

CALCULATION SCHEME FOR RESEARCH OF STABILITY OF COLLAPSIBLE RACKS

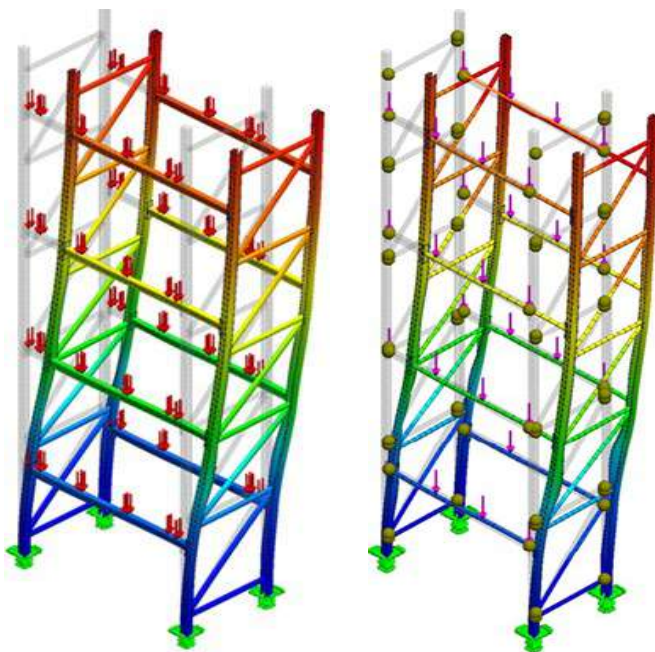
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The work is devoted to the development of methods for analyzing the stability of collapsible pallet racks. These structures are adapted to the minimum possible size of the area they occupy. They also provide convenient access to the goods that are placed on them. In order to accommodate the maximum number of goods in a minimum area, high requirements are required for the methods of projection and calculation of racking systems.

A finite element approach is proposed as a research method. This approach fully takes into account all the construction features of the constituent elements and the nature of their connection in a collapsible structure.

The aim of the work is to develop a calculation scheme for a section of a pallet collapsible rack. It is necessary to analyze the stability of the rack, which takes into account the design features of its constituent elements and the features of detachable



connections of elastic elements. In addition, the finite element model of the rack must have such a dimension that will provide acceptable accuracy of calculations, and also allow it to be used as a starting point for building models of multi-section racks. At the same time, when performing calculations, this model does not require significant computer resources of the computer system.

In the research, an exact shell model (Fig. 1) and a simplified calculation model (Fig. 2) were built. Then, the stability of these two models was compared and the effectiveness of using the proposed system of simplifications was proved. As a result, a simplified calculation scheme of the rack section was constructed. The resulting scheme can be used to construct calculation schemes for analyzing the stability of multisectional constructions.