

OBTAINING FUEL FOR POWER AIC IN THE PROCESSING OF WASTE

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The directions and technologies of waste recycling for their utilization and obtaining additives for liquid fuels, fuel, pyrolysis gas, carbon residue (char) have been generalized.

Key words: technology, processing, recycling, pyrolysis, reactor.

Introduction. In terms of dependence on imported oil and gas, Ukraine must seek ways to ensure the country's fuel and energy that would be environmentally friendly and not dependent on external supplies of raw materials. Long-term energy policy of Ukraine should be aimed at the rational use of energy and energy conservation with the necessary measures to protect the environment at all stages of life cycle from mining to energy consumption. The worked out now Energy Strategy of Ukraine for the period till 2030 and beyond, along with other measures, will provide substantial upgrading of energy equipment and power plants and boiler plants that require large capital investments. In the coming period one should also be oriented not only to new technologies, but we must use all available reserves in power to implement low-cost, quickly repayed projects that can now give a noticeable effect of energy conservation and reduce greenhouse gas emissions [1,2,4].

Problem. As a result of constant increase of industrial and household waste the recycling problem and the environment protection is very relevant. It is necessary to develop the technology of processing plastic waste (polyethylene, polyethylene terephthalate) waste RTP (rubber products), medical waste, household waste, wood waste, straw, chaff, oil refining waste, waste motor and industrial oils [1,2,4].

Analysis of recent research and publications. Ukraine cities generate about 40 million cubic / year of solid waste (10 million tonnes / year). More than 90% of solid waste is collected and exported to more than 700 landfills located near the town, about 140 landfills are grave yards, suitable for collection and subsequent use of biogas. 90 of 140 landfills are the largest, which housed up to 30% of MSW of Ukraine. In the process of the decomposition of solid waste (MSW) in anaerobic conditions in landfills and grave yards landfills gas is formed. In Ukraine annually about 15 million tons of solid waste, is produced 90% of which is removed to landfills. About 140 of 655 landfills are grave yards of MSW that could be considered suitable for the production and use of landfill gas. Up to 30% of all Ukraine solid waste is placed on 90 landfills, most cost-effective for the production and use of gas [1,2,4].

The purpose of research: Recycling is done for the purpose of utilizing and obtaining valuable products - additives for liquid fuels, fuel, pyrolysis gas, carbon residue .

Results of researches. Pyrolysis is thermal decomposition of organic compounds (plastic, medical waste, waste petroleum (oil sludge, soft roofing materials, etc.), used motor and industrial oils without air. Raw is loaded into the vessel with heat-resistant material (reactor). The reactor is placed in oven. Raw is heated by heat transfer through the walls of the reactor to a temperature of 110-450 ° C and is subjected to thermal decomposition (pyrolysis) to form a mixture of steam and carbon residue - semi char. Gas-vapor mixture is derived from the reactor by pipeline it is cooled, vapor is condensed and the resulting pyrolysis liquid is separated from the pyrolysis gas. Pyrolysis fluid accumulates in the collection of liquid product, pyrolysis gas is partially or fully used to support the process (burned in the oven) or is collected in a collection of pyrolysis gas. After the pyrolysis process the first reactor of char is extracted from the oven and the second reactor with raw materials is set in oven. And the process continues. Pyrolysis liquid undergoes cavitation process and is sent to the column for separation of fractions. As a result of distillation at 120-440 °C we gain pyrolysis gas, high-quality additive to diesel fuel, high-octane additives to gasoline, petroleum-greased fraction. To improve the performance of high-quality additives to diesel fuel, high-octane gasoline additives, it is treated on vacuum filters using special catalysts. Installation takes about 10 sq. meters.

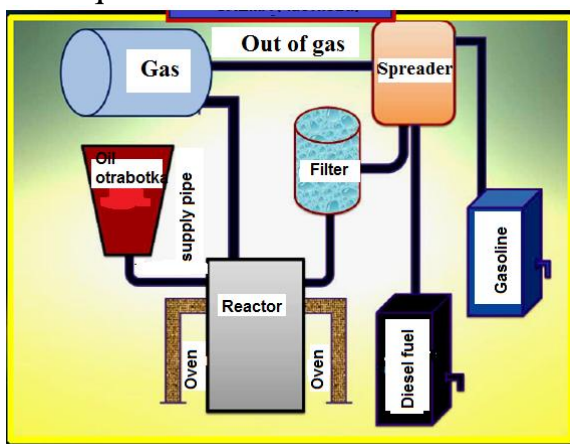


Fig.1. Installation for processing plastic waste (plastic, polietilenteraftarata) waste GTI (mechanical rubber goods), medical waste, household waste, wood waste, straw, chaff, oil refining waste, waste motor and industrial oils.

When used as a raw material waste oil out of the 100 liters of diesel fuel comes 85 liters, 5 liters of petrol, 3-4 cubic meters of gas and 5-6 liters of resin. After producing 3 tons of fuel, reactor, filter, and separator should be cleaned. If used as raw rubber than from 100 kg. rubber comes -20 liters of gasoline, 20 gallons of diesel fuel, coal 40 kg, 15 kg wire, 6 cubic meters of gas [2,3,4]. Composition of installation: reactor stove with fuel supply device, a brick oven (the outer shell of the reactor), recycled materials hopper, tube connectors, flanges, filter, separator, tank storage of finished products capacitors-refrigerators, collections-separators of liquid products, collection-ressiver of pyrolysis gas, pump, heat exchanger of heating the liquid pyrolysis in system of management and control. Because of the presence of sulfur in fuel received it must be passed through a dry lime or alkali. From plastic (many kinds) polystyrene is more suitable. This is white tableware.

From it comes almost 100% diesel fuel. Polyethylene and polypropylene give only gas, so they are best used in mixtures with working. PET bottles during the decomposition to gas while cooling give crystals which clog the filter and separator and display installation down.

That's why their use is impossible. Depending on the type and composition of raw materials used fluctuations in the volume of products obtained are possible [3,4,6].

Conclusions. The proposed processing technology and designed installation can solve the following problems: 1. Environmental - to reduce the negative impact on the environment and dispose of safely: -polymeric waste (plastic, polietilenteraftarata); - GTI wastes (technical rubber products); medical waste (used system, syringes, bandages, etc.); household solid waste (plastic toys, plastic packaging, disposable utensils, cans, etc.); wood waste (sawdust, wood chips, branches); agricultural wastes (straw, chaff, husk); Waste of oil refining, spent automotive and industrial oils. 2. Economical - as a result of effective waste processing topical products are obtained: pyrolysis gas; high-quality complement to diesel fuel; highoctane additive to gasoline; semi-coke; greased-fuel oil fraction. 3. Social - increase of employment, jobs are created, a civilized approach to the collection, recycling and using of household and industrial waste is formed.

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ПРОИЗВОДСТВО ТОПЛИВА ДЛЯ ЭНЕРГЕТИКИ АПК ПРИ ПЕРЕРАБОТКЕ ОТХОДОВ

Уминский С.М.

Ключевые слова: технология, переработка, утилизация, пиролиз, реактор.

Резюме

Обобщены направления и технологии переработки отходов с целью их утилизации и получения добавок к жидким топливам, топлив, пиролизного газа, угольного остатка (полукокса).

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Summary

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