Development of Integrated Technology of FRP Gear Manufacturing

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Gears are integral part of mechanisms and machines. The development of new composite materials impulse to increase of specific weight and load-carrying ability of gears. Current trend can be supplied with fiber reinforced materials (FRP) whose specific weight strength could by five times higher than of hardened steel. Those the mechanical properties of FRP wheel can substantially be influenced by technological heredity than metallic one. That is why the influence of technological steps should be taken into account during FRP wheels manufacture. The purpose of current research is to develop integrated technique of FRP wheels manufacture. Consequently in current experimental research the cooperation of load-carrying ability of non metallic and metallic wheels was provided. Different techniques were used for optimization of reinforcement fiber geometry when FRP wheels manufacture. Operating procedure of wheel manufacture contents computer simulation of forming, and properties programming helped to provide quality and load-carrying ability of the wheels.

Keywords: Machining; Polymer gear; Fiber orientation; CFRP; Gear metrology

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