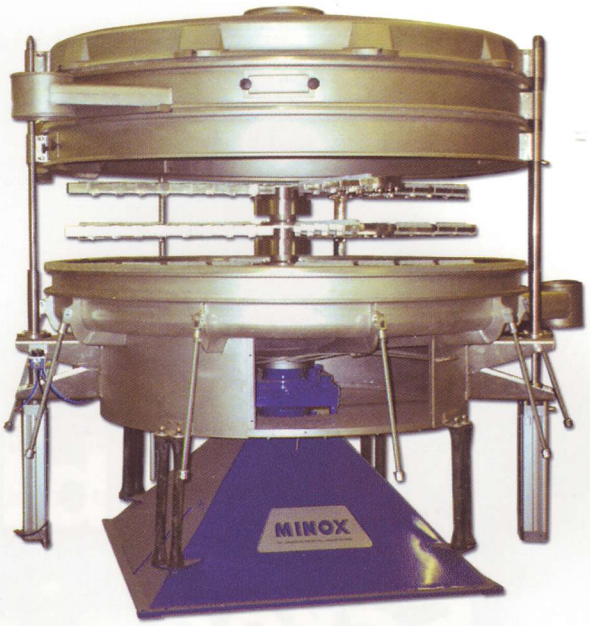
MINOX

Tumbler Screening Machines

The solution to fine and difficult screening problems

The solution for conventional screeners problems: Minox High-Tech Tumbler Screeners



Applications

Minox Tumbler Screening Machines are suitable for all powders and granular materials in the fine and ultra fine range and especially for difficult materials.

They are used in all industries, but mainly:

- Chemicals
- Foodstuff and Spices
- Plastics
- Mining
- Pharmaceuticals
- Wood and Particleboard
- Metallurgy
- Rubber
- Animal Food
- Fertilizers
- Sugar and Salt
- Recycling

For simple and difficult materials from 30 micron to 30 mm

Are your screens blinding ?

Do you wish to have a higher screening efficiency ?

Do you want to achieve a higher yield ?

Can you screen your fine or difficult materials ?

Do you only have limited capacities and short screen life ?

Do you have noise and dust problems with your screeners ?

Are you interested in a quick and safe change of screening frames ?

These are not problems with the Minox Tumbler Screening Machine

Robust, compact, modular and clean looking design !

Up to 5 times higher throughput per m^2 screening area !

Exact separation of up to 6 fractions with screening efficiency of 90-95% !

No blinding of screen meshes with the use of efficient anti-blinding systems, such as balls, rotating brushes or air-jet nozzles !

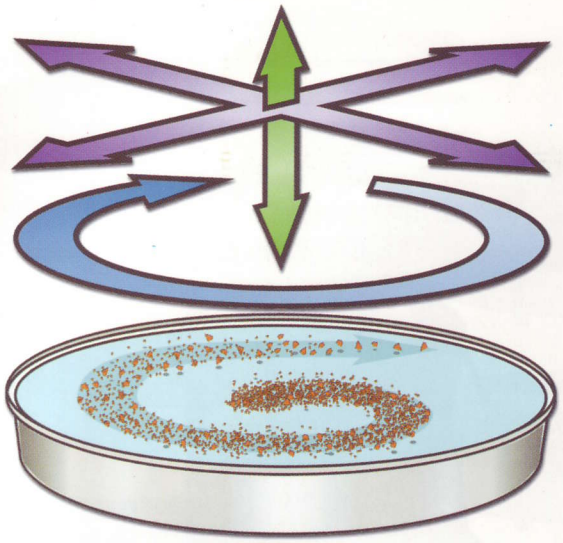
Fast screen exchange in approximately 15 min. with 4 decks and ball cleaning possible !

Dust tight and safe to operate units!

4-5 times less acceleration than a vibrating screen, thus longer screen parts life and less maintenance !

Low noise level of around 75 db(A)!

Low dynamic loads on the foundation by optimizing mass balance!



Function and screen motion

The simplest screening is hand screening by eye. This is machanically simulated by the Tumbler Screening Machine.

This basic motion is gyratory with the horizontal motion being similar to a plane sifter. The eccentricity can vary from 25 to 40mm. The slow speed V-belt drive allows speed from 170 to 280 rpms.

The residence time of each product can be adjusted by the patented Minox assembly in a radial and tangential angle, towards the drive axis.

A three-dimensional tumbling motion, which is a mixture of plane and throw, is created. The screening material is uniformly distributed over the entire surface from the center to the periphery. It will travel in a spiral transport direction. In the center, the finer particles will pass through the mesh holes. Towards the outside, the horizontal an vertical acceleration is increasing, causing the particles with near mesh size to be separated. The remaining oversize is being carried to the outlet where the flow is also controlled by an adjustable deflector. This deflector is another factor in controlling the residence time of a material on the screen. This process is repeated on every screen deck.

The basic components of a Minox Tumbler Screening Machine, such as bottom pan and hood, are pressed parts and made in one piece. They are very stable in their form, making it easier to polish the product contact surfaces.
Minox Tumbler Screening Machines are manufactured in carbon steel and stainless steel.
Stainless steel machines can be supplied in food and pharmaceutical design with a peak-to-valley height of 0.4 micron and also electropolished.

Test Center

Minox offers their customers a complete and modern test center for trials on their materials.

Our test center utilizes production sized machines that optimize the adjustments and results for extremely efficient scale-up to your plant requirements.

The results of the tests are often the basis for the process guarantee and the later economic and successful use.

Modular Design for easy handling

Circular construction with central feed, variable positions of the outlets, and easy to clean !

Automatic centering of the screen inserts !

Food grade Silicone U-shaped gaskets for easy mounting !

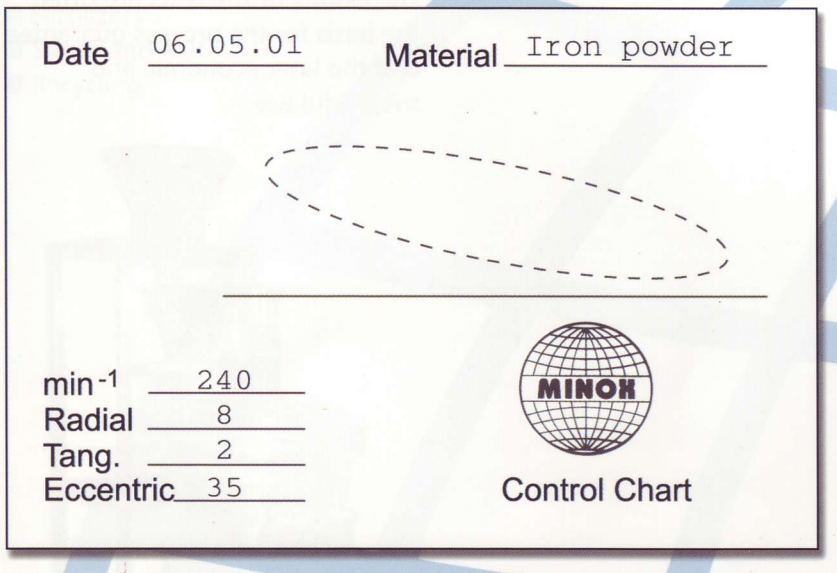
Patented adjustments for fast setting of the machine operation parameters !

Screening motion independent of material load !

No oversize material in fines stream !

No destruction of fragile materials and agglomerates !

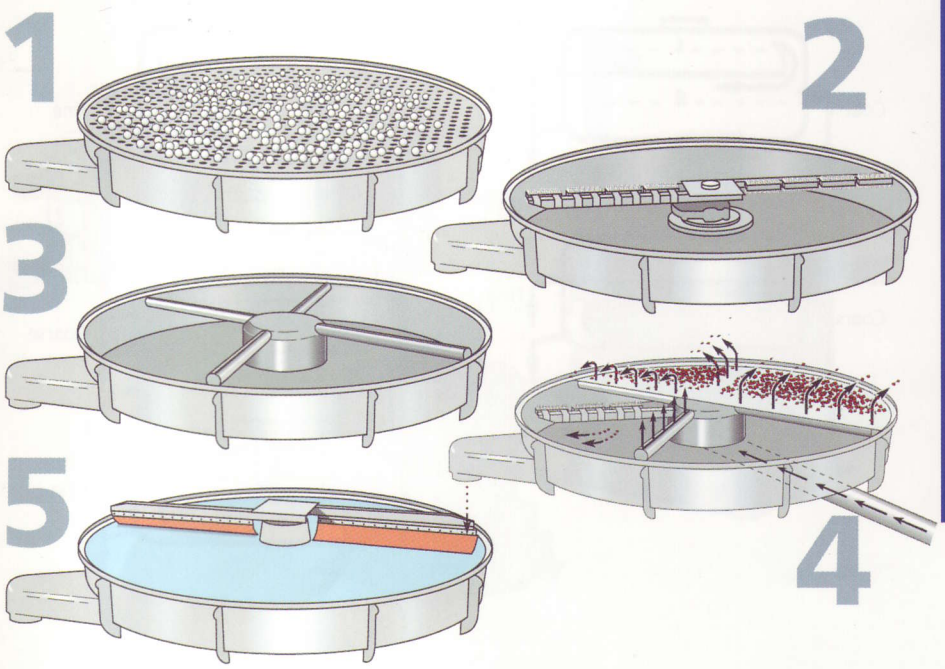
Very efficient with low density materials !



Control chart for reproduction of screen motion

The slow speed and large amplitude of the Tumbler Screening Machine allow a perfect plotting of the elliptic movement on a control chart.
The optimal operation settings or the test parameters once written down can the reproduced at any time.

This guarantees identical final products and their continuing quality.



Effective anti-blinding systems for continuos operation

When fine screening is done, the screen meshes can become blinded by grains, dust or by static charges. This greatly reduces the capacity and the screening efficiency.
For a continuous operation, it is necessary to have an appropriate anti-blinding system for the materials being screened. The circular design, with its central main shaft and three-dimensional motion, enables Tumbler Screening Machines to utilize different ant-blinding systems.

1 Bouncing Ball Cleaning

Special wear resistant and food grade rubber balls are bouncing on a perforated metal plate underneath the screen mesh. The material in the mesh is kicked out, thus reducing blinding. This system is simple to use and easy to maintain and is used for most of the granular materials.

2 Roller Brush Cleaning

Roller brushes are rotating under the screen and are used for spherical, crystalline and fragile materials. The brush arms are driven by a reduction gear mounted in the bottom pan.

3 Air-jet Cleaning

A blower carries air or gas into the central air bell where it is distributed into the air-jet arms. The knive like air-jet has a velocity of up to 120 m/s thus cleaning the mesh from underneath. A fluid bed like effect is created by the air-jet causing fine and coarse material to disperse. The air is being pulled out through the fines outlet or a suction nozzle in the bottom pan. The air-jet stream is reversed downwards above above the screen while the fine material is pulled through the mesh with the use of the vacuum, in addition to the mechanical screen motion. This system is utilized for difficult to screen materials like sticky, fatty, smeary, or electrostatic charged materials, such as spices or milk powders etc..

4 Combined Air-Jet and Brush Cleaning

Many of the very difficult materials, such as fine plastic powders, need additional brush cleaning, along with the air-jet cleaning, to remove material from the mesh holes.

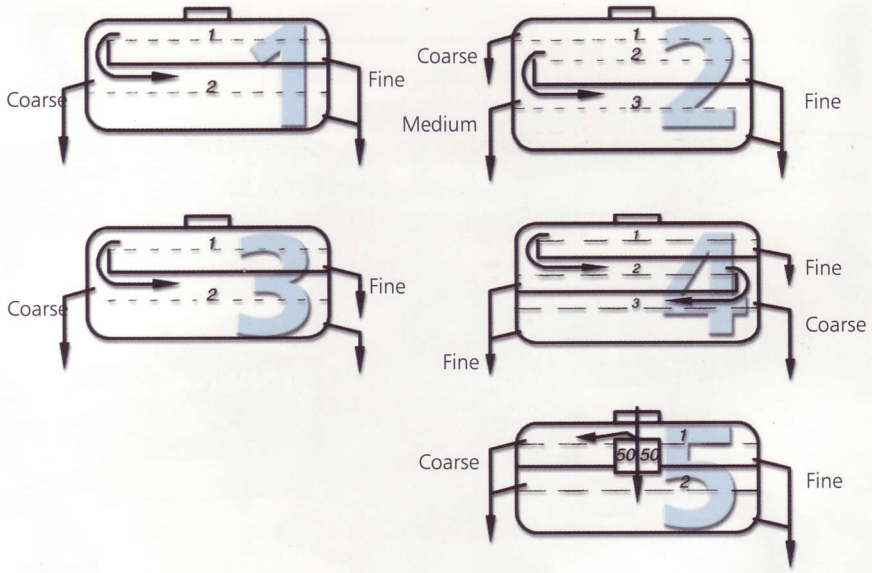
5 Straining device

Steel or rubber plates are rotating on the screen, thus breaking up large particles and helping pass material through the screen. I.e. Instant Coffee.

Ultra-Sonic Cleaning

This is new screening technology for very fine materials. An ultrasonic generator, with a high frequency, produces vibrations in the fm range which are being transmitted to the screen mesh. This cleans the mesh and significantly increases the capacity. Good for safety screening toner or pigments. Retrofitting is possible.

Increasing the yield



Each Tumbler Screening Machine is built with a modular design and can be retrofitted at any time with the use of special modules.

The throughput and efficiency can be increased considerably when screening precious or expensive materials. A few percentages higher yield will pay back the additional investment within a short time.

Double Screening Machine

The product is prescreened on the top into 2 fractions. The fines are being carried out on a blank plate, while the oversize, with the non separated fines, is fed through a lateral passage back towards the center of the lower screen having the same mesh size. The oversize is screened again, thus further removing fines.

Double Screening Machine with Prescreens

A double screening unit can have up to 2 coarser prescreens for the coarser fractions. Up to 4 different fractions can be achieved.

Double Screening Machine for reversed Screening

Many materials have a high percentage of fines that irritate the seperation on the coarser screens. Once these fines are removed, the coarse fractions can be easily produced. The top screen is usually the finest screen. With the help of the coarser particles, the fines will pass throug the mesh.

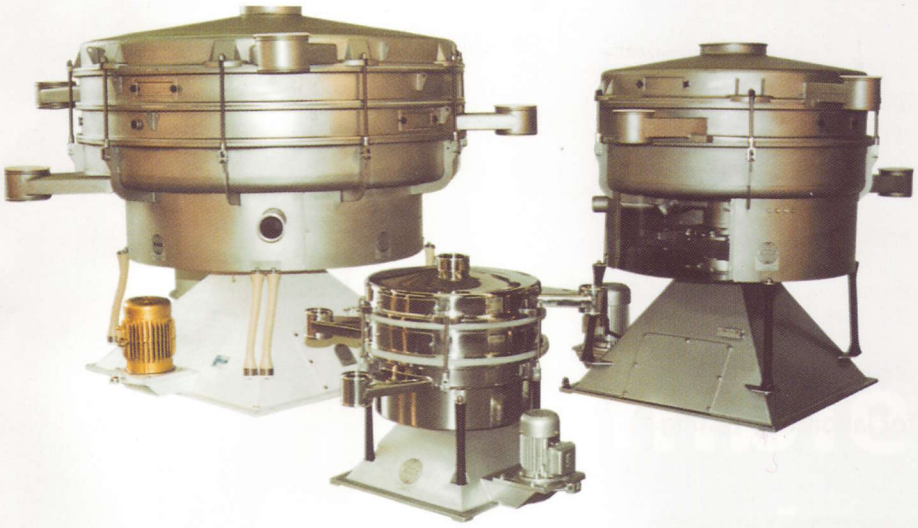
The fines are then carried out over the blank plate and oversize is fed through the lateral passage to the bottom screen. Another finer screen can be placed underneath this one and a maximum of 4 fractions is achieved.

Triple Screening Machine

The highest efficiency can be obtained by triple screening. A double screening machine is equipped with a third deck with the same mesh size.

Double Capacity Machine

If only 2 fractions, with a very high capacity are to be produced, the product can be distributed equally, by means of a special distributor in the center of the top screen, onto the top and bottom. The capacity increases by 180 % over a single deck unit.

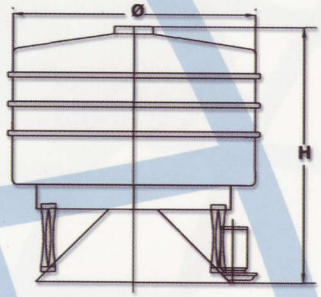


Minox Tumbler Screening Machines

At a glance

Modell	MTS 600	MTS 1000	MTS 1200	MTS1600	MTS 2000	MTS 2400	MTS 2600
Diameter (mm/inch)	600/26	1000/39	1200/49	1600/62	2000/74	2400/87	2600/104
Screening surface/Deck (m^2/ft^2)	0.29/3.1	0.71/7.6	1.1/11.8	1.83/19.4	2.62/28.0	3.63/39.1	5.31/57.0
Space requirement (m^2/ft^2)	0.4/4.3	1.2/2.9	1.6/17.0	2.5/27.0	3.6/39.0	5,2/56.0	6,8/73.0
Max. N° of decks	5	5	5	5	5	5	5
Power consumption (kw)	0.25	1.5	2.2	2.2 / 4	2.2 / 4	5.5	5.5
Screen cleaning options							
Ball cleaning	5 Decks	5 Decks	5 Decks	5 Decks	5 Decks	5 Decks	5 Decks
Brush cleaning	5 Decks	5 Decks	5 Decks	5 Decks	5 Decks	5 Decks	5 Decks
Air-jet cleaning	2 Decks	2 Decks	2 Decks	2 Decks	2 Decks	2 Decks	2 Decks
Air-jet + brush	2 Decks	2 Decks	2 Decks	2 Decks	2 Decks	2 Decks	2 Decks
Ultra Sonic Cleaning	5 Decks	5 Decks	5 Decks	5 Decks	5 Decks	5 Decks	5 Decks
Straining attachement	2 Decks	2 Decks	2 Decks	1 Deck	1 Deck	1 Deck	1 Deck
Base (Square mm/inch)	630/24.8	930/36.6	1100/43.3	1340/52.8	1340/52.8	1740/68.5	1940/76.4
1 Deck Hight (mm/inch)	850/33.5	1155/45.5	1480/58.3	1480/58.3	1500/59	1470/57.9	1580/62.2
1 Deck Weight (kg/lbs)	140/308	490/1080	700/1543	980/2160	1050/2315	1690/3726	1900/4189
2 Decks Hight (mm/inch)	965/38	1280/50.4	1640/64.6	1640/64.6	1660/65.4	1590/62.6	1710/67.3
2 Decks Weight (kg/lbs)	155/341	535/1177	770/1697	1060/2337	1140/2513	1780/3924	2000/4409
3 Decks Hight (mm/inch)	1080/42.5	1400/55.1	1800/70.9	1800/70.9	1820/71.7	1710/67.3	1840/72.5
3 Decks Weight (kg/lbs)	170/375	580/1278.6	840/1851	1140/2513	1230/2712	1870/4123	2100/4630
4 Decks Hight (mm/inch)	1200/47.2	1525/60	1960/77.2	1960/77.2	1980/78	1830/72	1970/77.6
4 Decks Weight (kg/lbs)	185/408	625/1377.9	910/2006	1220/2690	1320/2910	1960/4321	2200/4850
5 Decks Hight (mm/inch)	1310/51.6	1650/65	2120/83.5	2120/83.5	2140/84.3	1950/76.8	2100/82.7
5 Decks Weight (kg/lbs)	200/441	670/1477	980/2160	1300/2866	1410/3108	2050/4520	2300/5071

Please call or send us your inquiry by fax.
Ask for our questionnaire.



Minox also supplies

Vibrating Tumbler Screening Machines

- for dry and wet screening

Centrifugal screeners

- for safety screening of non-abrasive materials

Air-Jet Analysis Screeners

- for laboratory testing

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