dust emissions, and storage and handling of fuels or volatile chemicals can cause unorganized emissions [3].

Pollution of water bodies. Water is used in many technological processes of the railway economy. In order to save this valuable natural resource, water consumption and diversion standards have been developed. After use in enterprises, water is contaminated with various impurities and passes into the category of industrial wastewater. Many substances polluting the effluents of enterprises are toxic to the natural environment. Qualitative and quantitative composition of effluents depend on the nature of technological processes of the enterprise.

Noise and vibration. The main sources of noise in railway transport are moving trains, track machines, production equipment.

A common source of noise is the locomotive. Noise in certain environments can have a significant impact on human health and behavior. Noise can cause irritation and aggression, hypertension (high blood pressure), tinnitus, hearing loss.

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THE PERSPECTIVE OF BRIQUETTES PRODUCTION ON THE BASE OF PEAT AND RENEWABLE BIOMASS

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Briquettes are special type of solid fuel which may be produced from different type of feedstock. The traditional raw for briquettes is peat. Peat as a fuel for energy production are using in Finland, Rus-

sia, Belarus and other countries [1]. According to statistical data collected by the International Peat Society, energy peat production in Europe in 1999 was 21,5 million tons of air-dried peat. Finland was a leading energy peat producer in terms of volume, with some 7.5 million tons of production. The second in rank was Ireland with 4,7 million tons and the third the Russian Federation with 3,7 million tons of production. Belarus, Sweden and Estonia followed as the next largest producers [2].

There are some problems with peat using as an energy resource. The first, it is fossil fuel, but not renewable feedstock and peat is not endless, but exhaustible resource. The second, peat mining is finishing if the layer of the peat not enough deep and as the result degraded lands are forming on drained wetlands areas. After peat excavation finishing the biggest problem is to use these lands for other practice [3]. This type of soils is very heterogenic, with high level of acidity, poor contents of nutrients, low fertility and bad structure. At the result it is very problematic to grow traditional agricultural crops that have high demand to soil fertility on these areas. A soil condition after peat mining are not favorable and once peat harvesting has ceased it is impossible to grow any cultural plants for several years, with the most critical period being the time after planting.

The perspective direction is production of composite briquettes from mixture of peat and biomass. Production of composite briquettes fuel from renewable and fossil fuels enable to reduce the burden on the environment due to renewable biomass, at the same time, without compromising fuel specifications. There are some different sources of biomass: residues of wood and crops, solid waste or special agricultural crops growing for energy. For composite briquettes also using waste wood (sawdust, chips, shavings, pine needles, leaves, etc.), residues of agricultural production (hay, straw, husks of sunflower seeds, rice, buckwheat, etc.), The big potential for bioenergy has a straw of cereal crops, flax residues, hay and others. It connected as with big area of cereal, rape, rice and other crops in agricultural sector and also with cost of unit of energy which may be produced from the straw. There are several technologies of straw utilization as a biomass for energy, including biogas production, straw gasification, straw briquette and pellets production and so on, which are already commercialized and popularized. Nevertheless, direct combustion of biomass is the main and traditional way of the utilization of biomass energy. The problems for direct combustion of straw it is a high content of elements in biomass, which may damage

boilers. For instance, high content of chlorine, potassium, sodium in straw biomass which are highly aggressive and causes slagging of pipes and accelerates corrosion of the metal surfaces of the boiler during combustion. The big potential for bioenergy has a straw of cereal crops which occupy the biggest part of arable lands in European countries. In Europe, the leader in using straw for energy is Denmark. The annual utilization of straw for energy in the country is about 1,3-1,4 mln. tons [4]. Ash straw application has a positive effect for soil fertility [5]. Such as, it was concluded that recycling rice-straw ash had positive effects on soil, which could improve the saturated water-holding capacity of soil, pH value, the content of available potassium and the content of available phosphorus had little effect on the content of soil organic matter. The special attention at the result of ash straw application was given to phosphorus (P) availability in soil. Straw ash may be successfully used both for forestry and agriculture. So, the composition of 79 samples of straw ash from seven heating plants in Sweden was analyzed with the aim of evaluating straw ash as a fertilizer and liming agent. Ash from rape straw had a higher Ca content and liming effect compared with ash from cereal straw.

Briquettes production of high quality defines the special requirements for feedstock [6]. The key positions here are moisture and size of fraction of biomass. It is necessary to dry biomass to get humidity not more than 15%. The basis of the production technology of composite briquettes is compaction of mass with high pressure (with or without heating). The production process consists of crushing raw material, drying and pressing. The temperature during compaction must promote the melting of briquettes surface which thereby becomes more robust. This characteristic is important for the transportation of briquettes. Of course, it is necessary to follow special standards for composite briquettes. The most important parameters are included in the table 1.

Table 1 – Technical parameters of composite briquettes

Technical parameter	Unit of metering	Indicator
Density of the briquettes	t / m^3	1.0-1.2
Calorific value	MJ / kg	19-20,5
Ash content	%	0.5-1.5

Manufacturing of composite briquettes is a rational alternative as for peat fuel, so and direct firing of straw and other types of biomass. In contrast to peat fuel, composite briquettes may be used as a solid fuel for fireplaces and stoves of all kinds, including solid fuel boilers heating systems without limits. Composite briquettes are eco-friendly type of energy which emit smokeless and it is good choice for houses heating, baths, tents, greenhouses and other purpose.

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ИСПОЛЬЗОВАНИЕ БИОГАЗА КАК ЭНЕРГОНОСИТЕЛЯ

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Рассмотрены текущее состояние и перспективы развития биогазовых технологий.

В современных условиях энергосбережения, рациональное использование всех материальных ресурсов, возобновляемых