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Specifics in Injection Molding of Thermal Conductive Polymers for Mechatronic Applications

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The use of highly filled thermal-conductive thermoplastics is an innovative approach to directly adjust the thermal conductivity of plastic parts for heating and cooling systems. Compared to standard resins thermal conductive thermoplastics show a higher thermal conductivity in the range of 2 to 20 W/mK. The filler-content and the high thermal conductivity affect directly the flow- and cooling-conditions during injection molding. Therefore, the manufacture of injection-molded parts requires adjusted processing strategies. In this paper properties of thermal conductive thermoplastics relevant to the design of injection-molded parts as well as approaches to intelligent processing strategies (mold concepts, process control) are introduced.