

Elevator System

The invention relates to a construction site elevator system for temporarily bridging at least part of the distance between the top stop of a jump lift and the top work level on the construction site.

On construction sites of high-rise buildings, what are known as jump lifts, which grow with the building, are generally used to transport people and materials within the building. Such a jump lift has a plurality of platforms, in particular a machine platform, a lifting platform and a crash deck, which are gradually raised within the elevator shaft of the jump lift and require a relatively large space. As a result, the top stop of the jump lift is usually arranged 30 to 40 m below the highest work level of the construction site, i.e. in particular the upper end of a casting mold for casting the elevator shafts.

This can be problematic because in some countries there are work regulations that allow workers to reach only a certain elevation by foot.

The object of the invention is to provide a construction site elevator system for temporarily bridging at least part of this distance between the top stop of a jump lift and the top work level of the construction site, which system is simple in design, quick to install and the position of which within the building can be changed.

This object is achieved by a construction site elevator system having the features of claim 1. Advantageous embodiments of the invention are provided in the dependent claims.

According to the invention, the construction site elevator system comprises a frame structure and an elevator within the frame structure. In this case, the frame structure is designed in such a way as to be insertable into an elevator shaft and mountable at different positions, in particular arbitrary positions, on the elevator shaft.

By arranging the elevator in a frame structure, the entire construction site elevator system can be easily introduced into the shaft. In particular, the individual components of the elevator do not need to be assembled on the construction site. In addition, the frame

structure allows the gradual raising of the elevator at any time by the frame structure being simply raised and mounted at different positions on the elevator shaft.

5 The insertion of the construction site elevator system into the elevator shaft is carried out in particular by means of a crane or helicopter. Lifting can also be carried out by means of a crane. Alternatively, however, the lifting can also be carried out by any other lifting apparatus, for example by pushing from below.

10 The construction site elevator system is in particular also raised each time the jump lift is raised, so that at least part of the distance between the top stop of the jump lift and the top work level of the construction site is bridged by the construction site elevator system.

The construction site elevator system is preferably designed such that it can bridge between two and ten, in particular between three and five, floors of the construction site.

15 The elevator of the construction site elevator system within the frame structure is in particular a complete elevator, which comprises all the components of the elevator, so that no further installation of parts of the elevator on the construction site is necessary. In particular, the elevator incorporated in the frame structure is a “standard lift” which is also permanently installed in buildings.

20 In particular, the elevator has a car, a counterweight, a motor for moving the car and the counterweight, and/or at least one suspension means for suspending the car and/or the counterweight. The car and the counterweight are in this case guided in particular on rails which are fixed to the frame structure, and can be moved within the frame structure. Alternatively, the elevator may also be a hydraulic elevator.

25 The frame structure is in particular designed as scaffolding, in particular steel scaffolding. Such steel scaffolding offers high strength and loading capacity with a lightweight design. In particular, the frame structure is composed of tubes. In an alternative embodiment, the frame structure may also consist of closed walls.

30 The frame structure has in particular at least two cavities which function as door openings for entering and/or leaving the car of the elevator. The first of the two cavities is arranged

at the lower end of the frame structure, and the second at the upper end of the frame structure, such that a maximum possible distance can be bridged.

5 In a preferred embodiment of the invention, at least three cavities are provided for entering and/or leaving the car of an elevator. Passengers can be evacuated via this additional third cavity in an emergency.

10 In at least two of these cavities, in particular doors are provided for closing the cavities. This has the advantage that doors which would have to be dismantled when the construction site elevator system is raised and refitted on another floor do not have to be provided at each of the corresponding shaft openings. Instead, the function of the shaft door can be fulfilled by the doors of the construction site elevator system.

15 In particular, doors are provided on the frame structure only at the top and bottom stops of the construction site elevator system, whereas at the other stops the cavities are not closed by doors. In this case, on the other floors of the shaft, the opening is temporarily closed in each case by simple means, such as wooden partitions. A cost-effective design is thus achieved, as doors are provided only at the necessary locations.

20 In a preferred embodiment the vertical position of at least one of the doors, in particular the lowermost door, can be adjusted relative to the frame structure in a predetermined range. This ensures that the construction site elevator system can be adapted to different floor heights.

25 The construction site elevator system is operated in particular such that it can only carry out journeys between the bottom and the top stops of the construction site elevator system.

30 Furthermore, it is advantageous if mounting means are provided for mounting the frame structure on the elevator shaft. The frame structure and thus the construction site elevator system can be mounted in particular by being placed on one or more beams. Alternatively or additionally, they can also be screwed to the shaft wall. Furthermore, it is alternatively possible for the frame structure to be suspended from above on a holding device.

The mounting means are preferably designed such that they engage in the door openings of the shaft wall for mounting. Extra cavities in which the mounting means would engage therefore do not need to be provided in the shaft wall.

5 In a preferred embodiment, at least one pivotable beam is provided on the frame structure, which beam is pivoted after the construction site elevator system has been positioned at the desired location of the shaft, as a result of which the construction site elevator system is aligned relative to the elevator shaft and/or the construction site elevator system is mounted in the elevator shaft by the beam engaging in openings of the
10 elevator shaft provided for this purpose. The beam is arranged in particular at the upper end of the frame structure, preferably in the region of the top door.

Further, it is advantageous if a plurality of rotatably mounted rollers and/or wheels are provided on the frame structure on the side facing away from the elevator, i.e. on the
15 outside. This ensures that, when inserted into the shaft, the construction site elevator system can slide on the rollers or wheels along the shaft wall without damaging the shaft wall or being damaged itself.

The invention also relates to an elevator system comprising a first and at least one second
20 elevator shaft, a jump lift being arranged in the first elevator shaft and a construction site elevator system, as described above, being arranged in the second elevator shaft. The construction site elevator system is in this case arranged in the second elevator shaft, such that the bottom stop of the construction site elevator system corresponds to the top stop of the jump lift. This ensures that passengers who have travelled to the top stop in the jump
25 lift can easily transfer to the construction site elevator system and thus continue to travel upward within the building.

Each time the jump lift is raised, the construction site elevator system is preferably also raised accordingly.

30

Additional features and advantages of the invention are provided in the following description, which describes the invention in greater detail on the basis of embodiments in conjunction with the attached drawings.

In the drawings:

Fig. 1 is a schematic, highly simplified illustration of an elevator system; and

5 Fig. 2 is a schematic illustration of a section of the elevator system according to Fig. 1.

Fig. 1 is a schematic, highly simplified illustration of an elevator system 100, the elevator system 100 having two elevator shafts 102, 104. A jump lift 110 is provided in the first elevator shaft 102.

10

The jump lift 110 comprises a car 112 which is movable within the first elevator shaft 102, a machine platform 114 on which the machine for moving the car 112 is arranged, a lifting platform 116 and a crash deck 118.

15

The machine platform 114, the lifting platform 116 and the crash deck 118 can be gradually raised within the elevator shaft 102 so that the jump lift 110 can grow together with the building.

20

At the upper end of the two elevator shafts 102, 104, a casting mold 120 is arranged, by means of which further floors of the elevator shafts 102, 104 are cast gradually.

25

The top stop of the jump lift 110 is indicated by the line 122. As can be seen in Fig. 1, there is a large distance between this top stop level 122 and the casting mold 120, which distance can often be up to 40 m. In order to bridge this distance, a construction site elevator system 10 (shown in more detail in Fig. 2) is arranged in the second elevator shaft 104, which system can be raised correspondingly to the jump lift 110 and mounted at correspondingly different positions on the second elevator shaft 104.

30

As shown in Fig. 2, the construction site elevator system 10 has a frame structure 12 within which a complete elevator 14 is arranged. This elevator 14 has a car 16, a counterweight 20 connected to the car 16 via a suspension means 18 and a motor 22 for moving the car 16. The elevator 14 is already completely arranged in the frame structure 12 in advance, so that no assembly is necessary on the construction site. On the contrary, the complete construction site elevator system 10 is simply inserted, in particular by

means of a crane, into the elevator shaft 104 and mounted by suitable mounting means at the desired position on the elevator shaft 104. In the example shown in Fig. 2, mounting is carried out by the construction site elevator system 10 being placed on a beam 24.

5 A total of three lateral cavities are provided in the frame structure 12, which cavities coincide with corresponding door openings of three floors arranged one above the other. Furthermore, the frame structure has a door 26, 28 at the top and bottom stops, respectively, of the construction site elevator system 10, by means of which doors these cavities are closed. This has the advantage that no doors need to be installed at the
10 openings of the elevator shaft 104.

In the example shown in Fig. 2, no door is provided in the case of the central cavity 30 of the frame structure, i.e. the cavity 30 which coincides with the central floor. Instead, the opening in the shaft wall is closed by means of boards. In an alternative embodiment of
15 the invention, a door may be provided on the frame structure 12 here, too.

When the jump lift 110 has been raised, the construction site elevator system 10 is also raised correspondingly, for example via the crane by means of which it was inserted, and fixed at a new location of the elevator shaft 104. Alternatively, lifting can also take place
20 from below, for example, by pushing by means of a hydraulic arrangement.

List of reference signs

	10	Construction site elevator system
	12	Frame structure
5	14	Elevator
	16	Car
	18	Suspension means
	20	Counterweight
	22	Motor
10	24	Beam
	26, 28	Door
	30	Cavity
	100	Elevator system
	102, 104	Elevator shaft
15	110	Jump lift
	112	Car
	114	Machine platform
	116	Lifting platform
	118	Crash deck
20	120	Casting mold
	122	Level

Claims

1. Elevator system (100)

5 comprising a first elevator shaft (102) and at least one second elevator shaft (104),

a jump lift (110) arranged in the first elevator shaft (102), and

10 having a construction site elevator system (10) in the second elevator shaft (104) for temporarily bridging at least part of the distance between the top stop of a jump lift and the top work level on the construction site,

15 wherein the construction site elevator system (10) comprises a frame structure (12) and an elevator (14) within the frame structure (12), and

wherein the frame structure (12) is designed in such a way as to be insertable into the second elevator shaft (104) and mountable at different positions on the second elevator shaft (104).

20 2. Elevator system (100) according to claim 1, characterized in that the frame structure (12) is designed as scaffolding, in particular steel scaffolding.

25 3. Elevator system (100) according to either claim 1 or claim 2, characterized in that at least two cavities (30) for entering and/or leaving a car (16) of the elevator (14) are provided in the frame structure (12).

30 4. Elevator system (100) according to either claim 1 or claim 2, characterized in that at least three cavities (30) for entering and/or leaving a car (14) of the elevator are provided in the frame structure (12).

5. Elevator system (100) according to either claim 3 or claim 4, characterized in that doors (26, 28) for closing the cavities (30) are provided at at least two cavities (30) in the frame structure (12).

6. Elevator system (100) according to claim 6, characterized in that doors (26, 28) are provided only at the top and bottom cavities (30).

5 7. Elevator system (100) according to any of the preceding claims, characterized in that the elevator (14) comprises a car (16), a counterweight (20), a motor (22) for moving the car (16) and the counterweight (20), and/or at least one suspension means (18) for suspending the car (16) and/or the counterweight (20).

10 8. Elevator system (100) according to any of the preceding claims, characterized in that mounting means (24) are provided for mounting the frame structure on the second elevator shaft (104).

15 9. Elevator system (100) according to any of the preceding claims, characterized in that the mounting means (24) are designed such that they engage in the door openings of the shaft wall for mounting.

20 10. Elevator system (100) according to any of the preceding claims, characterized in that at least one pivotable beam is provided on the frame structure (12) for aligning the construction site elevator system (10) relative to the second elevator shaft (104) and/or mounting the construction site elevator system (10) in the second elevator shaft (104).

25 11. Elevator system (100) according to any of the preceding claims, characterized in that rotatably mounted rollers and/or wheels are provided on the frame structure (12) on the side facing away from the elevator (14).

30 12. Elevator system (10) according to any of claims 1 to 11, characterized in that the bottom stop of the construction site elevator system (10) corresponds to the top stop (122) of the jump lift (110).

13. Method for temporarily bridging at least part of the distance between the top stop of a jump lift and the top work level on the construction site,

in which the construction site elevator system (10) is temporarily mounted at a first position in an elevator shaft (104) by means of a mounting unit (24) in order to temporarily bridge at least part of the distance between the top stop of the jump lift and the top work level on the construction site,

5

wherein the construction site elevator system (10) comprises a frame structure (12) and an elevator (14) within the frame structure (12), and

10

wherein the frame structure (12) is designed in such a way as to be insertable into the second elevator shaft (104) and mountable at different positions on the elevator shaft (104).

the mounted attachment is removed again,

15

the construction site elevator system (10) is lifted by means of a lifting device, and

20

in which the construction site elevator system (10) is mounted at a second position in the elevator shaft (104) by means of the mounting unit (24).

14. The method according to claim 13, characterized in that the construction site elevator system (10) is raised gradually.