Variable Low Output Solvent Free High Pressure Metering Machine for P.U.

Elastomers and Foams

Featuring patented mixing head technology in many regions globally.

The Concept

CTM's new metering machine is designed to meet the environmental needs of customers who produce PU components that are too small for conventional solvent free high pressure machines.

In addition the CTM technology enables customers to produce larger moulded PU components at the same time and all from a single mixing head.

Proven Technology

CTM employs well-known impingement mixing principles via a grooved mixing piston and larger diameter-cleaning chamber; we combine them with a novel and new way that delivers variable output metering and mixing technology.

Bubble Free Mixing

The mixing head employs a unique opening sequence that completely avoids any risk of air inclusion at the start of pouring. There is no need for a traditional purging cycle as needed with low pressure mixing heads for elastomer applications which saves on material wastage.

CTM Equipment Ltd Units 18 &19 Zenith Park, Whaley Road Claycliffe Barnsley south Yorkshire UK S75 1HT

Telephone from the UK 01226 24 55 33 or International 0044 1226 24 55 33

Visit our Website www.pu-technology.co.uk

Three Output Ranges In One

Shot to shot
Output range from 0.5 to 100 grams per second

Mix ratio up to 10:1

CTM's controlled variable mixing chamber geometry delivers shot weights from 1 gram at 0.5 grams per second to 100 grams per second on a shot to shot basis.

The system automatically switches between three modes of operation depending upon the dispensing output and moulding weight requirement.

Micro single/multi shot Mode: The system can deliver mixed material at an output as low as 0.5 grams per second for moulding weights of 1 gram up to 120 grams, subject to material reaction time limitations.

Continuous low Output Mode: The system can deliver mixed material at an output as low as 5 grams per second up to 100 grams per second in a continuous mode for moulding weights above 120 grams with no upper weight limit subject to material reaction time limitations.

Continuous High Output Mode: The system can deliver mixed material at a fixed output of 100 grams per second for moulding weights from 20 grams with no upper weight limit subject to material reaction time limitations

The CTM metering unit is capable of dispensing a maximum of 150 grams per second in 'continuous pouring' mode, whilst also being able to achieve a minimum output of 15 grams in single shot mode.

Mixing Ratio Range In All Modes: The mixing ratio can be up to 4:1 at all output ranges and this does not affect the minimum shot weight capability.

Upon special request mixing ratios of up to 10:1 can be accommodated.

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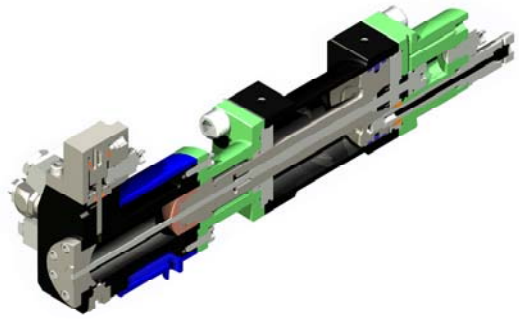
Variable Chamber Geometry



The key difference in the CTM approach is to vary the internal chamber volume of the mixing head in a controlled and dynamic way rather than varying the mixing rate as is the case with other systems.

We avoid any need for very small injectors and thus we eliminate all of the associated problems with nozzle/jet blocking and pressure instability.

No Jet Limitations

There is no requirement for altering injector pressure settings or high-pressure pump outputs between operating modes. Unlike other systems, mixing ratios of up to 4:1 do not limit the range of low output that is achievable from the new CTM mixing head. Dual hardness /dual density mixing via two mixing chambers are also possible.

No Stripping or de-mixing effects

The CTM mixing head is unique in design geometry as it enables the use of a much shorter outlet nozzle than is possible with conventional high pressure mixing heads that produce outlet laminar flow characteristics.

The CTM design allows for laminar flow across the whole output range with only a 20mm long outlet nozzle.

Stripping or de-mixing is an effect that can cause off ratio mixed material to be purged from the mixing head at the end of pouring cycle and can be a problem for a standard mixing head. The CTM mixing head does not suffer this effect.

P.U. Injection

The mixing head design offers several additional features;

It is possible to apply considerable injection or dosing pressures at controlled rates without any adverse affect on the quality of component mixing.

The new concept enables the application of considerable injection pressure to be applied to the reacting mixture, thus opening up many possibilities for controlled injection techniques.

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Variable P.U. Dispensing rates

A further benefit of the new mixing head is its ability to vary output rate during the dispensing phase, this unique feature has particular value for example:

When producing automotive panel air filters.

Over filling in the corners is easily corrected by reducing the lay down rate, in addition:

Higher straight-line lay down speeds are possible.

Radial filters requiring larger amounts of PU can be produced at the same time.

Variable Throttle Mixing

'Difficult to mix' PU systems are often processed using mixing heads that employ a fixed throttle.

The concept is simple in that the clean out piston is held short in a fixed position so as to partially restrict the exit point of the mixing chamber.

The fixed throttle concept, whilst simple, has two key disadvantages.

The variable output range capability of the mixing head when using a fixed throttle is seriously limited, as pouring pressure stability can be affected.

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In addition, an undesirable high side force load can be created during the mixing head closing phase due to trapped material, this can lead to accelerated wear to the clean out piston.

Piston sticking due to a build-up of reacted material trapped at the end of the mixing chamber piston being forced against the side of the clean out piston is also more likely.

Neither disadvantage is a problem for the new design CTM mixing head.

CTM employ a position sensor rather than a proximity switch. The position sensor enables exact control over the position of the clean out piston so as to achieve the optimum position of the clean out piston for throttling and retraction for cleaning at all times.

Highly compatible

The new metering unit, whilst able to operate our new concept three piston mixing head also supports additional traditional 2-piston L type high-pressure mixing heads.

Proven Metering Technology

Rexroth pumps, Siemens motors, DST magnetic drives, Hydac pressure gauges, Piston pump driven hydraulic pack, Siemens controls.

Longer Operating Life

CTM has enhanced the concept mixing head reliability.

We have designed in an internal pump within two central chambers. Lubricant is forced through each internal chamber every working cycle.

A water-cooling chamber is fitted to the main body of the mixing head so as to maintain a steady operating temperature at all times.

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Further Information

You can learn more about how our new machine and how can aid your production process by contacting CTM.

Shane Wootton
Equipment sales for CTM

E mail shane@ctmukltd.com

Website www.pu-technology.co.uk

Tel International 0044 1226 24 55 33

Tel from UK 01226 24 55 33