DESIGN OPTIMIZATION OF METAL PACKAGING BOXES

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ABSTRACT

This paper presents an optimization study of the geometrical parameters of covers and hoops of packaging metal boxes designed by the company BENPACK which its headquarters and factory are in the city of Batna in Algeria Country.

The main objective was to find the optimal combination of geometrical parameters of contact between the cover and the hoop at a given internal pressure, to avoid opening the cover.

Three types of test boxes, the most marketed by the company BENPACK was selected, the box of diameter 56, 83 and 108.5 mm.

First we Found an approximation of the objective function, which is the contact pressure at the last increment before opening cover, using Box-Behnken design and ABAQUS finite elements code.
Second, we applied the response surface methodology coupled with the SQP optimization algorithm to find the ideal dimensions for each type of boxes.