

Abstract

A prototype standalone tracking device was researched and developed for the use of assisting energy analysis of elevators. The multimeter system developed by Jim Bos records the power consumption and regenerative potential of elevator motors by monitoring the energy directed through them in the elevator control room as well as the power dissipated in the resistor banks. What this system currently does not record is the travel of the elevator to correspond to the energy chart. Research was done in various methods of continuous tracking of the elevator car. Methods unable to be deployed inside the elevator control room were ruled out, and a method using a laser mouse sensor was decided on for further testing into its capability of tracking via monitoring translational motion of rotating surfaces such as the motor head or deflector sheave. Performance testing was done on an ADNS-9800 high performance gaming mouse sensor on an Arduino platform on a motor at speeds relative to that seen on elevator motor, which demonstrated tracking capability but underperformed in reaching the maximum surface speed tracked. Further development on a multiprocessor platform such as Atmel is a desired next step to best utilize the hardware of the ADNS-9800 sensor and achieve tracking speeds that exceed elevator motor speeds.