

Xplore MC 5 micro compounder

Reliable, reproducible and fast R&D results



The platform for formulation development: reliable, reproducible and fast R&D results

Xplore developed a twin-screw micro compounder with a capacity of just a few grams of material. This micro compounder, which is the smallest in the world, is a unique asset for the development of new material compound formulations. It will improve your R&D by delivering reliable, reproducible and fast test results. A full-fledged material processing extruder on a laboratory bench or in your fume hood.

The MC 5 can process batch volumes up to 5 ml. As an option, the compounder houses the unique Vari-Batch*) concept, which allows you to select your batch volume between 2 and 5 ml. In the past, testing and evaluating of new materials or formulations was very time consuming and costly due to large amounts of test material or too much of expensive additives needed.

Our MC 5 offers you the solution: reliable and reproducible, speedy results with less material and waste and less equipment and

infrastructural costs. Even more so when the compounder is used in combination with our laboratory injection moulding machine, cast film or fibre line.

The core of this laboratory machine is formed by a divisible, fluid-tight barrel containing two detachable, conical, fully intermeshing mixing screws. These screws and the barrel are specially treated to minimise wear and to make them resistant against chemicals. Chemical resistance and hardness are essential to maintain their original geometries which enable to generate reproducible data over many years.

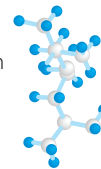


*) Xplore Instruments BV, proprietary technology

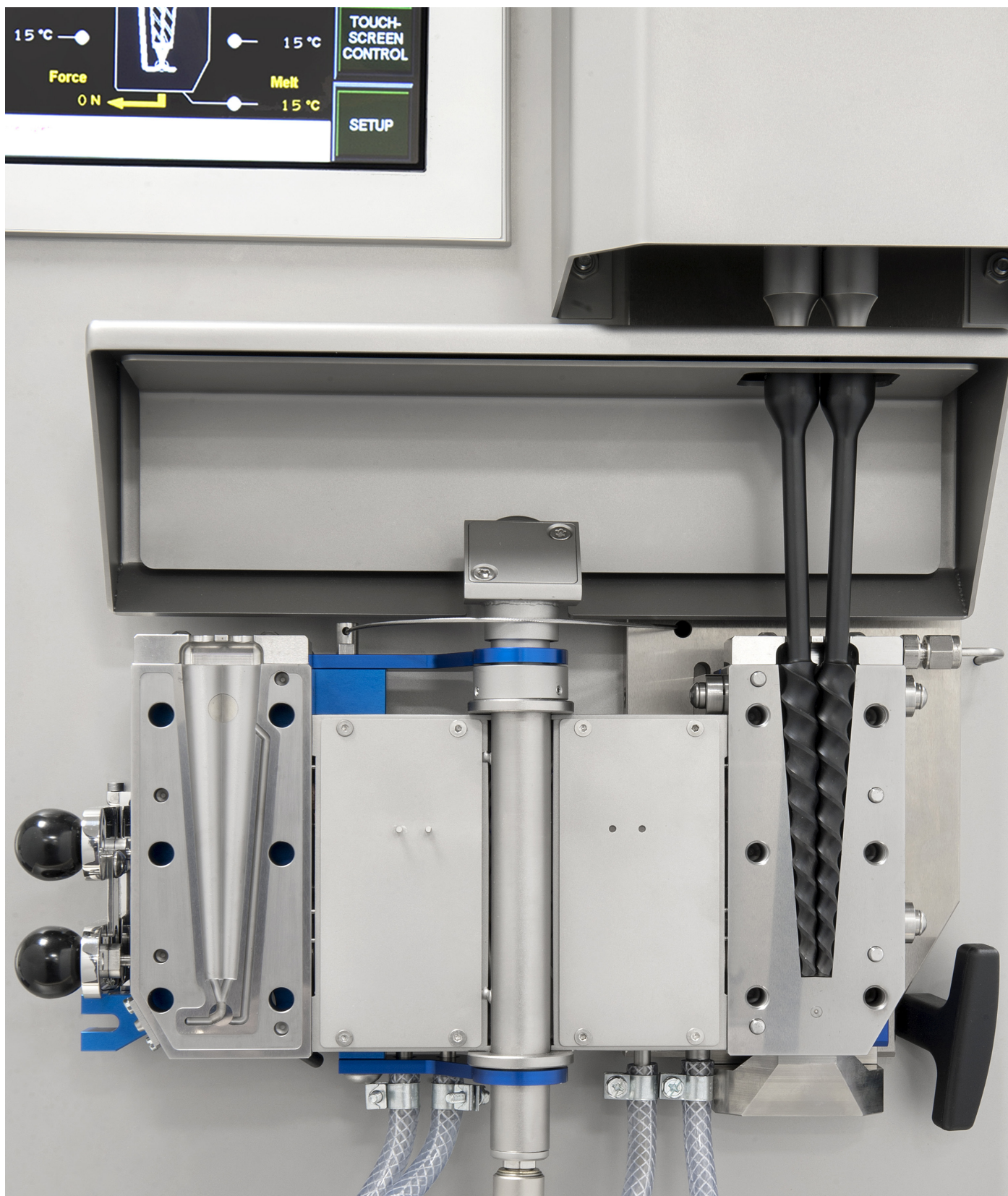
The main drive is continuously digitally variable. It allows for vertical force and rheological data measurements and controls a constant die pressure for film and fibre applications, hence throughput control. The processing temperature is controlled in 2x3 separate barrel heating zones, it enables to process with a temperature gradient over the barrel, or directly via the melt thermocouple.

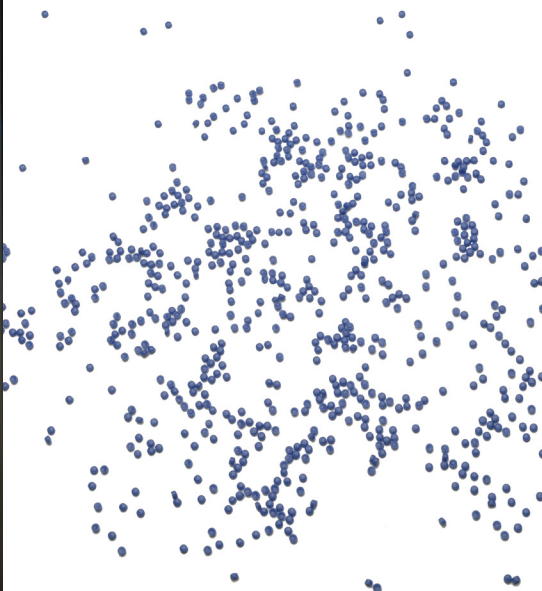
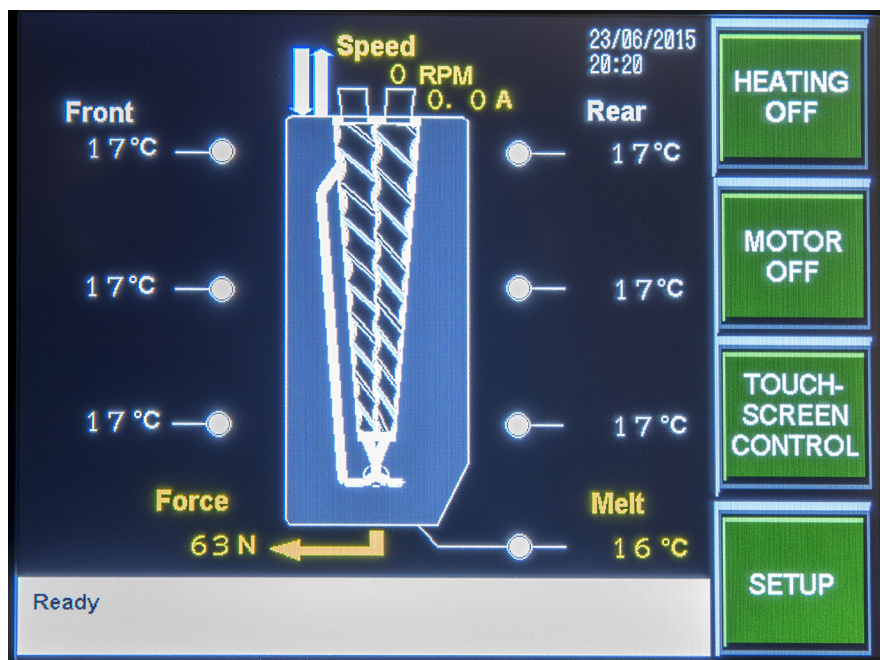
Residence time (L/D in continuous extruders) can be varied via recirculation of the melt. No screw geometry optimisation is needed. Mixing and dispersion are superb, preventing agglomeration. The shear rate can be influenced by adjusting the RPM or the gap between screw flank and barrel.

Due to the vertical position of the barrel and its fluid-tightness processing fluids is not an issue. Other standard features are air and water cooling, N₂ purge, integrated touch screen control and a vertical force measurement from which the screw torque in the melt, the shear viscosity, the average shear rate and shear stress are determined with our optional rheological software.



Our dedicated software enables you to control the instrument parameters and to acquire data to analyse a processing run thoroughly. Upscaling of this process to continuous parallel twin-screw extruders can now also be achieved.





Xplore MC 5 Graphical User Interface



Technical Specifications

- Abrasion-resistant barrel (hardness 64 HRC), coating hardness 2000 Vickers
- Barrel and screws chemically resistant between pH 0 - 14
- Batch volume: 5 ml (Vari-Batch 2 or 5 ml)
- Vertical barrel, position (fluid-tight)
- Heated by eight thermo cartridges and controlled by seven thermocouples (temperature gradient possible)
- Temperature control: in the melt and 2x3 barrel heating zones
- Detachable conical screws, fully intermeshing (Hardness 54 HRC), coating hardness: 1000 Vickers
- Maximum operating temperature: 450 °C
- Fast and easy to clean with a dedicated cleaning cycle
- Heating time (from 20 to 240 °C): 10 min
- Cooling time (from 240 to 80 °C): with cooling water in less than 10 min, with air in less than 35 min
- Acquisition of rheological data (screw torque in the melt, melt viscosity, shear rate and shear stress)
- Maximum vertical force: 5 kN
- Pressure 200 bar
- Screw speed: continuously variable 1 - 400 RPM
- Front hopper volume: 5 ml, optional water-cooled top hopper
- Supply voltage: 208 - 240V AC, others on request
- Main drive: DC controlled, 550 Watt
- Computer control via a USB port
- Maximum torque: 6 Nm per screw
- Overall dimensions (h x b x d): 83 x 70 x 40 cm
- Weight: 95 kg



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