Promix Solutions – trust the leader

Melt Blenders
Your partner in the plastics processing industry

- Founded in 2012 as a spin-off of Sulzer Chemtech
- Subsidiaries in Winterthur, Switzerland and Linden, Germany
Your partner in the plastics processing industry

- More than 30 years experience in plastic processing
- The biggest standard mixer portfolio in the industry
- Complete customized solutions including housings and nozzles
- Fast delivery of standard mixers and mixing nozzles within 5 days
- Local support in most important countries through own sales agents or local reps
- More than 30’000 references worldwide
Leading in static mixing technology

- **1975 First Mixer Application Plastics Processing**
- **1995 First Mix Nozzle**
- **1996 SMB-R Melt Blender**
- **1997 SMB-H Melt Blender**
- **2004 New LSR Mixing Block**
- **2007 Mix Tip**
- **2007 Introduction Foam Extrusion**
- **2009 Mix Body for sensitive applications**
- **2010 launch new Mix Nozzle KSM**
- **2013 SMB plus Melt Blender**

June 2012 | slide 4
Application range

Applications
- Injection Molding
- Hot Runner
- LSR
- Extrusion
- XPS
- Physical high density foam extrusion

Polymers
- Thermoplastics: LDPE, HDPE, LLDPE, PP, PS, HIPS, etc.
- Technical Polymers: POM, PMMA, TPU, PET, PBT, SAN, ABS, PC, LCP, PA, PC/ABS
- Filled Polymers: Glass-fibers, mineral fillers, etc.
- Foamed polymers: PS, PE, PP, PET, PVC
How it works

- Homogenization of additives as master batch, color, flame retardant, different polymer grades etc.
- Reduction of radial and axial temperature variations
- Equalization of velocity differences across the flow channel
Static mixers in extrusion
Advantages of Promix melt blenders

- Equalization of melt temperature over the whole cross section
- Equal melt velocity in the die inlet
- Excellent distribution of all additives
- Equal wall thickness and better tolerances of extruded products
- Improved cell structure and smoother surface in foam extrusion
- Significant saving of masterbatch
- Improved processing of recyclate
- Higher throughput due to optimized processing parameters
Effective temperature homogenization

In an empty pipe polymer melts will form a laminar profile

Promix melt blenders destroy the laminar profile and create a very effective cross mixing resulting in:

- Equal velocity
- Equal temperature
- Narrow residence time distribution
- Excellent melt homogeneity
Effective temperature homogenization

Diagram scanner

Line scanner

Temperature distribution WITHOUT static mixer

Temperature [°C]

Temperature distribution WITH static mixer

Temperature [°C]
# Product Portfolio Extrusion

<table>
<thead>
<tr>
<th>Product</th>
<th>Range</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMB-H</td>
<td>17 22 30 40 50</td>
<td>Standard solution; for high shear mixing and smaller DN</td>
</tr>
<tr>
<td>SMB-R</td>
<td>40 50 65 80 100 125 150 175 200</td>
<td>For bigger DN and applications with limited allowable pressure drop</td>
</tr>
<tr>
<td>SMB plus</td>
<td>40 50 65 80 100 125</td>
<td>New flow optimized generation, excellent mixing performance, min. pressure drop</td>
</tr>
<tr>
<td>SMB-E</td>
<td>50 65</td>
<td>Eco product line for standard applications</td>
</tr>
<tr>
<td>Polyguard</td>
<td>40 65 80</td>
<td>For PVC and rubber applications</td>
</tr>
<tr>
<td>Housings</td>
<td>Various sizes</td>
<td>Customized housings for any melt blender type acc. to customer specification</td>
</tr>
</tbody>
</table>
# Product Portfolio Extrusion

<table>
<thead>
<tr>
<th>Product</th>
<th>Range</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breaker plate</td>
<td>40, 50, 65, 80, 100, 125</td>
<td>Accessory for SMB-R, protection against cold slug</td>
</tr>
<tr>
<td>Dismantling adapter</td>
<td>40, 50, 65, 80, 100, 125</td>
<td>Accessory for SMB-R, ensures smooth dismantling of melt blender</td>
</tr>
</tbody>
</table>
Promix SMB plus melt blender

The new flow optimized melt blender generation

- Excellent mixing
- Lowest pressure drop
- Almost unbreakable
- Outstanding self cleaning behavior

SMB plus melt blenders including housings are available from DN40 up to DN125
Polyguard – first mixer solution for rigid PVC

Polyguard is the first and only mixer solution for rigid PVC, rubber and WPC on the market

Your advantages

- Improved color appearance, avoidance of flow lines
- Better distribution of fillers and additives result in improved material strength
- Steady high product quality and reduced warpage
- Improved smoother inside surface of pipes
Installation principle

A: Temperature measurement connection
B: Flange
D: Heating tape
E: Temperature sensor
F: Pressure sensor

Extruder
Promix Melt blender
SMB-R

Die
# Self cleaning performance Promix melt blender

<table>
<thead>
<tr>
<th>Purging time</th>
<th>Extruder</th>
<th>Promix mixer</th>
<th>Helical mixer</th>
<th>Empty pipe</th>
<th>Extruder + Promix mixer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 min.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 min.</td>
<td></td>
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<tr>
<td>3 min.</td>
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<tr>
<td>4 min.</td>
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<tr>
<td>5 min.</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 min.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 min.</td>
<td></td>
<td></td>
<td>100% clean after 6 min. = 6 times the mixer volume</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 min.</td>
<td>clean after 7 min.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 min.</td>
<td></td>
<td></td>
<td></td>
<td>clean after 12 min.</td>
<td>clean after 9 min.</td>
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</table>
Installation example

Melt Blender SMB-H with housing and adapter flange

Installation in a flat film coextrusion line
Promix melt cooler PMC

Your advantages

- Very high cooling efficiency and accurate outlet melt temperature control
- No fouling or blockage problems due to a well-mixed single flow
- Narrow residence time distribution
- Short installation length and low pressure drop
- Improved product quality in foam extrusion
## Main benefits Promix Static Mixer in Extrusion

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Bars</th>
<th>Sheets</th>
<th>Films</th>
<th>Profiles</th>
<th>Pipes</th>
<th>Coatings</th>
<th>Blow molds</th>
<th>Cables</th>
<th>Foams</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher throughput</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>Less warpage</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td>✔</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Improved Temperature homogeneous</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td>✔</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Uniform color</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Uniform wall thickness</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>Improved surface finish</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>Quicker start-up</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>Better adhesion</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Equalized melt flow with multi-cavity molds</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>Incorporate recyclate from co-extrudates</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<td>✔</td>
<td>✔</td>
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<tr>
<td>Avoid brilliant spots</td>
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<td>✔</td>
<td>✔</td>
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<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>Density reduction</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Uniform cell structure</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Incorporation of mono recyclate</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>
References Extrusion

Machine builders

- Davis-Standard
- Breyer
- SML
- W. Müller GmbH
- SACMI
- KAUTEK
- Collin
- KraussMaffei Berstorff
- Brückner
- Bekum
- Reifenhäuser Extrusion
- battenfeld-cincinnati
- Kuhne