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PROSPECTS FOR THE PRODUCTION OF SYNTHETIC PETROL IN UKRAINE

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The article analyses the possibility of using various hydrocarbon feedstocks (including secondary ones) in the technology of synthetic motor petrol production, which, together with petrol produced by classical technology (from oil or gas condensate), can satisfy the existing demand for this type of motor fuel. It is shown that, taking into account the possible production volumes and demand for raw materials, as well as the complexity (energy intensity) of their technological processing, the most promising types of raw materials are biomass, solid fossil fuels and secondary polymers.

Biomass (mainly agricultural waste) is a feedstock for biogas production, which is currently being used quite successfully in the European Union. The product of this production is methane, which can be used for energy purposes or processed into petrol and biomethanol. Another promising area in biomass processing is the direct production of alcohols (biomethanol and bioethanol), which can be used as a raw material for organic synthesis and for the production of blended petrol (e.g., grades E5, E7 and E10).

Given Ukraine's reserves of various grades of coal, its processing into synthetic gasoline by gasification followed by synthesis using the Fischer-Tropsch method or hydrogenation can also be considered very promising. However, to date, these processes have not been widely used in industry due to their high energy intensity.

It has been determined that secondary polymers - production and consumption wastes represented by polyethylenes (HPDE and LPDE) and polypropylene (PP) - are more promising for Ukraine than other types of raw materials. The main process for their processing is thermal or thermocatalytic pyrolysis, which produces both liquid petrol fractions (boiling point 30-210 °C) and gases, represented by ethylene, propylene and butylene. Given their conversion rate (70-90 % and 100 %, respectively), propylene and butylene can be processed into polymer gasoline, which, after purification, will be suitable for use in mixed or synthetic commercial motor gasoline.

Keywords: natural gas, biomass, solid fossil fuels, polymers, processing, hydrogenation, synthesis, pyrolysis, methane, propylene, butylene, synthetic petrol.

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