Melt Filtration in PVC Extrusion

Vinyl Recycling Summit
July 20, 2021

Monika Gneuss
VP/Sales & Marketing Manager
Gneuss, Inc.

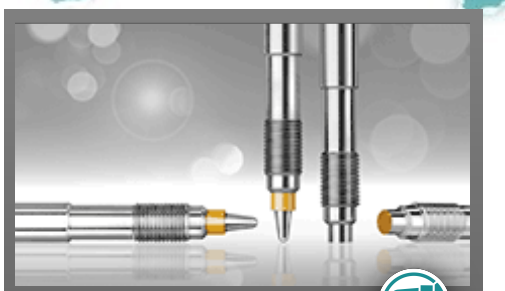
monika.gneuss@gneuss.com
704.841.7251

Who we are

Gneuss at a glance

Extrusion Technology

Filtration Technology



Measurement Technology

Who we are

Gneuss at a glance


Bad Oeynhausen, Germany

about **200** employees worldwide

More than **100** patents

38 years of successful development

50 % of our turnover in recycling applications

Worldwide distribution with **55** sales & service locations

Outline

- Melt Filtration – Why, how, challenges
- Rotary Filtration System SF
- Rotary Filtration System RSF*genius*

Melt Filtration

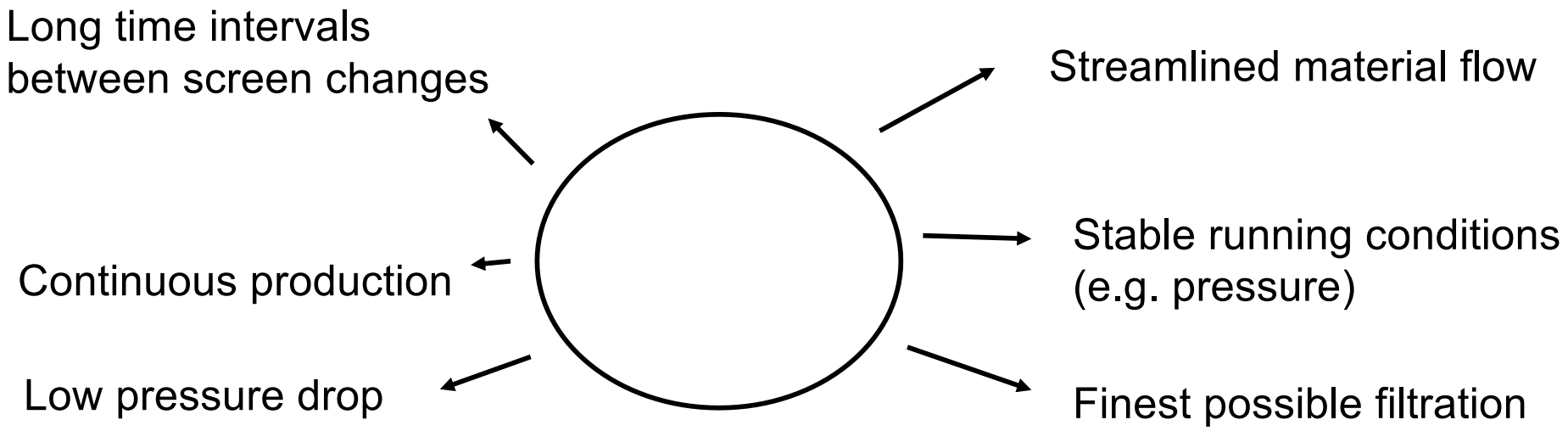
Foreign particles

Different sizes and forms from:

- Contaminated raw material
- Contaminated additives
- Contaminated reclaim/recycled material
- Metal parts, wear debris, corrosion effects
- Operating errors
- Process-technical disturbances (degraded material)
- Oversized particles and agglomerates, unmelts, inhomogeneities, viscous gels, etc.

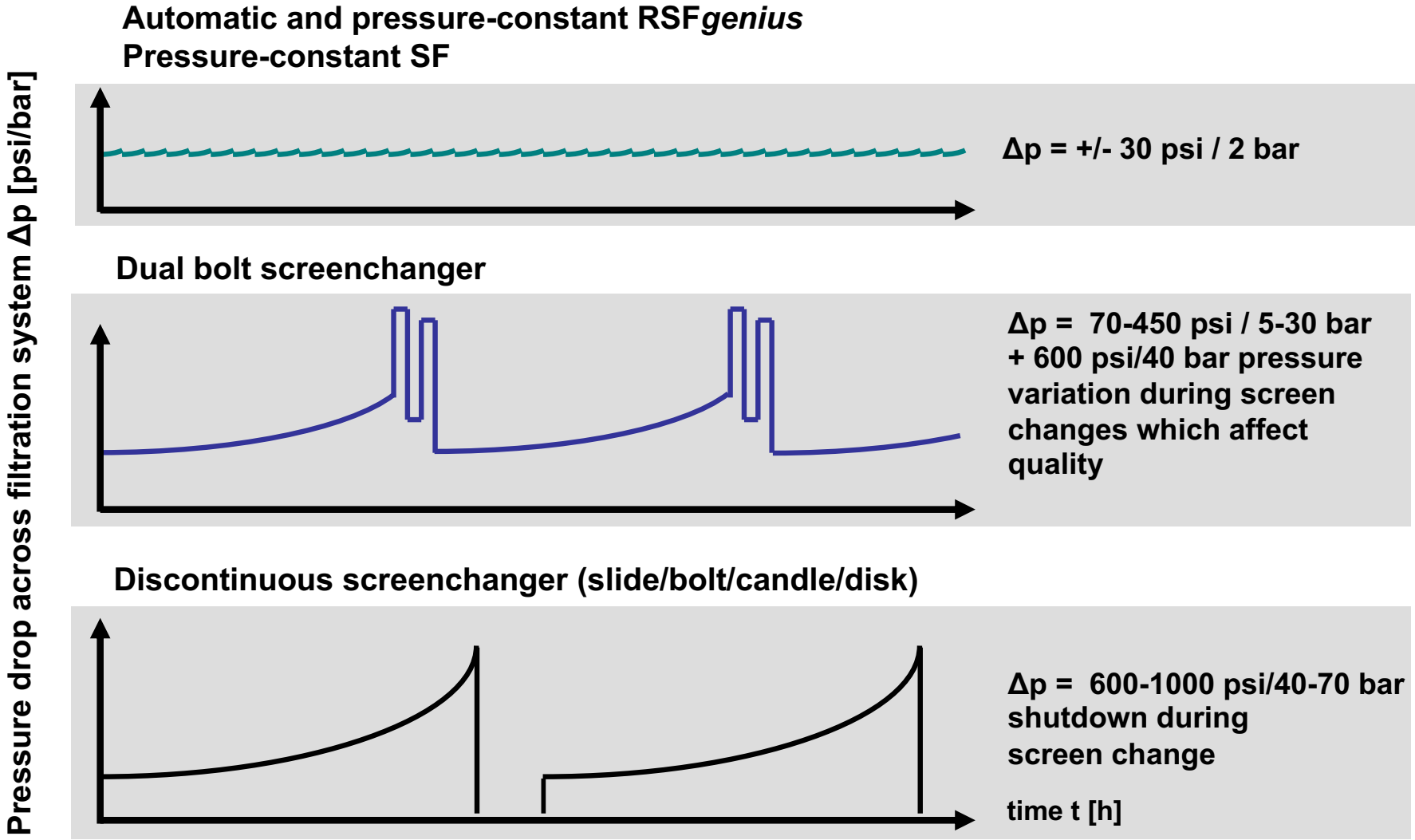
PVC Melt Filtration

Requirements on a Filtration System for PVC (recycling):



Filtration Technology

Comparison



Rotary Filtration Systems

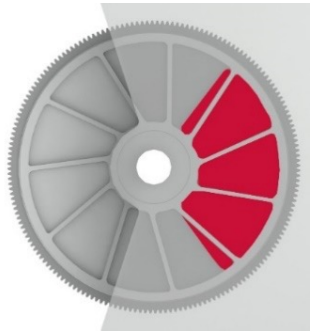
Fully automatic, process and pressure constant filtration.

RSF*genius*

Process and pressure constant filtration with integrated backflushing system for demanding applications.

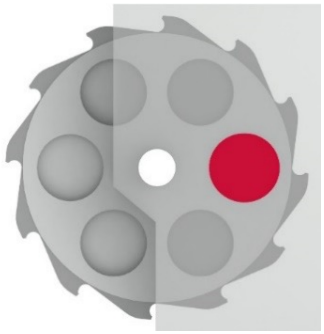
SFX*magnus*

Process and pressure constant filtration for high quality end products.



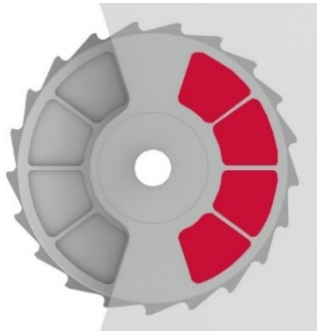
SF*neos*

Process and pressure constant filtration for thermally sensitive materials (e.g. PVC).



KSF

Continuous and process constant filtration for applications with high pressure or frequent changes.

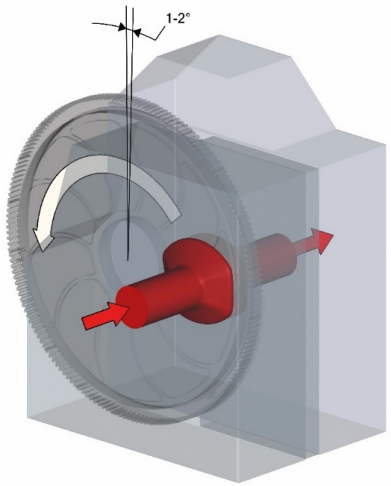


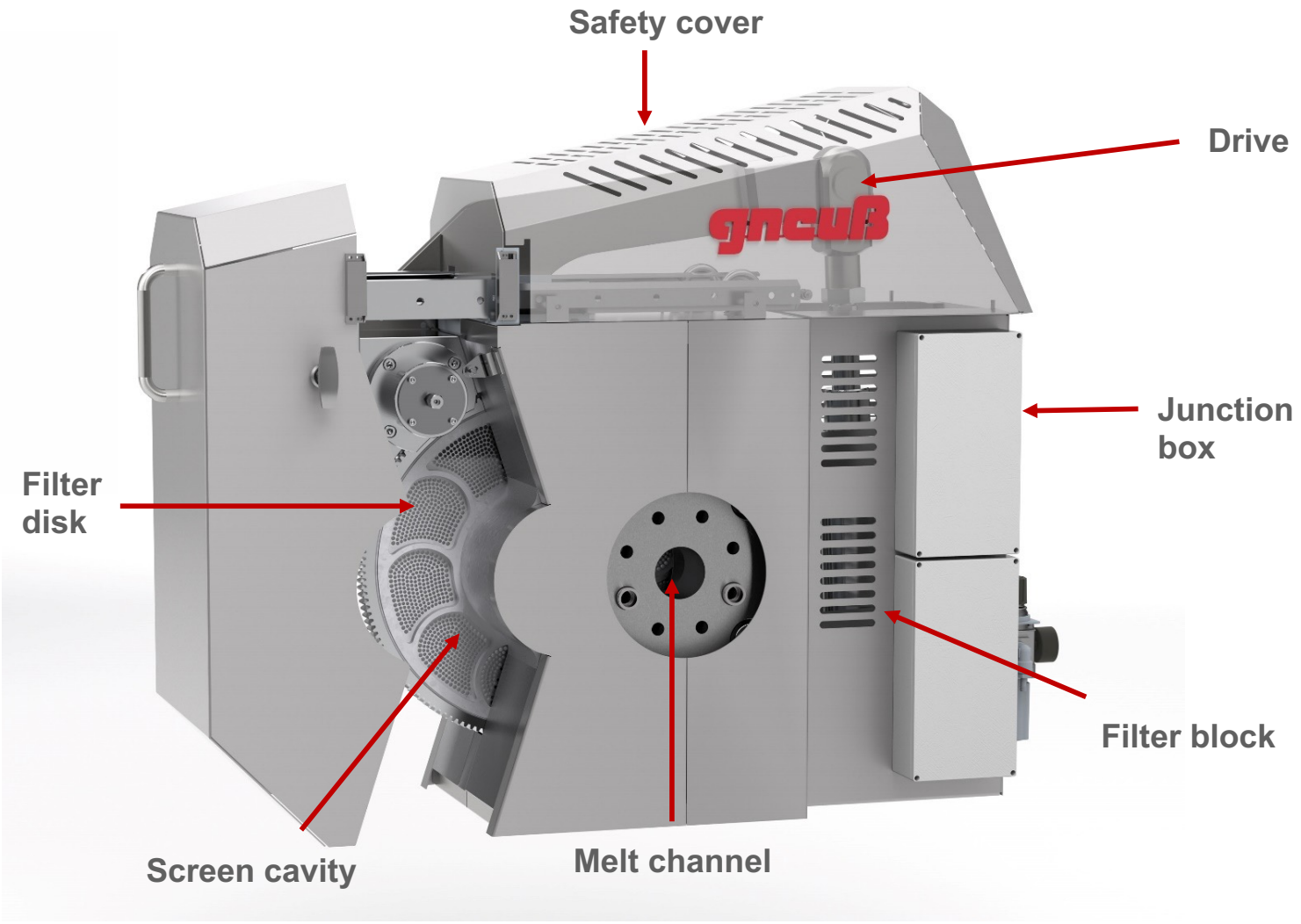
CSF*primus*

Continuous filtration for with large active screen area for safety or pre-filtration.

Filtration System SF

Design





Filtration System SF

Animation

SF
Advantages

Constant
By always keeping the size of the active screen area constant, the pressure can be kept constant during the whole production process (max. pressure variations of ±2 bar). Also, melt temperature and viscosity are permanently free from variations. Thus, the end product quality is always constant.

Quality
Melt purity and quality downstream of the filtration system are permanently achieved. Rheologically optimized melt flow channels.

Streamlined
Due to the optimal rheological flow channel design, the dwell time of all the melt in the filtration system is very short (< 1 minute). No danger of material burning in dead spots.

Straightforward
The operator is informed in time about upcoming screen changes by the control system. Changing screens is a simple, quick and safe procedure and does not have any influence on the process and product quality.

Compact
The compact design of the SF makes a simple and cost-efficient integration possible, even in very confined spaces. Thanks to the compact design and good insulation, the energy consumption is extremely low.

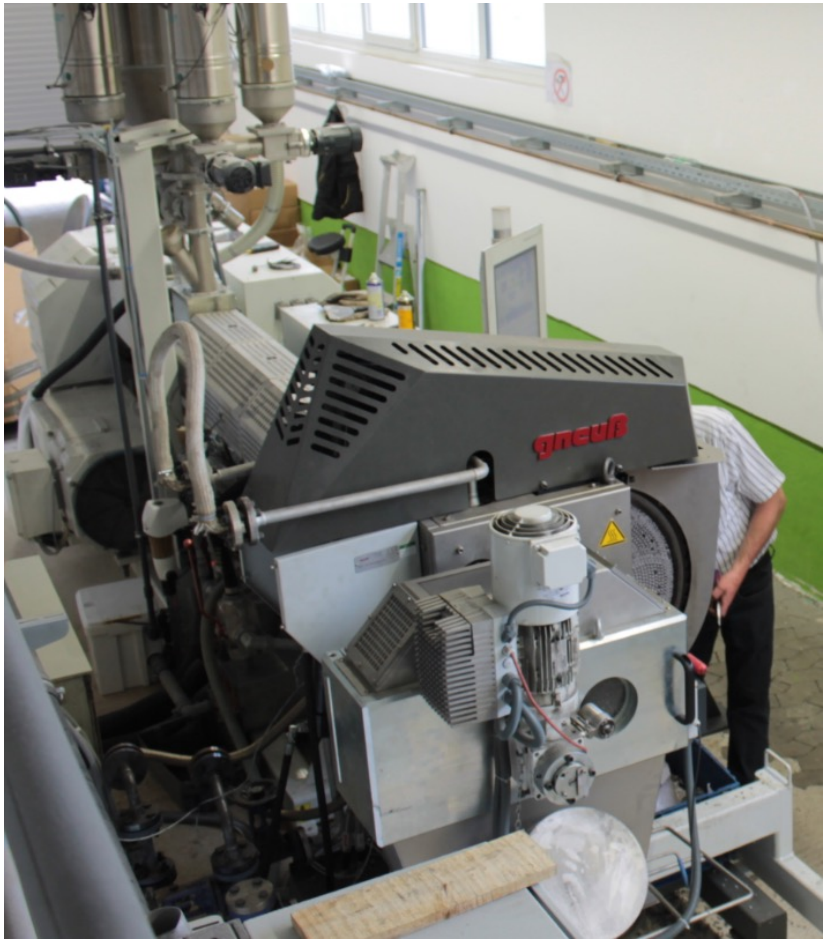
SF

PVC specifications

- Especially tailored for challenging PVC applications
- Optimized surface protection
- Enhanced rheological melt flow design
- Special reinforced drive technology
- Separate temperature control in central filter area
- Screw tip extended up to screen (optional)
- Liquid heating
- Melt channel bushings available

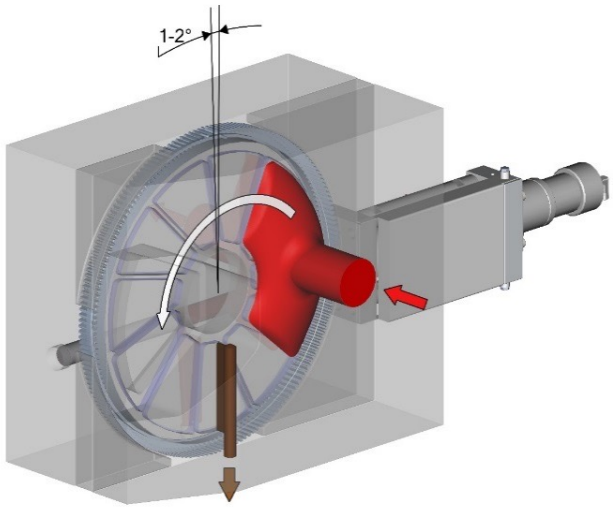
SF 175L

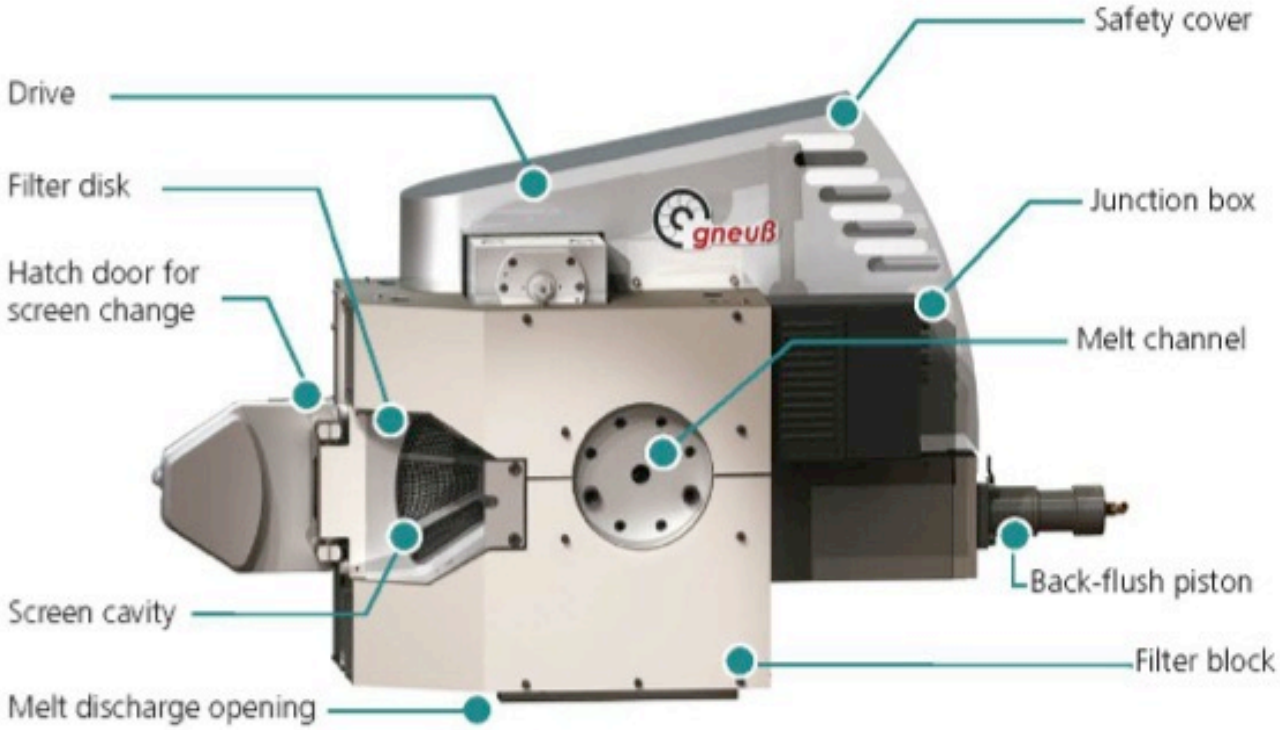
In rigid PVC recycling



600 kg/h with 250-500 micron screens

RSF*genius*
Design





RSF*genius*

Animation

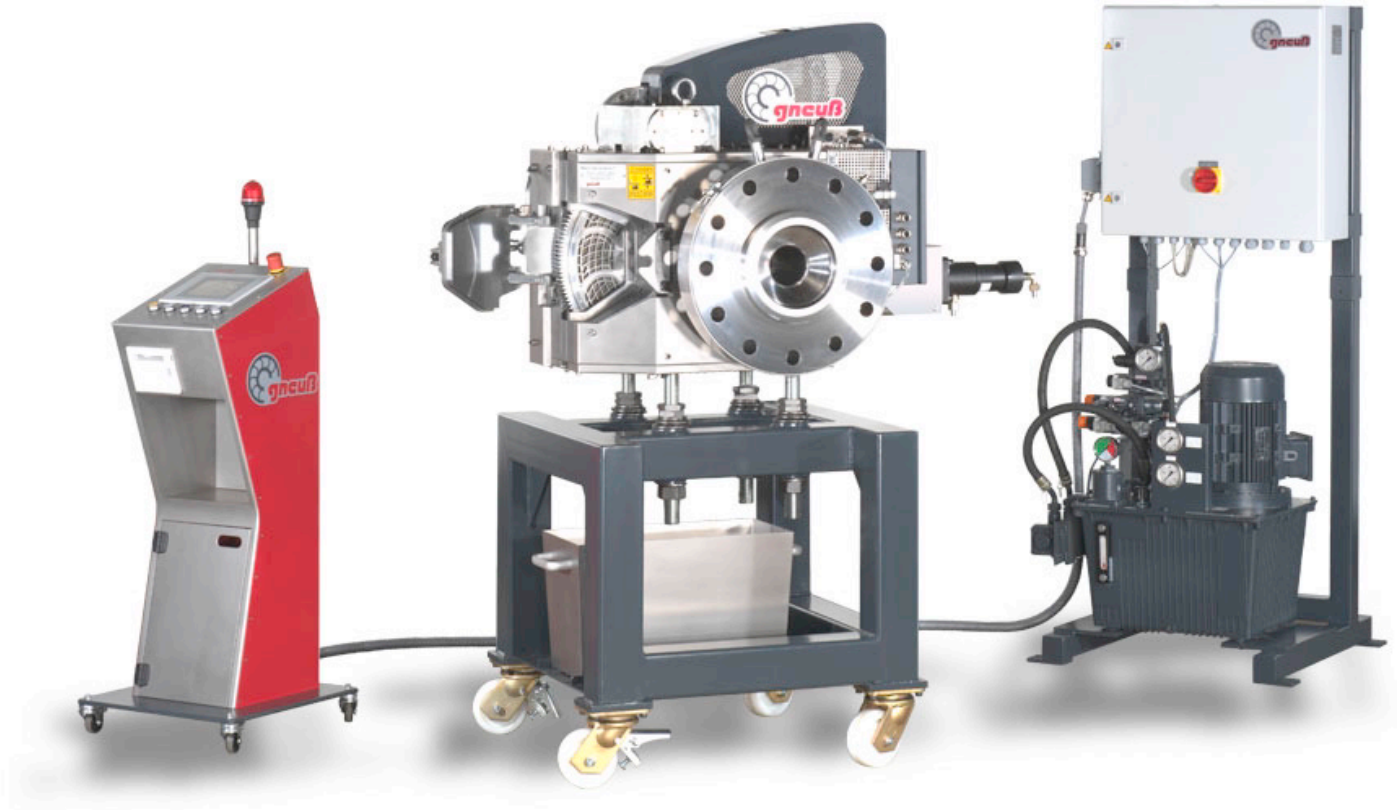
RSF*genius*

Advantages

1. **Process- and pressure-constant mode of operation**
2. **Fully-automatic mode of operation**
3. **No (thermal) degradation of the melt within the filtration system**
4. **Very efficient self-cleaning of filter elements**
5. **Low melt loss due to back-flushing**
6. **Back-flushing without influence on the production process**
7. **Short dwell time of the dirt cake in the filtration system**
8. **100% availability of the line**
9. **Safe and easy operation**

RSF*genius* 150

In PVC cable recycling



300-400 kg/h with 160 micron screens

Thank you for your attention!

Gneuss Technical Center – Bad Oeynhausen, Germany