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Reduction of CO2 Emissions in Automobiles Using Composite Materials

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ABSTRACT

Now days, controlling CO2 emissions is one of the greatest challenges. The use of cars on the roads represents about 18.4% of the total emissions of CO2 and the development of the automotive industry entered new solid materials based mainly on polymeric material and these polymers can be recycled and reused many times. where automotive industry has developed to high levels of efficiency, safety and stability, in addition several ways to improve fuel efficiency such as improving the efficiency of the engine and transmission, and more the most effective means of improving fuel efficiency is by reducing the overall weight of the vehicle. The choice of manufacturing materials plays an important role in the economy of fuel consumption and minimization of exhaust. If the mass of the component is reduced, there will be a reduction in the secondary mass of the other parts, which necessarily leads to further reduction in the final mass of the vehicle. The general rule is that for each 10% reduction of the total weight of the car, the fuel consumption of car is reduced by 5–7%. This paper will focus on: Composite materials where polypropylene is reinforced with percentages of carbon fibres with different tensile strength, talc which is added in small quantities to create a suitable mixture. Mathematical modelling of "Extruder" is performed to calculate the temperature for use in the molds and to study the flow of liquid in the extruder at the melting temperature of the reinforced polypropylene. Reduction of the thickness of the produced panels needed to manufacture various parts of the cars to a large extent while maintaining the tensile strength of the materials at the required designed levels was the major target of the study.

Keywords. Polymer / Carbon dioxide / Extruder.