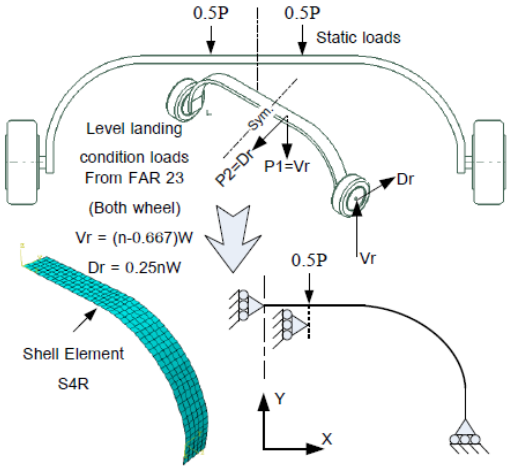
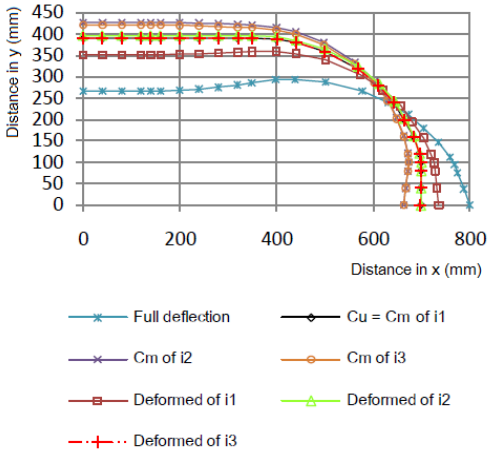
(a) real light aircraft



(b) simulation by FEM



(c) optimization results

Figure 1. FEM simulation and optimization results using python script

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OPTIMIZATION AND CONSTRUCTION OF SOLID SPRING TYPE OF MAIN TRICYCLE LANDING GEAR FOR LIGHT AIRCRAFT

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This project aims to find out the best configuration of Solid Spring Type of Main Tricycle Landing Gear, made of unidirectional glass fiber composite material for Light Aircraft subjected to the maximum takeoff weight as shown in Fig. 1a. Naturally, when the manufacturers receive the design from the engineer then they make the mold fitted to the dimensions. This causes the errors between the real structure under loading and drawing positions. To archive the very good displacements according to the requirement of the engineer, a way is running a finite element using a four nodes shell element with an initial thickness as seen in Fig. 1b then comparing the simulated results with the ordered dimensions. The success of this work is done by writing the Python script permitting the FEM automatically reiterations. If the displacements in x and/or in y direction are far from the correct positions the program will decreases or creases the thickness of the shell element. Next, the FEM program will calculate the strength that it must be strong enough with respect to the Tsai-Hill criteria. The optimized coordinates after the iterations are given as exhibited in Fig. 1c. Then the part of this landing gear will lay in the optimized mold construction.