

CLASSIFICATION OF THE FUNCTIONAL FEATURES OF THE SHELL OF A SPACE INDUSTRIAL PLATFORM

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The goal of this paper is to identify and classify the functional features of the shell of a space industrial platform. Further space exploration is limited by the difficulty of launching large-sized and massive objects into orbit. At the initial stage of the industrialization of near space, space industrial platforms can be placed therein. The configurations of existing orbital stations as a prototype of space industrial platforms are analyzed, and the ranges of the main parameters of their modules are determined. The structural layout of an industrial platform depends significantly on the technological processes implemented thereon. The configuration of a platform depends largely on a number of criteria that have an effect on its functional features. The paper identifies a number of criteria that have an effect on the functional features and configuration of a platform. They are as follows: structural modularity, the shell frame type, the shell shaping method, the sealing type, the need for a special atmosphere, the need for special process modules, the orientation and stabilization type, the power system type, the thermal control type, the need for a microclimate, and the type of preprocessing of raw materials and their components. Using these criteria, the paper proposes a classification of the functional features of an industrial platform shell. For classification, a space industrial platform is decomposed down to the level of the structural elements of its modules to be used in the development of a comprehensive mathematical model of platform operation. A set of parameters of industrial platforms is formed to ensure the technological processes implemented thereon. The set will be used in platform shell formation according to process parameters. The problem of mass optimization of a space industrial platform is formulated.

Keywords: *space, industrial platform, shell, functional features, set of parameters.*

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