УДК 620.92 + 662.767.2

USE OF BIOGAS TECHNOLOGIES FOR DECREASEING IMPACTS ON ATMOSPHERIC AIR

Dubik K., master's student
Sci-research supervisor – H. Belskaya, Ass. Professor,
Engineering Ecology Department
Belarusian National Technical University,
Minsk, Republic of Belarus

Livestock production in Belarus is concentrated in large state pig and cattle farms. It is known that Belarusian industrial pig farming produces approximately 22 million tons of waste water annually. This waste water consists of 20,9 million tons of liquid part (or 95% of volume) and 1,1 million tons of solid part (or 5% of volume). The solid part contains 800 000–840 000 tons of organic matter (4%), 28 000–34 000 tons of N common (0,25%), 17 000 tons of P_2O_5 (0,09%), 1 500 tons of SO_4 (0,01%).

Pig and cattle farms production activity impact on air. Each farm emits ammonia, hydrogen sulfide, carbonyl compounds, amines, mercaptan, dinitrogen monoxide, fodder dust, microbial bodies, and others. We may propose that about 18 000 tons of NH_3 emit from sewage of pig complexes in Belarus annually (0,15% from all sewage volume). Air pollution takes place included GHGs compounds. The gases cause offensive odour, danger for human health (pernicious effect on air-stream mechanism transformation of haemoglobin into hematine, plugged nose, induce stress, ets.). Content of organic compounds in the atmospheric air on the territory of pig farm can be 40-50 mg/m^3, and on the distance of 1 km – 18.6 mg/m^3. Offensive odour can be spread on the distance of 5–7 km.

Special type of renewable energy is biogas using. Emissions of carbon oxide and nitrogen oxides at combustion of biogas are minimum in comparison with other types of fuel, emissions of dioxide of sulfur and solid pollutants are practically absent. Use of biogas as fuel excludes release of methane in atmospheric air. The emitted carbon dioxide is in limits of the natural circulation.