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MODERNIZATION OF THE PLANT FOR THE PRODUCTION OF POLYETHYLENE TO OBTAIN A COPOLYMER OF ETHYLENE WITH VINYL ACETATE IN AUTOCLAVE REACTOR

The main products of the plant "Polymir" JSC "Naftan" is high-pressure polyethylene.Ethylene can enter into copolymerization reactions with other monomers, so it is possible to obtain copolymers having special properties in comparison with polyethylene, on the available equipment of the plant. This issue is well studied for tube-type polymerization reactors, which produce ethylene copolymer with vinyl acetate in the CIS countries and the world.However, obtaining a copolymer in a reactor with a stirrer is not sufficiently developed.According to the studied literature [1,2] obtaining ethylene-vinyl acetate copolymer in an autoclave reactor has such advantages as greater flexibility and maneuverability of the copolymerization process and the resulting ethylene-vinyl acetate copolymer has a more regular structure.

To modernize the plant, calculations of the main equipment were made with the determination of the available stock in terms of productivity.For verification of the calculation was selected autoclave reactor and the heat exchanger cooling the reaction mixture.As changes in the technological scheme, installation of tanks of fresh and returning vinyl acetate, a high-pressure pump for supplying vinyl acetate to the reactor, as well as separators of high and low pressures for separating the mixture of ethylene and vinyl acetate are provided.A high-pressure separator [3] and a high-pressure vinyl acetate pump [4] are designed and selected.

The obtained calculations confirm the possibility of copolymer production with vinyl acetate content up to 14% (mass fraction) in the autoclave reactor. This will increase the range of products of the plant, because the copolymer of ethylene with vinyl acetate is in great demand due to the limited number of its manufacturers.The resulting product with a minimum investment in modernization will meet its need in the country and can be exported, since its only production in the CIS is in Russia.

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