Method and apparatus for monitoring a state of a passenger transport system by using a digital double

Description

The present invention relates to a method and an apparatus for monitoring properties of a passenger transport system, such as an elevator, an escalator, or a moving walkway. The invention further relates to a passenger transport system equipped with a proposed apparatus, a computer program product configured to carry out the proposed method, and a computer-readable medium storing this computer program product.

Passenger transport systems in the form of elevators, escalators, or moving walkways are used to convey passengers within edifices or buildings. Sufficient operational safety must always be ensured, but ideally also continuous availability. For this purpose, passenger transport systems are usually checked and/or serviced at regular intervals. The intervals are generally determined based on experience with similar passenger transport systems, wherein the intervals must be selected to be sufficiently short in order to ensure operational security such that a check or maintenance is performed in good time before any safety-endangering operating conditions occur.

In the case of older passenger transport systems, the checks are usually performed completely independently of the actual present state of the passenger transport system. This means that a technician has to visit the passenger transport system and inspect it on site. It is often recognized that no urgent maintenance is necessary. The visit of the technician thus turns out to be superfluous and causes unnecessary costs. On the other hand, in the event that the technician actually recognizes the need for maintenance, an additional journey is required in many cases, since the technician can only determine on site which components of the passenger transport system require maintenance, and thus it is only apparent on site that maintenance or repair is required, for example, that spare parts or special tools are needed.

In the case of newer passenger transport systems, there is already partially a possibility, for example with the help of sensors and/or by monitoring the active components thereof,