

Example of a Successful Conversion

Task of the customer was the development of a reasonable thermosetting molding compound for the application in commutators. After a detailed examination of all parameters it was decided to develop a new production process. The result was so convincing that the procedure has been announced, meanwhile, to the patent. Within two years (a very short development time for a product in this market segment) the process and the molding compound were developed and presented to important customers.

Solution of the Task (Single Dumps of the Patent Application)

By working with a melt process thermosetting molding compounds for the production of commutators at present are worked off in a kneader like a screw, a Buss-kneader or a roller. In the alternative fluid resin procedure, fluid resins or resin solutions are submitted in a mixer and are worked off in the warmth. Afterwards the product must become cooled, ground and sieved. The aim of both procedures usual used up to now is a pre-reaction of the resins, a homogenisation of the mixture and an optimal wetting of the used reinforcement materials (particularly the assigned glass fibers) with the resin. These processes break down the used glass fibers of an exit length of 3mm to 6mm to lengths between 0,2mm and 1mm with negativ effects for the mechanical properties of the molding compound. The break down in the practice is accepted, because with these products the wetting of the glas fibers was judged so far as necessary.

The invention is based on the knowledge that a pretreatment of the mixture of resin and reinforcement substances with a melt or solution is not necessary if the used resin is present as a powder by a maximum grain size of 1mm, preferably maximally 0,5mm and particularly preferred maximally 0,2mm. The powder must be compacted only with enough pressure and the wetting of the usually used glass fibers takes place on a later processing step, namely in the compression tool or the injection machine.

The cold compression of the pre-mixed material can take place with the known machines as for example stencil presses, compaction presses and tablet presses. It has turned out that it is advantageous to reach the wished qualities (free flowing, stability of the particles etc.) to carry out forces from at least 45kN/cm by using of compaction presses and at least 15kN/cm² with tablet presses.

With this procedure thermosetting molding compounds for commutators and slip ring bodies are producible particularly environmentcareful and energy-saving, and the process form molding compounds to produce commutators and slip ring bodies with outstanding mechanical properties. The advantages of the procedure are substancial, because neither the melting of the resins is necessary (like with the known melt process) or an evaporation of the solvents (like with the fluid resin procedure) or cooling of the finished molding compounds. In addition to a lower consumption of energy it is also reached that the glass fibers usually used as reinforcement, in the finished product largely in the exit length are present which leads to better qualities of the commutators produced with these thermosetting molding compounds. Moreover, no emissions of of low-molecular resin components or solvents with this procedure leads to low environmental impacts.