

Mission Statement

To provide technically advanced and high quality products and services to the plastics industry.

To develop new machinery and processes that allow plastics processors to improve quality and to make products more efficiently.

REE, Inc. provides value by:

- Custom extruder screws that improve process performance
- Increasing knowledge of employees by training
- Developing process machinery with improved performance
- Debottlenecking manufacturing operations by systematic process analysis and identifying areas of potential improvement
- Solving difficult process problems by systematic troubleshooting using advanced tools such as computer aided problem solving
- Advanced engineering analysis and design using the latest tools such as 3D FEM and BEM analysis of flow in extruder screws and dies
- Process simulation software for single screw extruders, twin screw extruders, dies with expert technical assistance
- Expert witness services with trial experience

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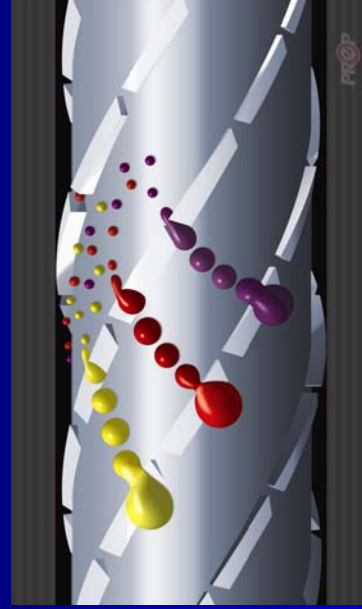
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Rauwendaal Extrusion Engineering Inc.

If you can define it we can design it!

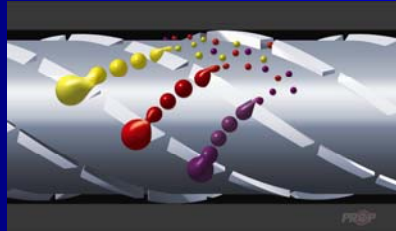


- **Custom extruder screws** for extrusion, compounding, injection molding, blow molding, foam extrusion
- **Training tools** for the extrusion industry such as interactive training programs
- **Public and in-house seminars**
- **Books** written by Chris Rauwendaal
- **Consulting services** particularly in the area of troubleshooting

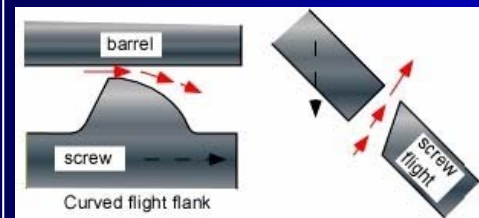
CRD Mixing screw (Patents 5,932,159 & 6,136,246)

The CRD mixer is a revolutionary new design unique in its ability to provide dispersive and distributive mixing with low pressure loss or even pressure gains. The CRD generates elongational flows, which provides the most efficient mixing. There are a number of important benefits to elongational mixing.

First of all, greater hydrodynamic stresses are generated in elongational flow and the stresses are transferred more efficiently to the agglomerates because rotational motion is absent in pure elongational flow. This is why rheologists call this "irrotational" flow.



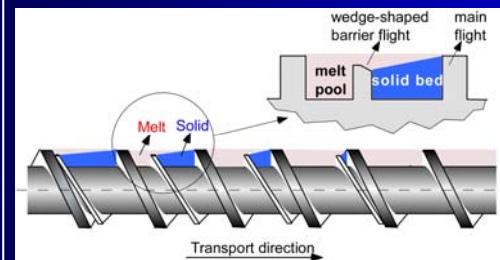
Secondly, the energy consumption is less in elongational flow relative to shear flow. As a result, the power consumption of the extruder can be reduced while the melt temperatures can be maintained at lower level.



Thirdly, in elongational flow it is possible to disperse highly viscous droplets in a low viscosity matrix while this is not possible in shear flow. As a result, gels can be dispersed in elongational flow; however, shear flow is incapable of dispersing gels.

CRD Barrier screw (Patents 5,932,159 & 6,136,246)

The unique feature of the CRD barrier screw is that the barrier flight is designed to generate elongational flow as the plastic melt passes over the barrier flight. This can be done by making the pushing flight flank of the barrier flight curved or slanted.

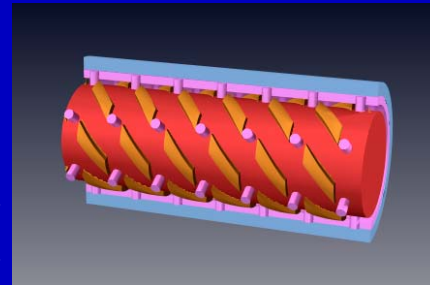


This wedge-shaped region allows the material to accelerate and stretch, causing elongational flow with better mixing and less shear heating. The barrier section is relatively short and located toward the end of the melting zone which eliminates plugging and surging.

VIP (Vortex Intermeshing PIN) Mixer

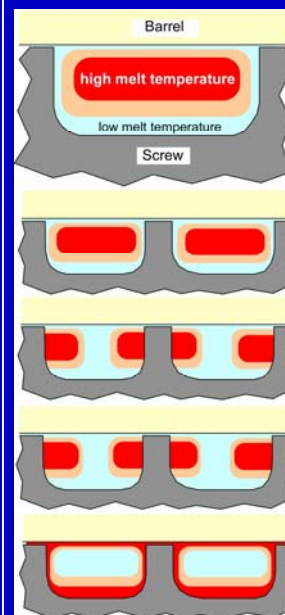
(Patent 6,709,147; licensed to Sulzer Chemtech Inc.)

The effectiveness of the mixing action in the new intermeshing pin mixer is due to the active stretching and folding of the interfaces achieved by the intermeshing action of the pins into the screw flights and the relative motion between the pins and the screw. As a result, effective mixing can be achieved over a short distance. This makes the intermeshing pin mixer ideal for incorporation into an extruder or injection molding machine.



These mixers can be used in extrusion, compounding, direct-extrusion, foam extrusion, blow molding, and direct-injection molding. The VIP mixer fits in a conventional smooth barrel and, therefore, can be used in standard extruders and injection molding machines. Installation of the intermeshing pin mixer does not require modification of the extruder barrel or a barrel extension. As a result, installation is simple and straightforward.

HHT (High Heat Transfer) Cooling Screw (patent pending)



The effectiveness cooling extruders is limited by the fact that the melt in the center region of the channel is insulated from the barrel surface. Cooling can be improved significantly by using a screw geometry that achieves effective mass transfer from the center region to the outside region and vice versa.

A new screw geometry has been developed which forces high temperature melt in the center region of the channel to the barrel surface. This new screw has been used in polystyrene foam extrusion to improve the cooling capacity of the secondary extruder. The HHT screw improved the cooling capacity by 25%-50% relative to the existing screw.

Public Seminars in:

Tube and Profile Extrusion, Foam Extrusion, Die Design, Troubleshooting Extrusion, Understanding and Optimizing Extrusion

In-house Seminar

REE, Inc. offers in-house seminars on several topics. The advantage of an in-house is that they are cost effective and can be tailored to the customers requirements.

Consulting Services/Troubleshooting

REE provides consulting engineering services, such as:

- Analysis and improvement of existing extrusion operations
- Troubleshooting and solving extrusion problems
- Design of custom extruder screws, dies, and complete extrusion lines
- Failure analysis and material characterization
- Expert witness services with extensive trial experience

ITX[®] Computer Based, Interactive Training in Extrusion

ITX[®] is a fully interactive, multi media training program designed for extruder operators, process engineers, technical service personnel, and others involved in extrusion operations

Books written by Chris Rauwendaal

