# Analysis of main aspects of procedure formalisation in systemic design of excavators at the pre-project stage

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*The article deals with basic aspects of design procedure formalisation concerning developing single-bucket excavators in an integrated environment. We outline specifics of putting together a methodology, mathematical models and computer-aided design software, as well as the role the developer plays in decision-making and the opportunities he or she has. A composition of non-linear algebraic equations represents the model for structure and configuration design of single-bucket excavators, in which the relationships between linear parameters, assembly masses and so on are expressed as functions of the main machine parameters or are defined through the requirements for machine stability and the laws describing how the strength properties of the framework change. We suggest using the method of nested spheres as the basis for constructing the criteria space in order to analyse geometrical properties of the excavator attachments.*

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