

Excavator solar container device working dynamic diagram

<div class="df_qntext">How to analyze the dynamic characteristics of hydraulic excavator?

In order to more accurately analyze the dynamic characteristics of the working device of the hydraulic excavator. The load changes on the two digging trajectories were calculated and analyzed by using the limit digging force model and the theoretical digging force model, respectively.

<div class="df_qntext">Why is the design process of excavators so complicated?

Owing to the symmetry of the working device structure and computational complexity, the lightweight design process was simplified by including only the thickness of the top plate, bottom plate, and left plate of the boom as design variables. The stress situation of excavators during actual operation is very complex.

<div class="df_qntext">How are digging trajectories selected?

Therefore, in this study, two individual digging trajectories are selected based on the working characteristics of the excavator, the external load of the working device is calculated by using the LDF model and the TDF model, and the rigid-flexible coupling model of the tooling is established.

<div class="df_qntext">How are load changes calculated on two digging trajectories?

The load changes on the two digging trajectories were calculated and analyzed by using the limit digging force model and the theoretical digging force model, respectively. The rigid-flexible coupling model of the working device was established in ADAMS.

<div class="df_qntext">How to improve the structure of existing excavators?

To improve the structure of existing excavators, this paper focuses on the lightweight design of their working devices. Currently, structural size optimization mainly relies on two methods: one is based on high-precision simulation models.

<div class="df_qntext">Is hydraulic excavator dynamic?

Hydraulic excavator is one of the most commonly used machines in engineering, and scholars pay close attention to the dynamic performance of its working device. In the previous research [1,2], the dynamic analysis of tooling based on virtual prototyping technology is one of the research hotspots.

1 Introduction Large shovel hydraulic excavators are widely applied in the areas of large-scale mining, stripping, and load-ing of surface mineral materials. A face-shovel hydraulic excavator is mainly ...

S.Salinic et al. [14] considered the influence of foundation deformation when establishing dynamic equations. Chen et al. [15] studied in detail the influence of soil characteristics on the digging ...

(DOI: 10.1007/S40032-021-00725-4) In order to more accurately analyze the dynamic characteristics of the

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working device of the hydraulic excavator. The load changes on the two digging trajectories were ...

After dynamic modeling of working device with Kane-Huston method, it is necessary to verify the correctness of the established dynamics equation, thus ADAMS is used to build a virtual prototype ...

In the above research, scholars have carried out the dynamic analysis of the working device of the excavator and the finite element analysis of the arm and rod, but the dynamic analysis is only based ...

This paper analyzes the importance of hydraulic excavator in engineering construction, describes the working process of each device of hydraulic excavator, discusses the design principle of the working ...

Based on Lagrange equation, the dynamics model of excavator is established, and a trajectory tracking control method is proposed for this model. The tracking effect of model predictive ...

In order to study the influence of key hinge point's positions to the kinematical performance of the face-shovel hydraulic excavator working device, a forward kinematics model of the working device is ...

Taking the working device of the hydraulic excavator as the research object, the theoretical models of kinematics and dynamics for the working device were established. The kinematics and dynamics ...

Moreover, dynamics simulation for hydraulic excavator working device is carried out under different operating mode and the stress of the hinge point is obtained, which provides the basis ...

Mechanical power equipment often because of bad operation condition affecting the face friction pair clearance of wear serious, in order to discuss joint changes in operation in the process of friction pair ...

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