

Melt Filter made by the company Maag Pump Systems

Oberglatt, October, 8th 2006

Hand Screen Changer – much performance for little money

(Introduction)

The past decades of the plastics processing industry were characterized by a steadily accelerating progress in the development of new materials, procedures and applications. In addition, the globalisation of the market broadens today's challenges which machine engineers and processing companies have to face.

The manufacturers of Melt Filters have had to take this phenomenon into account as well; as a consequence, the user of Melt Filters is in a position today which allows him to make his choice of the best possible solution for his particular production process among a multitude of filter constructions.

In making this choice, he often focuses his attention on specific high-tech variants, which, however, are in the upper price level as they offer functions such as automatic screen changing, automatic cleaning of the

screens and constant process and pressure conditions.

To present an alternative, this article deals with the low-priced Manual or Hand Screen Changers which, overshadowed by their „taller brothers“, do all too often not receive the attention which they would merit.

(main text)

PVC, PET and rubber as well as profiles, fibres and films are just a small choice among the innumerable materials and manufacturing procedures for which specific Melt Filters are offered on the market. Picture 1 shows the choice of Melt Filters offered by a leading manufacturer who meets all market requirements with his four product lines covering a total of 13 types of filtration equipment. Depending on the design and size, filtration areas from 7 cm² to 1,000,000 cm² are provided.

Melt Filter Type HSC (Hand Screen Changer)

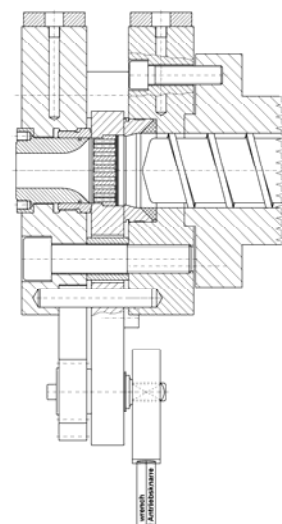
The main feature of this design of a filtration machine is the hand-operated driving gear unit. Thanks to a patented reducing gear unit, it is possible to do without any electric, pneumatic and hydraulic driving components in this filter, as this patented reducing gear unit multiplies the forces of a removable ratchet spanner by 50 (picture 2). As there is no need for using a long driving lever, a comfortable screen changing process in all mounting positions of the filter, and even in restricted space situations, is possible.

From the very beginning, the product line HSC was designed as an open system, offering the possibility of incorporating a screen extension into the housing e.g. in thermally unstable plastic melts, and of adapting the flow channel diameter to any downstream units variably at the outlet side using a bush (picture 3).

The flange-like configuration of the filter housing also facilitates a direct connection to MAAG extrex[®] pumps, as a design analogous to the structure presented in the profile sample (picture 4). The filter heating up to the temperature of 260°C is basically also ensured from the outside using directly accessible band heaters in this machine design as



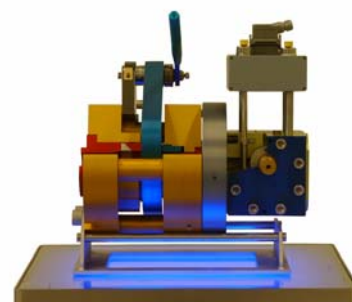
Picture 2: Melt Filter type HSC fitted with reducing gear unit



Picture 3: HSC flow channel geometry

well. Such band heaters are quite easy to replace when necessary without dismantling the filter.

Hand Screen Changers of the type HSC made by the company Maag Pump Systems can be used as a serial equipment in applications with pressures of up to 700 bar, thanks to an active sealing system. The clamping forces necessary to seal the slide plate are absorbed by the expansion ring radially according to the melt pressure, and are forwarded (picture 5) towards the pressing ring via the oblique contact surface as an axial sealing force. This means: The higher the melt pressure is inside the system, the higher will be the sealing effect as a result. This actively working sealing system ensures a leak-proof filter operation independent on the viscosity and the throughput.

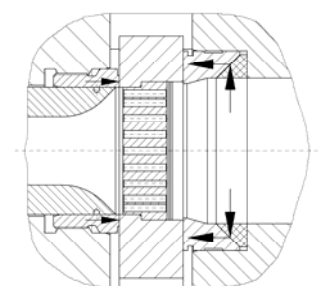


Picture 4: Combination of an HSC-Filter with an extrex®-pump

The modular constructional shape of HSC Screen Changers allows the incorporation of special construction elements as required, in order to be able to use the filters in the high temperature range of up to 350°C and for highly corrosive molten plastic materials as well. Moreover, a specific variant is available which conveys the start-up material outside during the production start and only then initiates the filtration process through two screen cavities as a standard technology (picture 6).

Summary

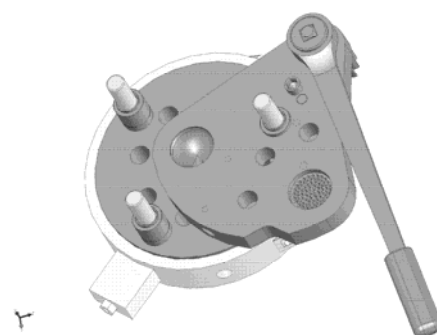
Hand Screen Changers of the line HSC are a low-cost, compact and robust filter design offered by the company Maag Pump Systems. Their easy incorporation into new and existing production lines, and the comfortable manual screen change procedure make this design interesting for both OEMs and final customers. Owing to their high operational



Picture 5: HSC sealing system

reliability and leak-proof function, they are the first choice in quality assurance, and as a protective filtration equipment used for melt pumps, and moulds', dies' and bowls' gaps.

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Picture 6: HSC Diverter Valve