The Parametric Design of the Frame of Agricultural Machinery Cab based on Analysis of Ergonomics Data

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The cab of the big-scale and medium-sized agricultural machinery is not only the main environment of the drivers operate the machine, but also by which the driver interact with the machine. Currently most China's agricultural machinery manufacturers will order the whole cabs for production, but not make them by themselves. Therefore to design the cab models by parametric customization would be better adapt to business needs and reduce the repetitive and mindless calculation and design. The design of cab mainly includes two types of parameters: the driver’s ergonomics data and the constraint parameters provided by agricultural machine such as space area, etc. In addition its shape should match the the whole style of the machine. The paper provides a parametric design procedure of cab’s frame based on RhinoScript. Firstly the characteristics of a variety of cabs are analyzed and classified into several typical sorts; then the main ergonomics parameters and constraints of these cabs are extracted; finally the basic framework of the cab can be automatically completed on these data and constraints and a digital model can be generated by the chosen style of the agricultural machine.

Keywords: Agricultural machine, Cab, Parametric design, RhinoScript, CAD

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References


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