

FDM Technology

Fluid Division Mixing



For more than 20 years, machines based on the principles of inter-cavity transfer have been used in the polymer processing industry to provide high performance blending of extrudate. Recognising the potential of inter-cavity transfer and understanding the limitations of existing machines, Maelstrom APT has developed and patented a new form of machine with a much greater range of applications.

Termed "Fluid Division Mixing" (FDM), this new technology is extremely configurable and offers a high performance alternative to existing "high-shear" mixers.

Process Benefits

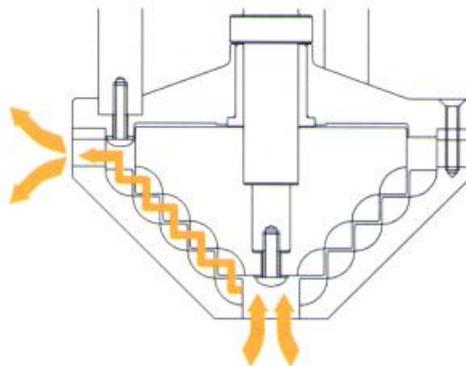
- Up to 5x the specific energy of conventional rotor/stator high-shear mixers for:
 - finer dispersions - reducing "fisheyes" or agglomerates
 - faster, more efficient mixing
- Defined fluid flow paths - fluid cannot short-circuit the high shear zones
 - more consistent results
 - fewer passes required through the mixing head
- Self pumping - centrifugal pumping with additional turbine assistance
- Batch and inline machines available - easily retro-fitted to existing processes
- Inline machines can be configured for ultra-low shear blending applications
- Hygienic and easily cleanable - parts are accessible and can be inspected
- Simple, rugged construction for long-term, reliable service

"inter-cavity transfer for turbulent shear and rapid, reliable blending"

Applications

- Solids dispersion
- Suspension
- Homogenisation
- De-agglomeration

FDM technology can replace conventional "high-shear" mixers in many applications where higher performance is required.



Maelstrom APT **Distromix** machines based on FDM technology are available from 0.37kW laboratory units through to 100kW+ large-scale production systems. Maelstrom APT also supplies complete mixing systems including dosing, solids handling, vessels, piping and controls.

technology

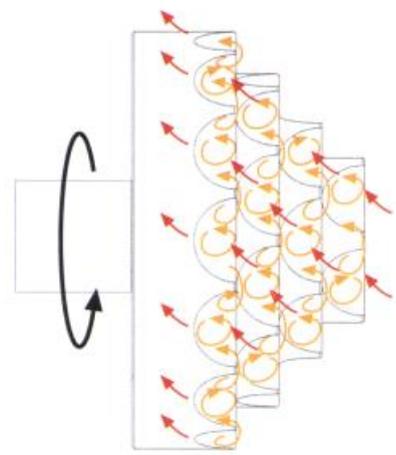
FDM

Fluid
Division
Mixing



Technology Background

Fluid Division Mixing is based on the principles of inter-cavity fluid transfer between rotor and stator elements. As fluid is pumped from one end of the mixing stage, it passes into and between relatively moving passages (cavities), being cut and folded in the process to achieve excellent distributive mixing (blending). For fluids typically below 50,000cP, the pumping force is provided by self-generated centrifugal action as the fluid passes along the expanding cone geometry. For higher viscosities, external pumping through the mixing stage is usually required.

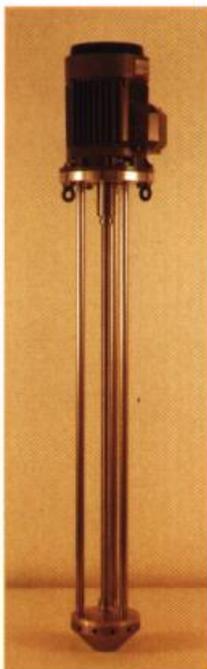


Key features of FDM machines are:

- The ability to process a wide range of viscosities
- Tuneable configurations to adjust mixing performance in real time
- A standard multi-stage geometry, providing highly intensive mixing action to reduce the number of mixing passes required.

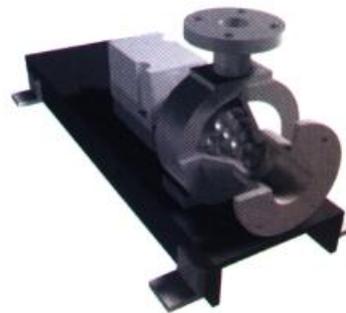
These features translate into highly effective and efficient fluid mixing using relatively simple, low-cost machines.

“all-round performance from high-shear mixing to ultra-low shear blending”



Distromix B

A range of general purpose high-shear batch mixers for use in a wide variety of applications where rapid dispersion, homogenisation and de-agglomeration are required. High flowrates and the ability to dose directly into the mixing head combined with rugged and safe construction make Distromix B the ideal choice for demanding high-shear applications.



Distromix C

For uniform inline processing in either high-shear or ultra-low shear configurations, the Distromix C range offers major improvements to continuous mixing processes for materials ranging from pharmaceuticals to rubber.



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