Optimum fuzzy design of ecological pressurised containers

In this study, the basic engineering principles, goals, and constraints are all combined to fuzzy methodology and applied to design of optimally pressurised containers emphasising the ecological and durability merits of various materials. The present fuzzy heuristics approach is derivable from generalisation of conventional analytical optimisation method into fuzzy multitechnical tasks. In the present approach, first the goals and constraints of the end-user are identified. Then decision variables are expressed as functions of the design variables. Their desirable ranges and biases are defined using the same fuzzy satisfaction function form. The optimal result has highest total satisfaction. These are then checked and fine-tuned by finite element method FEM. The optimal solution is the ecoplastic vessel, and aluminium was close. The method reveals that optimum depends strongly on the preset goals and values of the producer, society, and end-user.