

Screening equipment from ITE for the production of glass wool

At present, insulating materials made of mineral fibres are the most effective. Glass wool makes up the largest portion of the mineral fibres used. Approximately 100 to 150 m³ of glass wool can be made from 1 m³ of glass. After spinning the hot melt of 1300 °C, binders are added to obtain certain product properties. The portion of binders in the end product glass wool is 0.5 % to 7 % depending on the manufacturing process. After spinning, the mat webs (the so-called glass fibre wrapping material) is passed through a hardening furnace at approx. 250 °C and is hardened there. After leaving the hardening furnace, the fibre mat is so strong that it can be cut and further processed. The phenol-formaldehyde Bakelite gives the glass wool its dimensional stability.

The washing water circuit plays an important role in the process for the manufacture of insulating mats of glass wool fibres (Fig. 1). The washing water is circulated. During the process binder portions, fine and very fine portions as well as glass fibres accumulate. Therefore, the plant operator is very interested in an effective washing water treatment and recycling. However, they often come up against boundaries or recycling over a prolonged period is not possible. The very fine glass fibres in the circuit lead to increased wear of pipelines, pumps and bends and, consequently, to increased operating costs.

The filters and dewatering units used in the glass wool industry reach their limitations due to the very short glass fibres and particles. The company Isover belonging to the Saint-Gobain Group was also confronted with this problem.

For a long time they had been looking for a suitable separation solution for these very fine portions. In November 2009 a vibrating screen from ITE GmbH was tested for four weeks. With their fine screening technology ITE is able to

offer screening solutions even for cases where the conventional screens available in the market come up against their limitations. With up to 325 mesh (45 µm effective separating diameter) ITE offers a screening technology that can compete with the separating ranges of lamellar clarifiers and hydrocyclones.

The screening machine used, a 3PSM (Fig. 2) from ITE with 3 frame screens has a screening surface of 2.4 m². The screens are linearly driven by 2 vibration motors of 2.2 kW each and generate a discharge acceleration of max. 6 G. The high acceleration force makes it possible to dewater even fibrous and very finely dispersed feed. The inclination of the screening machine 3PSM can be adjusted, thus directly enabling a variation of the retention time on the screening surface, which

leads to optimized dewatering. The entire circulating flow of binders of approx. 8 to 10 m³/h was passed through the vibratory screening machine. In order to counteract blinding of the fine screen meshes, the operator installed a sprinkling system that made process water spraying possible, thus effectively avoiding the formation of jamming particles.

Due to this optimization, the ITE 3PSM successfully stood the test in the required continuous operation. The discharge result was consistently positively evaluated. Both the residual moisture of the material being screened and the discharge



Production of glass wool from the melting chamber up to cutting out



2 Screening machine 3PSM from ITE



3 Fine frame screen from ITE

throughput were more constant than those of other machines previously tested. The samples of the screened material evaluated in the Isover laboratories had a solids content varying between 18 and 29 wt.-%. The circulating washing water circuit could be stabilized for various days. Variations of the feed volume flow and of its solids content, which were caused by the process, were overcome by the 3PSM without any problems.

A downstream process stage dewatered the mix of fibres and binders to the extent that it became possible to return the solids to the process without a thermal aftertreatment. The screening technology used in oilfields proved to be abso-

lutely suitable for the industry due to its simple structure and rugged design. Another advantage was the easily exchangeable system of frame screens (Fig. 3). This system made a quick change of screens possible leading to minimum downtimes in the production cycle. Due to the wide range of frame screens available, it is always possible to adjust the screening machine to changing operating conditions. The screen program of ITE offers 16 different screens with mesh widths varying between 3360 μm and 44 μm .

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New product line

At bauma 2010 Hartl Powercrusher presented its new "Powercrusher PC1 – PC6" product line. The PC1 compact plants (impactor, inlet width 1010 mm) and PC2 (jaw crusher, inlet width 1 020 mm), which have already been in operation worldwide since mid-2008, provided the design basis for the entire new series (Fig.). The medium-sized PC3 (impactor, inlet width 1250 mm) and PC4 (jaw crusher, inlet width 1250 mm) are used especially in recycling and aggregate processing and, despite their crusher size, score points with their optimum transport dimensions and comparably low overall width. The plants can be quickly and flexibly transported from one operating site to the next and, after a short set-up time 30 min maximum, can handle up to 300 t/h depending on the material and infeed size. One size class bigger, the PC5 (impactor, inlet size 1300 mm) and PC6 (jaw crusher, inlet size 1300 mm) are equipped as standard with a double-deck heavy-duty screen integrated upstream of the crusher for optimal screening and separation of the material prior to the crushing process. The pre-screened material, with adjustable size thanks to simple a screening surface changeover, is discharged on the side belt and the medium-size particles are fed below the crusher on to the main discharge belt. Depending on the application, rates up to 400 t/h can be achieved. Both plants can hydraulically lower the main discharge belt, giving optimal access below the generously sized crusher chamber and facilitating belt changeover. The belt frame has a built in adaptor system



PC2 in operation

allowing it to be fitted with a screen box at any time. Installation of this optional screen box and the return belt also enables the production of two grades in one pass or operation in a closed circuit.

In addition, the complete new product range has already been designed to accept TIER 4 exhaust gas components which will come into effect for motors and installations in the USA and Europe from 2011, enabling a flexible and fast adaption to the necessary and prescribed generation of motors. The new fold-out combi-coolers permit easy access for service and maintenance. The louvre arrangements have also been redesigned to facilitate cleaning of the radiators. The use of wider tracks means gives the machines increased stability and mobility, especially for use on rough terrain. The entire new series is fitted with large covers and panels constructed of special GRP materials. Because of the nature of these materials, extremely good results are achieved with regard to impact strength as well as noise emission reduction – the larger panels permit optimum access for all service and maintenance work. The new series is rounded off with the PC1055J and PC1060I in the lower size range and the PC1610IG (impactor with an inlet opening of 1600 mm/capacity up to 500 t/h) in the higher size range.

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