

Weight Model

Spring 16.82

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Assumptions

1. Mass take off weight is greater than the end of the first segment weight plus that segment fuel weight.
2. The end of each flight segment weight must be greater than the next end of flight segment weight plus the fuel weight of the next flight segment.
3. The end of the last flight segment weight must be greater than the zero fuel weight.

Variables

$W_{begin}[3]$
 $W_{end}[3]$
 $P_{shaft}[3]$
 $MTOW$
 $W_{fuel}[3]$
 W_{zfw}

Constraints

$$\begin{aligned} MTOW &\geq W_{end(0)} + W_{fuel(0)} \\ \left[\begin{array}{l} MTOW == W_{begin(1)} \\ W_{end(0)} == W_{begin(1)} \\ W_{end(1)} == W_{begin(2)} \end{array} \right] \\ \left[\begin{array}{l} W_{end(0)} \geq W_{end(1)} + W_{fuel(1)} \\ W_{end(1)} \geq W_{end(2)} + W_{fuel(2)} \end{array} \right] \\ W_{end(2)} &\geq W_{zfw} \end{aligned}$$