

ABSTRACT

ACTIVE ELEVATOR HITCH

An elevator motion control system compares a dictated flight path signal (101), indicative of a desired elevator flight path along a nominal flight trajectory, with a measured flight path signal (108), indicative of actual elevator motion, and provides a motion command signal (115) to both a high pass filter (117) and a low pass filter (116) such that the frequency of the motion command signal is split into high and low frequency components (141,118). An active elevator hitch (36) is used to implement the high frequency/low stroke portion of the motion command signal while the elevator motor (28) is used to implement the low frequency/high stroke portion of the motion command signal. A time delay (106) delays the dictated flight path signal prior to its use with the measured flight path signal for providing the motion command signal, the duration of the time delay corresponding to the delay associated with a motion perturbation propagating along a main rope (14) between the elevator motor and the elevator car (12). The active elevator hitch (36) includes a support plate (12) interconnected to the elevator car, a hitch plate (46), and at least one force actuator (56) having a variable extension. The force actuator is connected between the hitch plate and the support plate, and the variable extension is controlled for varying the vertical position of the elevator car along the elevator flight path for damping at least the high frequency components of elevator car vertical oscillations.