

ABSTRACT

ELEVATOR ACTIVE GUIDANCE SYSTEM HAVING A COORDINATED CONTROLLER

The invention features an elevator system including an elevator car (12) having a frame that operates on guide rails of an elevator shaft of a building. The elevator car (12) has a rigid body motion in a global coordination system (X, Y, Z) kinematically defined by five degrees of freedom including side-to-side translation along the X axis, front-to-back translation along the Y axis, a pitch rotation about the X axis, a roll rotation about the Y axis, and a yaw rotation about the Z axis. The elevator system includes local parameter sensing means (14), responsive to local parameter sensed in each of the five degrees of freedom in the global coordination system (X, Y, Z), for providing local parameter signals (G_m , A_m); coordinated control means (16), responsive to the local parameter signals (G_m , A_m), for providing coordinated control signals (CC_{x1} , CC_{x2} , CC_{y1} , CC_{y2} , CC_{y3}); and local force generating means (18), responsive to the local force coordinated control signals (CC_{x1} , CC_{x2} , CC_{y1} , CC_{y2} , CC_{y3}), for providing coordinated local forces (F_{x1} , F_{x2} , F_{y1} , F_{y2} , F_{y3}) to maintain desired gaps between the frame and the guide rails to coordinate the position of the elevator car (12) with respect to the elevator shaft of the building.

(Figure 1)