

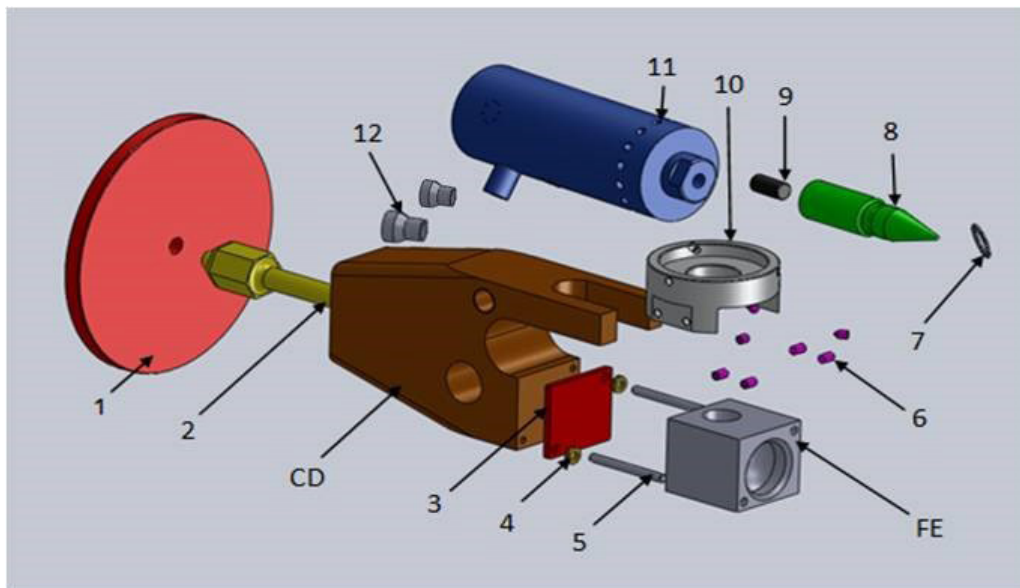
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ULTRASONIC DEVICE FOR EVALUATION OF THE MELT FLOW OF POLYMERIC AND COMPOSITES MATERIALS



The invention relates to an ultrasonic device used for the evaluation of the melt flow of polymeric and composite materials, which can be used in academic, research and development areas, as well as in the chemical industry, in the manufacturing industry of polymeric materials and composites, in order to evaluate the flowing process due to the beneficial effects of the micro-vibrations with ultrasonic frequency, respectively the increase of the flow rate and reduction of the processing flaws. The ultrasonic device is built in a compact manner and can be easily positioned and fitted on classical processing equipment for polymeric materials by injection or extrusion.



According to the invention, the ultrasonic device for the evaluation of the melt flow rating of polymeric and composite materials is composed of an ultrasonic assembly (AU), which includes a piezoceramic transducer (11), a cone-headed cylindrical sonotrode (8), in steps, the fitting (9) and the heat-resistant silicone rubber ring (7) which seals and centres the ultrasonic assembly (AU) relative to the extrusion dies (FE). Positioning, fixing and adjusting of the ultrasonic assembly (AU) in the device's body (CD) and in relation to the extrusion dies (FE), which provides also the technological parameter "flow gap - i", is realized either by positioning the holder (10) in relation to the device's body (CD), using a set of feeler gauge of different thickness or by using the screw-nut mechanism, fine-pitched, located in the assembly area of the support (10) and the piezoceramic transducer (11).

In both cases, the mounting of the adjusted position is realized with threaded bolts (6). The positioning and fixing of the ultrasonic device

between the plates (fixed and mobile) of the injection or extrusion classic equipment of the polymeric materials or polymer composite melt is realized through the screw-nut mechanism (1 and 2) and the reducing or even eliminating the heat transfer between the device body (R) and the extrusion dies (FE) is carried out by using a thermal insulation textolit (3) and two distance plates (4), which are positioned by means of threaded head guides (5), which are fixed on the device's body (CD) in threaded borings.

Also, the ultrasonic device is equipped with an air cooling system (E) on the piezoceramic transducer (11) and on the device's body (CD); the fixation of the cooling system on the device's body (CD) is realized through rapid coupling (12). It is mentioned that there is a possibility of the extrusion dies (FE) to be changed according to the technological requirements (size and shape) of the process. So interchangeability can be done easily, achieving a new product involving minimal costs.