USE OF ADJUSTABLE ELECTRIC DRIVE PC-AD FOR ELEVATOR MECHANISMS BASED ON GEARLESS WINCH

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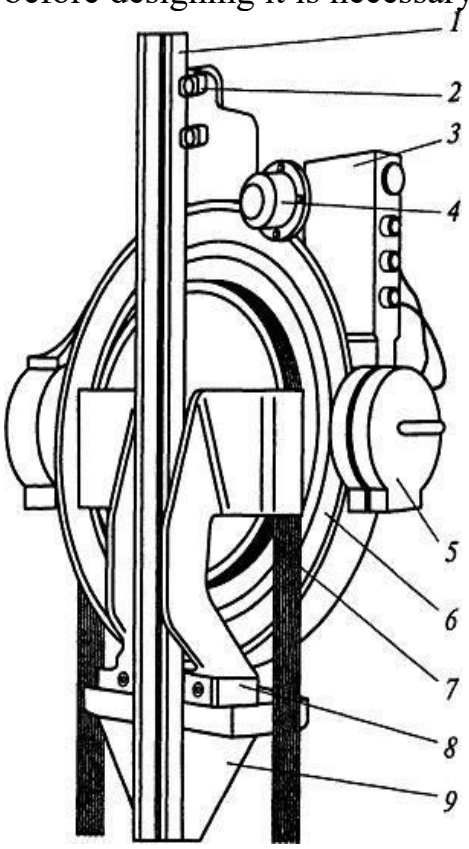
The basis of an electric elevator is its lifting mechanism - an electric drive. In this case - it is adjustable, using a gearless elevator winch. The main tasks of controlling the elevator car are to ensure comfortable movement and accurate stopping at the required floor level. The main quality criterion is smoothness of movement. For comfortable transportation of people, the acceleration value of the car is no more than 2 m/s^2. The physical effect on the human body depends on the acceleration time. With an acceleration duration of less than 0.4 s. the human body satisfactorily tolerates acceleration up to 30÷40 m/s^2. Therefore, when controlling the movement of the car, short-term high acceleration or deceleration is allowed [1]. The comfort of the elevator is also determined by other factors. The waiting time of the elevator is how long the passenger waits for the elevator on the landing. If the building is high-rise, it makes sense to include the function of increased speed of movement of the empty car in the control. Smoothness and accuracy of stopping is achieved using precise stop sensors. When reaching the stop floor, a signal is given to reduce the speed, and since a gearless electric drive with vector control using a frequency converter is used, it is possible to set a smooth stop. The presence of noise during movement is also an indicator of comfort. Compared to gear drives, a gearless electric drive has a minimum noise level of mechanical parts. Since the electric drive is the main body of elevator equipment, before designing it is necessary to formulate the main requirements for electric drives of passenger elevator installations [1]: reliability, high level of safety; low noise; ease of operation; limitation of cabin acceleration; smooth start of movement and stop; availability of revision speed; accuracy of stopping at the floor level.



1 – cabin guide; 2, 8 – winch mounting clamps; 3 – terminal box; 4 – tachogenerator of the engine control system; 5 – brake release electromagnet; 6 – disk rotor with rope-driving and brake pulleys; 7 – traction ropes; 9 – winch body

Gearless winch with AC disc electric motor EcoDisk

Література:

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