

Abstract

The purposes of this research were to design and produce a prototype of high pressure water system in water-assisted injection molding technology (WIT). The water injection unit developed to generate high pressure water, which included a water pump, water injection pin, control circuit, and pressure accumulator, has then been built up in the laboratory. Experiments were carried out on an injection molding machine equipped with the prototype of the water injection unit. The investigation of the manufacture of thermoplastic part by the prototype was observed at the water injection pressure of 100, 150 and 200 bar. In addition, comparisons under the same conditions were made between the mold-filling processes by prototyped water-assisted injection molding and commercialized gas-assisted injection molding. Experimental results demonstrate the consistency of the processing parameters generated by the prototype. Furthermore, the parts molded by water-assisted injection molding were found to have a smoother internal surface than those molded by gas-assisted injection molding.