ALGORITHM FOR CALCULATION OF PARAMETERS OF THE BEARING ELEMENTS OF OIL HEATING INSTALLATIONS

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ABSTRACT

Load-bearing elements of oil heating installation in the shape of rods, as well as load-bearing elements of gas-generator plants, internal combustion engines, flight-type engines, and hydrogen engines work in a complex thermal and force field. To ensure the reliability of these installations, it is necessary to provide the load-bearing structure elements with thermal strength. Many load-bearing structure elements have the shape of a rod with limited length of constant and variable cross section. Depending on the use of these elements, local surfaces may be partially isolated locally. In addition, these load-bearing elements are under the simultaneous effect of different sources of heat and axial force. To investigate thermal strength parameters of these load-bearing elements operating in the complex thermal and force field, it is necessary to develop specific methods; these methods cannot be analytical, because operative factors involved are too diverse and heterogeneous. Therefore, it is necessary to develop a universal software package, that allows exploration of the thermal strength of these load-bearing elements based on the availability of heterogeneous heat sources and partial local thermal insulation. In addition, this complex of programs should be based on relevant computational algorithms and methods. But these algorithms and methods must rely on fundamental law of energy conservation. Therefore, the development of computational algorithms, methods and software package contribute to investigate numerically condition of load-bearing elements in the shape of rods with a limited length of constant and variable cross section considering the availability of heterogeneous heat sources is an urgent problem.

KEYWORDS: The Temperature, The Rod, The Thermal Energy, The Algorithm