating measurement. For calibration, three times as many meshes are measured as for certification, thus achieving a particularly high level of statistical reliability. The measurements are finally evaluated separately in the warp and weft directions and the results of the measurement are saved for subsequent check measurements.

We use a modern, calibrated video analysis system for certifying new test sieves and re-certifying used test sieves. This can either be a stationary unit in our works laboratory or a mobile unit at the customer's premises. The Haver BSA measuring system is certified by the Materials Testing Laboratory of Braunschweig Technical University and fulfils the requirements of ISO 3310-1: 2000 and ASTM E 11-04 for test sieves. The Haver BSA calibration process guarantees traceability back to the national standard measures.

Machines in top form.

We can also test the operation, safety and condition of test sieve shakers on your behalf, either in our laboratory or directly in situ. When the tests are carried out in our factory, the units are subjected to comprehensive system diagnostics and special functional tests on a test rig. These are used to determine and, if necessary, readjust the amplitude characteristics. We also check the electrics, mechanics and safety of the screening machine.

Following successful testing, we affix a test seal to the test sieve shaker and issue an Inspection Certificate 3.1 in accordance with DIN EN 10204. If we find unacceptable deviations and faults, we will provide you with a cost estimate for repairs and restoration.



VIRTUALLY INDISPENSABLE ACCESSORIES.

Haver & Boecker provides a comprehensive range of accessories and peripheral equipment relating to all aspects of particle analysis for precise and convenient work in the laboratory. All components from hardware to software are optimally matched to Haver & Boecker test systems.

HAVER UFA, Ultrasonic Frequency Variation for Haver Test Sieves

The HAVER UFA is especially designed for the sieving of powders at critical particles-size cuts of $\leq 300 \mu\text{m}$. The screen is excited by means of

ultrasonic wave at continuously varying frequency.

These high-frequency vibrations reduce the frictional resistance between particles and the screen: The tendency to block is reduced, the performance of the sieve is increased and the time required for sieving is significantly shortened. This way of aiding the sieving process makes it possible to reach the end of the sieving process much more quickly. Only using this method makes automated screening possible at all for some bulk materials.

HAVER SGT, Dryer for Screening Material

The HAVER SGT has been designed for drying free-flowing screening materials in Haver Test Sieve Shakers and can easily be installed with special test sieve shaker covers. The dryer removes moisture by feeding warm air at a defined pressure through the sieving material. The drying time is thus reduced to less than 30 minutes depending on the type of product, the amount of sample and the test sieve diameter. The drying process is also accelerated by regular pulses which briefly excite the sieve tower.

Sample Splitters and Sample Reducers

Representative test samples can be easily and reliably produced with these units. The Haver sample splitter forms two representative partial quantities by means of alternately arranged dividers in the splitter head. It is available in two different sizes and with different sized dividers depending on the product. The Tyler sample reducer reduces the material sample in the ratio of 16:1 in several steps. All parts have an extremely sturdy design and high-quality, hard-wearing surfaces.

HAVER RPT, Rotating Sample Reducer

The sample reducer produces small but representative sample quantities of solids and suspensions and is combined with high-accuracy analytical measuring instruments. It is used in research, development and process monitoring laboratories. Rotating sample reducers combine three dividing methods in one unit and provide the best possible sample reducing available today. The sample is fed to a dividing cone that emulates the process of quartering and

coning. The sample material on its surface is accelerated outwards by rotation and is divided through guide channels into up to 30 individual samples. The individual samples are collected in 250 ml and 500 ml glass screw-top bottles which can be easily and reliably secured by means of a quick-release clamp. The rotation and number of dividing channels enable variable dividing conditions to be achieved up to 3,000 dividing steps per minute. This means that each sample consists of a very large number of individual samples – a mark of accurate sample division. The Haver RPT rotating cone sample reducer thus achieves an accuracy of 99.9%. Even heavy flowing materials such as cement or limestone can be divided with high accuracy in this way.

The Haver RPT is made from food-grade materials, is easy to clean and is fitted with a low-maintenance drive motor with safety clutch. Its housing is made from recyclable, sturdy cast aluminium.



HAVER UFA



HAVER SGT



HAVER Sample Splitter RT 6,3 – 12,5



HAVER Sample Splitter RT 25 – 37,5 – 50 – 75



TYLER Sample Reducer RX-18



HAVER RPT

MORE IN THE WAY OF ACCESSORIES.

Haver CSA-Software 5.0 Evaluation Software

Haver CSA 5.0 software enables PC-aided analysis of standard sieve systems. With its help simple and precise analyses can be carried out in double quick time. The interface is user friendly and self-explanatory. The measurement results, graphical displays and detailed documentation can be introduced into statistics and reports. Haver CSA 5.0 is available in three versions differing in the scale of functions.

Test Sieve Cleaners Haver USC

Clean test sieves are pre-requisite for accurate sieving results. Haver USC units guarantee that sieves are cleaned thoroughly and gently while at the same time saving energy. They have been proven to work outstandingly well in practice, particularly in conjunction with the Haver USC cleaning fluid. USC cleaners are available in various sizes for cleaning individual sieves and for the simultaneous cleaning of up to five sieves.

Sieve Holder for Test Sieves with Ø 200 mm and 203 mm

This simple but useful accessory provides better clarity and order, and therefore contributes to more reliable and cleaner analysis. The sieve holder with its space-saving design can easily be fitted in many versions and enables up to five test sieves to be safely stored.

Sound Absorbing Cupboards for Test Sieve Shakers

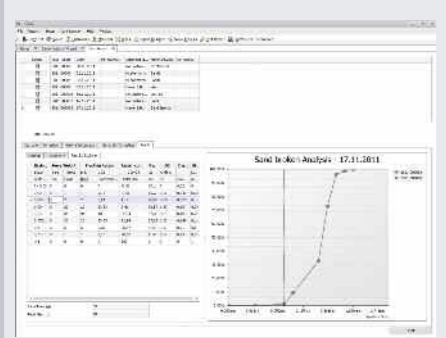
Test sieve shakers can be used in sound absorbing cupboards in order to reduce the noise level in the laboratory environment. This measure enables the noise level to be reduced by up to 28 dB(A) depending on the machine type.

Haver Drip-off Weight Test Set

This device is used for in-house and official calibration tests on products in the fish and meat processing industry and for tinned fruits and vegetables. The tilting device is initially horizontal and after introducing the product can be fixed at an angle of inclination of approx. 17° to 20°. A complete set consists of a slope device, test sieve w 2.80 mm according to DIN ISO 3310-1, intermediate pan and discharge nozzle.

Haver-Cones made from Metal Wire Cloth

Haver-Cones are used for determining the absorption capability of granular products based on the Westinghouse method. They comply with the European norm prEN 15366:2005 for winter and road service area maintenance equipment/solid absorbents intended for road usage, and the French norm NF V 19-002 for pet litter/determination of absorption capability and water retention capacity.



CSA-Software



USC 200



USC 500



USC 200 Multi



Sieve Holder



Sound Absorbing Cupboard



Drip-off Weight Test Set



Cone made from Metal Wire Cloth

PHOTO-OPTICAL PARTICLE ANALYSIS – HAVER CPA. ACCURATE MEASUREMENT OF MATERIAL QUALITY.



The principle of CPA measurement: State-of-the-art innovation.

Haver CPA measuring instruments are based on digital image processing. A high-resolution digital line scan camera scans the particles in free-falling bulk materials against the background of an LED lighting array with a recording frequency of up to 28,000 line scans per second. The scanned lines are combined by the CPA to form an endless data record and the shadow projections of the particles are evaluated in real time (Haver REAL TIME) in parallel with the measuring process. Up to 10,000 particles can be detected, analysed and counted every second.

Tailor-made solution of the peg: CPA CONVEYOR.

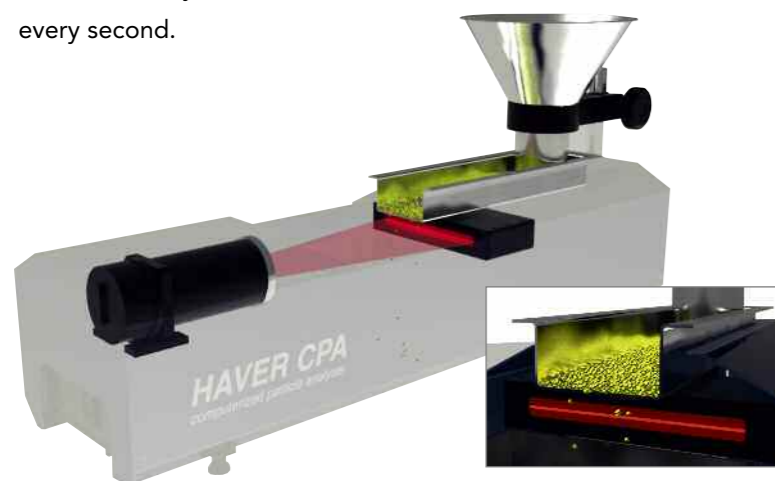
The CPA CONVEYOR measuring process has been especially developed for analysing elongated materials where measuring results can be falsified due to overlaying and rotation of particles while the image is being analysed. Particles are separated and brought into a stable orientation before the digital image analysis takes place. The Haver CONVEYOR measuring principle virtually rules out random rotation of the particles at the instant they are measured.

A one-stop shop: from laboratory and industrial units to customised special solutions.

All Haver CPA units are equipped with Haver CPA software which runs under major Windows operating systems. Its convenient installation, user-friendly, menu-prompted operation and clear presentation of results are impressive.



The Haver CPA portfolio covers a measuring range of 10 µm – 400 mm. All units are provided with the hardware and software for online operation. Modular Haver peripherals enhance the capabilities of the CPA units.



ANALYSING BULK MATERIALS: DEFINING MATERIAL PROPERTIES.

Haver bulk density tester

Unit for determining the bulk density of powdery and granulated bulk materials. Even the density of poorly flowing, cohesive, lumpy or fragile bulk materials can be determined reproducibly with the Haver bulk density tester. Its design enables rapid and uncomplicated work, maintenance-free and wear-free operation, and simple cleaning.



Haver flow tester

Unit for determining the flowability of bulk materials. As well as measuring the time taken for product to flow out of a defined hopper, it is also possible to make a visual assessment of the flow behaviour. This unit is able to reliably qualify differences between fresh and stored products, batch differences, different finishes or coatings and material additives.

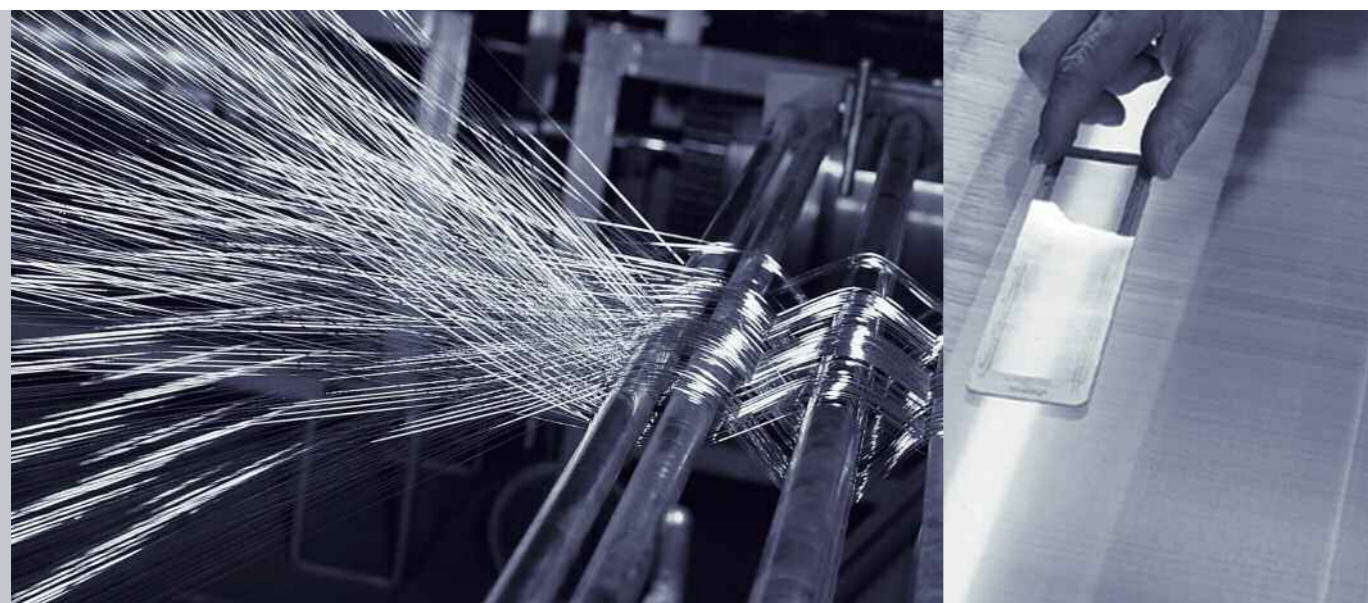


Haver deaeration measuring instrument

Unit for determining the aeration and deaeration behaviour of powdery, micro-granulated and mixed products. The resistance of the products to air flowing through them is also established. This is done by simulating the air currents which typically occur in a pipe or silo with a predefined amount of air pressure.



STRONG PROCESS CHAIN.

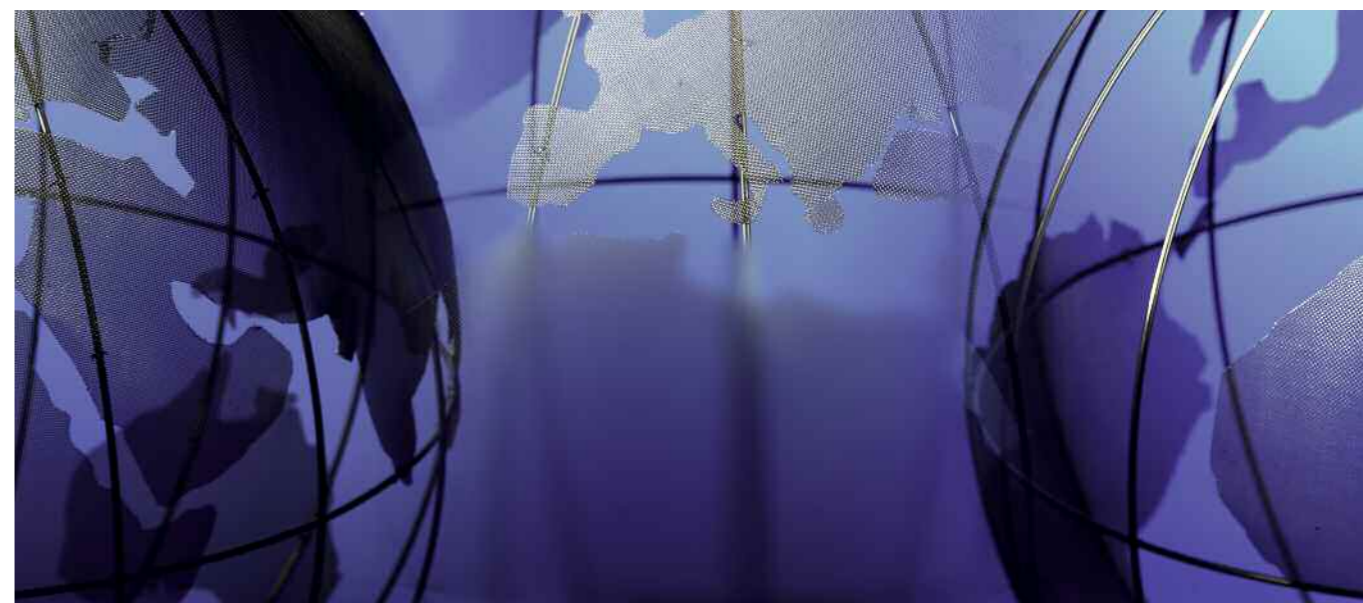


The control of the whole process chain, both in the manufacture of sieves and machines, enables us to guarantee quality which exceeds the current standards at every stage. From wire cloth manufacture, processing and assembly to final inspection and certification.

The efficiency of our customer service matches the quality expected of our products. We provide support and advice for users in the development of complex analytical concepts on all aspects of particle analysis as well as in the conscientious and standards-compliant maintenance and repair of users' test systems.

For the specialised trade we offer a comprehensive and advanced range of products and systems as well as prompt and reliable order handling via our own worldwide sales network.

NO SITE IS OUT OF SIGHT.



Haver & Boecker has actively influenced the technology of wire weaving since its beginning. As a result of our successful company history, today we are able to offer our customers the benefit of our unrivalled experience, technology and know-how about wire cloth.

Whether science or research, industry or architecture – wherever Haver & Boecker wire cloth is used, our customers benefit from a broad but still unique individual service.

With our worldwide weaving network we offer the comforting certainty to be your competent and reliable partner at any time and any place. So as to continue WEAVING IDEAS in time to come.

Haver & Boecker operates production sites in Germany, Great Britain, Belgium, the USA, Canada, Brazil, India and Belarus. More than 2,890 people work for the Group worldwide.



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