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## **JUSTIFICATION FOR THE APPLICATION OF HEAT-ACCUMULATING MATERIALS WHILE DESIGNING PHASE TRANSITION HEAT ACCUMULATORS OF ICE AND VEHICLE TAKING INTO ACCOUNT HYSTERESIS EFFECTS WHILE MELTING AND CRYSTALLIZING THEM**

The perspective trend to improve the indices of vehicle engine cooling systems is the introduction of modern recourse-saving environmentally friendly technologies into the processes of their operation. At the same time the structure of cooling system elements is being improved, its adaptation to the conditions of operation is being realized etc. One of the most efficient methods of safe utilization of engines and vehicles is the development and utilization of complex systems of combined warming-up on the basis of phase transition heat accumulators.

Thermal control of a vehicle engine operation is a key aspect of the development of a vehicle warming-up systems. The use of heat accumulators and phase transition heat-accumulating materials is perspective. The given article describes the ways of improving thermal properties of phase transition heat-accumulating materials in the processes of their designing, the effectient ways of heat transfer from phase transition heat-accumulating materials to heat carrying agent of heat accumulators and then to vehicles. To create reliable phase transition heat-accumulating materials, different ways of their realization are suggested. One of them is the construction of the corresponding phase diagrams to determine an optimal composition of phase transition heat-accumulating materials with higher thermal properties to operate in a given temperature range. Another way is to study thermal hysteresis phenomena in melting and crystallization in order to increase the efficiency of phase transition heat-accumulating materials. The application of a contact heat accumulator for long-term storage of a vehicle with disabled engine has been considered. Its feature is that the heat accumulator in this case utilizes the stored thermal energy of a vehicle engine radiation. The results of experimental studies of a phase transition contact heat accumulator of a vehicle engine with possible changes of the parameters under measurement taking into account hysteresis effects are presented. In general, the given results are recommended to justify the use of heat storage materials while designing vehicle engine heat accumulators. The features of the heat accumulator under study technology are selected depending on vehicle operational requirements and purposes.