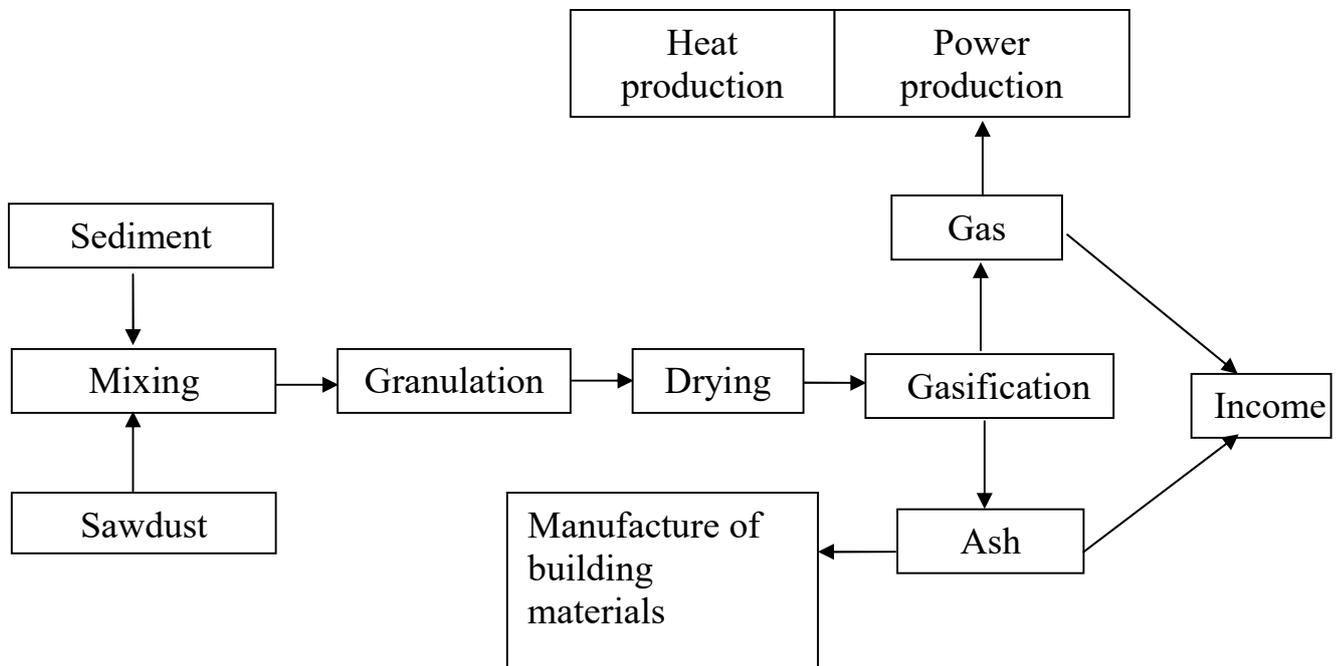


Thermal processing of sewage sludge of cardboard and paper industry

Technology scheme



Description. Wet sludge is mixed with additional fuel in amount of 5-10% by weight and sent to a screw granulator. As additional fuel, sawdust, straw sticks, coke from worn-out tires and other wastes are used. Granules with a diameter 10 ... 15 mm are sent from granulator for drying to a moisture content below 30%. Drying can be natural (5 ... 7 days) or with the help of waste heat, which is formed during the production of electricity in a gas piston power plant. The dried fuel is sent for gasification. Gasification products are combustible gas with a combustion heat of 1200...1500 kcal/kg; The gas output is 0.8...1.2 m³/kg of fuel. The gas is used to produce heat or electricity. Ash is used in construction.

Results of the analysis of the Obukhiv sediment (2015):

Moisture – 50 ... 60%; Ash content – 45 ... 50%. Ash composition: CaO - 53%; SiO₂ - 20%; Al₂O₃ - 10%; ZnO = 7%; Fe₂O₃ - 3%; Other oxides - 7%.

Technical and economic advantages:

1. Reduction of mass of the sediment in 4...5 times.
2. Energy costs for granulation, drying and gasification are 0.05 ... 0.1 kW/kg.
3. The possibility of obtaining a "green tariff" for electricity from biomass (sediment is a type of biomass).
4. Income from the sale of ash.
5. Reducing the cost of disposal of sludge at landfills.

Conducting of additional research of optimal parameters of the process at the Institute of Renewable Energy of the NAS of Ukraine is suggested. Following results of studies are needed to prepare a draft design for a pilot plant for processing the sediment.