

HAYER & BOECKER



DIE DRAHTWEBER

SUGAR SCREENING MADE EASY.

How you can optimise throughput and process reliability with selected woven wire screen.



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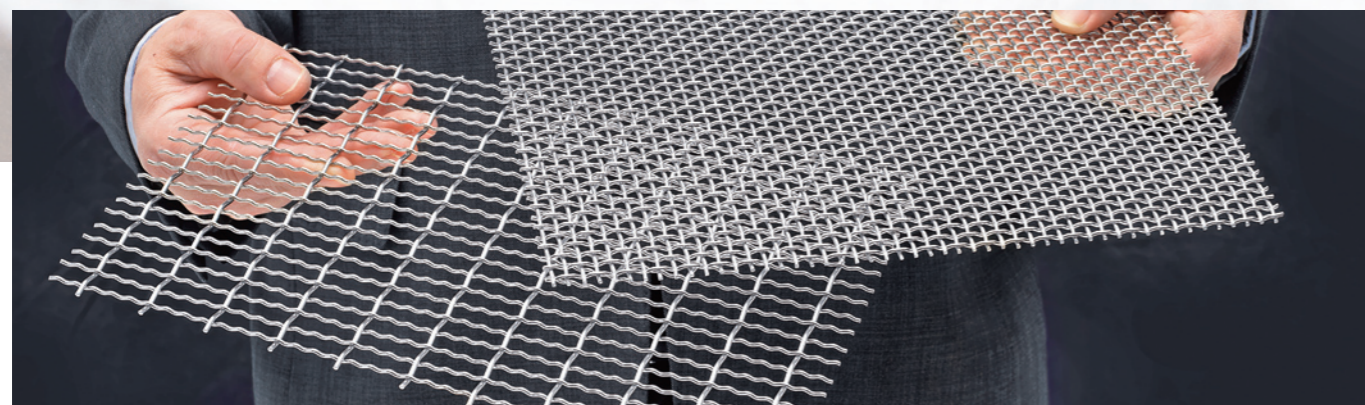
When screening sugar, the focus is primarily on the selection of screening machines: round screen machines, end and side tensioned vibrating screens or directly excited screens. Less well known is the fact that both the throughput rates and the process reliability of the screening can be optimised to a high degree by selecting suitable screen cloths. However, it is worth taking a closer look. The wire weaving company Haver & Boecker has developed a special product range especially for (sugar) screening, with focus on the mesh shape and the material.

The suitable mesh shape for higher throughput rates.

Whenever precise separation cuts or screening materials are required or elongated particles have to be screened, square apertures are used.

The following applies: the thicker the wire diameter compared to the aperture width, the smaller the open screening area. The sieve bottom offers a longer service life, but at the same time the throughput is reduced. If you want to increase the capacity without having to

purchase a new screening machine, an optimised screen cloth can help. Increasing the open screening area by reducing the wire diameter is only a good solution to a limited extent, because thinner wires can have a negative influence on the service life of the screen sections.



Square or rectangular meshes? The right choice ensures higher throughputs.

What is more effective:

For round or cubic particles, the use of **rectangular or long slot woven wire cloth** is recommended. Their relatively large open screening area leads to higher performance with a lower tendency to clog. If the long slot is parallel to the material flow, a higher throughput is achieved. If it is crosswise to the flow direction, a more accurate separation cut is achieved. The greater the ratio of length to width, the more flexible the wire mesh and the better the self-cleaning effect.

Furthermore, a flexible wire cloth promotes the layer formation, also known as stratification: The fine sugar particles reach the screen surface faster and are thus screened more effectively. The result is a significantly improved throughput.

Sugar particles are mostly round. Screen sections with rectangular meshes can be used without problems.

As standard, rectangular meshes have a ratio of 1:3 and the same wire diameters are used as for the corresponding square meshes. However, more and more meshes are now being produced with a ratio of up to 1:25. In all cases, the open area is increased compared to the square mesh, which ensures a higher throughput. Depending on the wire diameter selected, the lower weight per unit area may reduce service life of the screen section. Since sugar is not an abrasive material, the wear properties are only relevant to a limited extent.

Round or cubic? Recognise the particle shape.

With a photo-optical particle analysis, you can determine whether your sugar particles are round or cubic, if required. The HAVER CPA 2-1 has become a standard analysis device in the sugar industry. In addition to the particle shape, it also analyses the particle size. This is done in a fraction of the time required for a conventional analytical sieving. Haver & Boecker offers various solutions for online analysis in the ongoing production process.



HAVER CPA 2-1 for photo-optical particle analysis.

The right material increases process reliability.

In addition to the mesh shape, the selection of the right wire material is also important. Until now, spring steel and stainless steel 1.4016 (AISI 430) have been used as magnetisable materials in order to sort the wire residues out of the product with the help of a magnetic separator in the event of a wire break. However, both materials also have disadvantages in the screening process.

Spring steel wires can only be used in dry processes, otherwise they corrode. In addition, these wires have a very high tensile strength, which makes them brittle and thus susceptible to continuous oscillation breaks. The material 1.4016 (AISI 430), on the other hand, has a low tensile strength and surface hardness, which means that it can only be used on vibrating screens to a limited extent and with short service lives. For this reason, many manufacturers resort to the material 1.4301 (AISI 304), which offers a good, but not outstanding mixture of tensile strength and surface hardness.

In addition, this material is not magnetisable, so that these wires cannot be detected in the event of a wire breakage. If this is the case, complete batches have to be screened again: an extremely expensive undertaking that is avoidable.

In short:

Not all previous standard materials are well suited for use in sugar screening. For this reason, Haver & Boecker has set up a stock program for the common wire cloth specifications of the sugar industry in material 1.4462 (Duplex), for both square and rectangular meshes. This Duplex material combines all the positive properties of the above-mentioned materials: a medium tensile strength counteracts wire breakages caused by continuous vibration loads, and a high surface hardness ensures very good wear properties.

The material 1.4462 (Duplex) is magnetisable, so that metal residues can be detected with a magnetic separator.



HAVER Multistretch provides for optimum tensioning of screen and support layer.



Double fold hook strip for end tensioning. Available with silicon or rubber seal.



Correct maintenance and handling.

If wire breakage occurs even though the material 1.4462 has been used, this can have several causes: If the wire breaks before wear is visible, this is usually a sign of vibration breaks, which can be caused, for example, by insufficient maintenance of the screening machine or incorrect installation of the screen sections.

But bad handling of the screen sections can also be the reason: Once there is a kink in the screen mesh, it can no longer be tensioned properly. Sooner or later, the kinks will lead to wire breaks. Especially when removing and reinstalling used screen sections, such damage to the wire screen can occur. Correctly installed screen sections can last at least a whole season or longer.

However, it is generally recommended to replace used screen sections after each sugar campaign.

Haver & Boecker will be happy to advise you on the correct handling and installation of the screen sections.

Conclusion

By using the optimum woven wire cloth specification, the capacity of your operation can be optimised while providing more process reliability at the same time. Correctly installed screen sections enable problem-free sieving. Sieve analyses can also be checked quickly and reliably on the HAVER CPA units.

Solutions from a single source.

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