

Sugar screening : from lump removal to fine classification

Whether it is sugar beet scalping in Europe or grading sugar cane sugar in the Far East, the ROTEX Screener is one of the most successfully used products involved in processing a wide variety of sugars and its derivatives throughout the World. The ROTEX dates back over 70 years and still retains its position, recognised as one of the most consistently reliable, high performance screeners on the market.

Sugar is mainly used for baking or sweetening, with a bulk density ranging from 600 to 800 kg/m³.

The three main screening applications are used in the sugar industry: scalping, fines removal and grading.

Scalping application

In this application, a small percentage of material greater than the screen aperture, called the oversize, is removed from a feed containing a predominance of particles less than half screen aperture size, which is usually from 2 to 5mm. Sugar is scalped to remove lumps and foreign materials prior to grading or packaging. High volumes per square meter of screening surface are obtainable.

Sugar scalping is generally classified into two categories : rough scalping and close scalping.

Rough Scalping

Through approximately 4.75mm screen cloth. Very high rates are obtainable for these applications up to 70 TPH/m².

Close Scalping from 2.5 to 1.0mm.

Close scalping is performed in either refineries or beet sugar factories or in food plants where sugar is used as an ingredient. Capacities range from 10 to 40 TPH/m².



Fines removal application

Fines removal application is less widely used in the sugar industry. It ensures removal of a small percentage of fines from a feed material having a predominance of particles greater in size than the mesh aperture. Sugar fines and dust are removed before despatching or packing line. This application can also be used for producing icing sugar. Mesh apertures used range from 200 to 400 μ m.

Grading application

After scalping, grading is performed in two stages : primary screening and specialty screening.

Primary Screening

The primary screeners normally produce three grades: fine granulated (- 1.4+0.6mm), extra fine (- 0.6+0.18mm) and fine confectioners (-0.18mm). A typical rate for primary screening is 3.4 TPH/m².

Specialty Screening

Specialty screening is most often accomplished with a second set of screeners having two or more decks, and is fed from the primary screeners. Final product specifications vary widely among processors.

Screeners are the proven standard in the sugar industry. A single Screener handles capacities which require multiple vibratory machines. Screeners maximise product yield and quality because their motion produces very accurate and efficient separations.

Innovations

Blinding Control System

Since grading requires screening of near size crystals, screen blinding is frequently a problem. ROTEX has developed two mesh cleaning systems : the ball mesh cleaning system and the Ultrasonex system.

For scalping applications, wear resistant polyurethane balls will be used for an effective control blinding, thus ensuring continuous performance. Diameter of balls is subject to mesh aperture. 50mm balls will be used with mesh apertures above 2mm. For applications where finer meshes are used, such as grading and/or fines removal, balls with a 35mm diameter will be selected.

For handling sugar on very fine screen cloths smaller than 100µm, ROTEX has recently developed a new blinding control system : the Ultrasonex system, which, combined with the unique gyratory motion of the Screener, ensures optimum screening accuracy and efficiency.

More Stringent Regulations

The basic design principle of the screen has essentially remained constant for many years to offer the sugar industry high screening accuracy and efficiency as well as high production rates. However, with the continued introduction of more stringent European Standards, Health and Safety Standards, and the more and more demanding requirements of the sugar industry as regards to product quality and specifications

In the past, most Screeners in the sugar industry were traditionally equipped with wooden parts. Now, Screeners, where all parts in contact with sugar are in stainless steel or sanitary aluminium to meet new Health & Safety Standards. Manufacturers of screening equipment offer upgrades of the existing equipment to help customers save the expense of investing in brand new screening equipment, but still be able to meet hygiene requirements.

For further information regarding the complete range of ROTEX products and services, please call:

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Application sheet obtained from the SHAPA website at www.shapa.co.uk