Technical and economic indicators for operating irrigation pump using natural gas

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Abstract

This paper presents the experimental for the types of mixers used in mixing natural gas with air to operate the irrigation pump to save energy, many of measurements were carried 2021 year in workshops of Agricultural Engineering Department, Faculty of Agriculture, Ain Shams University, Egypt. Used engine single-cylinder, air-cooled. A new pump with a discharge diameter of 2 inches, which was an Egyptian manufacture. Several types of mixers were manufactured to mix natural gas with air before entering the engine. Using iron pipes of different diameters, three types of mixers were used Mixer with a perforated inner tube of 8, 10. 12cm (L8, L10, L12) . selected determine the four shaft speeds (1750, 2300, 2900 and 3500 rpm) using the engine speed measuring device. The results here dealt with study the analysis of technical indicators for the types of mixers used in mixing natural gas with air to operate the irrigation pump. where the actual power (Braking power) is superior to all types when operating with gasoline was (3.07 kW) A comparison with the use of natural gas, where the mixer type (L10) (2.69 kW) was 10% less than gasoline.

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