

*Kondratenko O.M., DSc(Eng.), Assoc. Prof., Assoc. Prof. of Dept.  
National University of Civil Defence of Ukraine of SES of Ukraine, Kharkiv  
kondratenkoom2016@gmail.com*

*Babakin V.M., DSc(Law), Assoc. Prof., Lect. of Dept.  
National University of Civil Defence of Ukraine of SES of Ukraine, Kharkiv  
vado7373@gmail.com*

*Krasnov V.A., MSc(Eng.), Adjunct  
National University of Civil Defence of Ukraine of SES of Ukraine, Kharkiv  
kraslav@icloud.com*

*Semykin V.M., Chief Engineer of Dept.  
A.M. Pidgorny Institute for Mechanical Engineering Problems of NAS of Ukraine,  
Kharkiv  
semikin\_vm@ukr.net*

## **APPROACH TO THE DEVELOPMENT OF COMPLEX ENVIRONMENTAL PROTECTION TECHNOLOGY FROM THE INFLUENCE OF RECIPROCATING ICE WITH HIGH LEVEL OF WEAR**

It is a known fact that power plants (PP) equipped with a reciprocating internal combustion engine (RICE), including units of fire and rescue vehicles (FRV), are on operative duty in the departments of the State Emergency Service of Ukraine (SES of Ukraine), is a powerful source of environmental hazards.

The classification of such factors and the hierarchical classifier based on it, contains both chemical factors (emissions of gaseous substances, spills of technical liquid and solid waste) and physical factors (harmful factors – energy pollution of environmental components by thermal energy, noise and vibration, electromagnetic fields).

In the monograph [1] the methodological bases of development of environmental protection technology (EPT) from negative technogenic influence of the specified PP with a considerable degree of moral and physical wear at their exploitation are stated.

The operation of the EPT itself is based on the relevant environmental safety management system (ESMS), which is the material basis of the first, and it, in turn, is the methodological basis for ensuring the legislative established level of ecological safety (ES) indicators of this process [2].

This EPT consists of actuators, one of which must be a particulate matter filter (DPF) [3].

It was performed the analysis of designs and methods of operation of DPF, among which should be especially noted filters with liquid working fluid.

Such filters are the most promising, as they can complexly reduce the value of ecological hazards – emissions from the RICE exhaust gases (EG) flow of the particulate matter (PM), emissions of unburned hydrocarbons, emissions of nitrogen oxides, and in addition – to absorb the noise of the exhaust gases, to extinguish the sparks in the gases, to reduce the high temperature of the gases.

Evaluation of the effectiveness of such an ESMS and appropriate EPT can be assessed by the relevant criteria-based mathematical apparatus, in which individual components characterize the effectiveness of the DPF as an executive body.

Another way to increase the ecological efficiency of the exploitation process of the PP is to convert its RICE to the consumption of renewable energy, namely motor fuel of biological origin, which also imposes some restrictions on the design and operation of the DPF.

Thus, the analysis of scientific and technical, reference, patent and regulatory literature shows that research aimed at improving the EPT from the negative technogenic impact of PP with RICE with a significant degree of moral and physical wear during their operation the development of EG flow purification devices, which reduce several factors at once, are relevant, have signs of scientific novelty and significant practical value.

## References

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