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OVERVIEW

Modern technology allows selective and controlled ventilation of lift shafts. Heat losses are drastically reduced, while energy consumption and CO₂ emission are significantly lowered. In case of fire, hot and poisonous gases are quickly and reliably released into the atmosphere.

On the following pages, you can find out what requirements these innovative solutions must fulfil, what they are capable of achieving and how these standards can be used in new constructions or modernisation.

SCHAKO’s GREENKIT is one of the most advanced systems available on the market - the result of continuous further development always in accordance with the latest state of the art and, of course, in compliance with all legal requirements. We have a comprehensive modular range of components available. This allows us to offer you exactly the solutions that you require - in each detail tailored to your requirements.

Irrespective of the components selected, only the installation must be ordered - everything else is done by the system. This includes, apart from temperature monitoring and time-controlled ventilation, intelligent ventilation according to lift use and measurement of the air quality and humidity. GREENKIT can be adapted to your individual requirements.

SCHAKO’s GREENKIT thus guarantees reliable operation of the ventilation and smoke exhaust dampers and an optimised balance between energy saving and conservation of the air quality.

Safety, convenience and savings potentials

- Heating cost savings of up to € 1,000 per year per lift
- More safety in the building
- Convincing price/performance ratio
- Manageable assembly costs
- All components can be retrofitted without problems
- No moisture, no mould inside the shaft
- Improved air quality in lift shaft and cabin
- Pleasant building climate
- No draught air and flow-generated noise
- Important contribution to environmental protection

USE

GREENKIT impresses with its particularly compact system. It has been developed to be even easier and quicker to mount. It consists of only a handful of components, but gives you a complete system that is low-cost, can be installed in a very short period of time and is immediately ready for use. Due to its short payback period, it is a worthwhile investment.

GREENKIT combines all technological and standard requirements in one compact control unit. As the most advanced and most intelligent control unit for smoke extraction of lift shafts, it thus sets completely new standards in the lift shaft sector. For convenient assembly, GREENKIT is equipped with plug-in connections that can be connected to commercially available RJ45 connecting cables. The 230 V connection is also of the plug-in type.

The system is suitable both for lifts without machine room, lifts with machine room and group systems. It is preferentially installed in the shaft head or technical/machine room. During its development, not only functional, but also economic aspects were taken into account to ensure effective and efficient operation of the lift system.

Advantages of the system

- Plug-in connection of the components
- Integration of emergency power batteries possible
- Parameter setting possible via coding switch
- Intelligent ventilation function
- Integrated temperature sensor
- New fire detection with utmost reliability
- Permanent cable monitoring for short-circuit and cable breakage

Requirements

Fire protection for lift systems - in compliance with Lifts Directive 95/16 EC and German Energy Saving Ordinance (EnEV) - has previously been implemented via a permanent opening in the shaft head or by means of an RWA solution of VdS-certified companies.

GREENKIT has been optimised as intelligent smoke extraction and ventilation system for lift shafts.

GREENKIT controls the required ventilation of lift shafts as a function of current building use (lift use) by means of the Lift Status Transmitter (LST) located on the cabin or via a direct potential-free connection to the lift controller. This results in a substantial reduction of the heat loss and, accordingly, of the heating costs. It simultaneously increases air quality and improves room hygiene.

GREENKIT fulfils in particular the lift smoke extraction and ventilation requirements according to the Model Building Code (MBO), Lifts Directive 95/16/EC and German Energy Saving Ordinance (EnEV).

Requirements

Shaft smoke extraction and ventilation systems must meet the following requirements:

Smoke removal

According to the Model Building Code (MBO) largely incorporated in all Regional German Building Codes (LBO), lift shafts must be ventilatable and have an opening for smoke removal at its top end. The size of free cross-section of the opening depends on the floor area of the shaft and must be 2.5% of this area, but at least 0.1m² (State of Brandenburg: 5 %, at least 0.2 m²).

Ventilation

According to the Lifts Directive 95/16/EC and the series of standards EN 81 Parts 1 and 2 for lifts, adequate ventilation must be guaranteed for the lift shaft and the machine room, for which an opening having a free cross-section area of at least 1 % of the floor area of the shaft at the top end of the lift shaft is recommended.

Implementation in accordance with building law

Previously, permanent openings had been provided in order to meet the requirements of ventilation and smoke removal according to the Regional German Building Codes. However, openings that can be closed can also ensure the requirements of the Regional German Building Codes. At the same time, systems that can be controlled in accordance with demand make a significant contribution to energy saving, thus complying with the German Energy Saving Ordinance (EnEV).

Smoke extraction openings are required by building law. Accordingly, in all lift systems suitable shaft smoke extraction and ventilation systems that are in possession of the following certificates must be mounted:

- General building supervisory approval or
- Certification of the components used according to harmonised European standards under the Construction Products Directive/Construction Products Ordinance or
- Case-specific approval

If a fire protection concept is required for buildings as part of the building permit procedure, you have to check whether the shaft smoke extraction and ventilation system must be included in the evaluation.

Safety can be considerably increased by interconnecting the lift control, lift shaft smoke extraction control and fire alarm centre of a building.

German Energy Saving Ordinance (EnEV)

The German Energy Saving Ordinance defines tightness and minimum air change requirements. According to this ordinance, the total heat transfer of buildings must be designed permanently air-impermeable.

Moreover, the minimum air change required for health and ventilation must be ensured.

Lift system

Provisions must be made that the basic safety and health requirements (GSA) of lifts defined in the Lifts and Machinery Directives are met.

They require, among other things, environmental conditions that present no health risk to the persons working in the lift shaft (assembly, commissioning, service and checking).

Shaft smoke extraction and ventilation systems are considered devices not unlike lifts, since they meet these requirements.

Lift component

GREENKIT has been specially developed for use in lift shafts and machine rooms and can be used both in new buildings and in redevelopments.

GREENKIT is an investment that pays back within a short period of time by significantly reducing the heating costs.
PERFORMANCE AND INTENDED PURPOSE

GREENKIT IDENTIFIES HAZARDS

In general, smoke extraction or smoke removal is achieved absolutely reliably by opening the NRWG multi-leaf damper associated with SCHAKO’s GREENKIT.

In case of fire, a smoke exhaust opening in the shaft head is opened by an electromotive actuator. Continuous monitoring and smoke detection of the entire shaft is effected by means of smoke detection components. This detects fire smoke reliably and early even under difficult conditions.

Simultaneously with the warning message sent to the NRWG multi-leaf damper, SCHAKO’s GREENKIT sends a prioritised warning signal to the lift control. Immediately following, the lift is moved to a defined first evacuation level. However, should this defined first evacuation level be full of smoke - this local detection is likewise done via smoke detectors located there, the lift will automatically move on to the second defined evacuation level. There the lift doors will open automatically, all persons can safely leave the lift and use the guaranteed smoke-free rescue route.

GREENKIT MAKES ADJUSTMENTS

The adjustment of ventilation to building use by means of intelligent monitoring of lift use takes place automatically. In this way, GREENKIT ensures regular and reliable air change in compliance with the requirements of the German Energy Saving Ordinance (EnEV).

GREENKIT MAKES PROVISIONS

The preset temperature range inside the shaft is reliably maintained by means of an integrated thermostat. If the set temperature (ex works 30°C, optionally 35°C) in the shaft head or machine room is exceeded, the NRWG multi-leaf damper will be opened and will remain open until the temperature is again in the preset temperature range.

GREENKIT CREATES CONFIDENCE

During maintenance work or other activities inside the lift shaft, a service key guarantees fresh air supply and thus the safety of the service personnel during the service work.

GREENKIT PROVIDES SAFETY

In emergency situations (e.g. lift breakdown with people trapped inside), ventilation is guaranteed due to connection to an alarm key inside the cabin.

In energetically refurbished buildings with improved air tightness of the building exterior, closed ventilation flaps can immediately stop the thermal in the lift shaft. In the event of a technical breakdown of the lift with people trapped inside the cabin, it may happen that the lift cabin is no longer sufficiently ventilated. The temperature in the cabin rapidly rises above 36°C. In combination with a respiratory and heart rate of the passengers increased by stress, this creates a genuine O₂ or CO₂ emergency situation.
COMPONENTS AND ARRANGEMENT

ARRANGEMENT OF THE COMPONENTS

1. CENTRAL UNIT [ -1- ]
   with integrated thermostat, cycle counter and emergency power supply battery (optional)

2. REPORTING THE LIFT STATUS [ -2- ]

3. LIFT STATUS TRANSMITTER -LST [ -2.1- ]
   Autonomous transmitter unit with integrated temperature, air quality and accelerations sensors

4. LIFT IN [ -2.2- ] NOT SHOWN
   direct connection to the lift control

5. SMOKE EXHAUST KEY [ -3- ]
   with integrated ventilation function (optional) for manual triggering in case of smoke
   Status display via LED

6. SMOKE DETECTION COMPONENTS [ -4- ]

7. SMOKE DETECTOR [ -4.1- ]
   Optical fire alarm working by the scattered light principle according to EN 54-7

8. LIFT BEAM [ -4.2- ]
   Motorised linear smoke detector with optical infrared light beam according to EN 54-12

9. NRWG MULTI-LEAF DAMPER [ -5- ]
   For smoke extraction and ventilation according to EN 12101-2 as models JK-180MB and JK-190
The GREENKIT central unit is distinguished by a handy and compact housing, with increased modularity. It has been developed to be easy to mount and to be immediately ready for use when it is connected for the first time.

- can be configured, if required, via the DIL coding switch (all systems are delivered in operational condition)
- integrated thermostat for ventilating the lift shaft and thus the lift cabin when the temperature is exceeded
- integrated radio transmitter for communication with the wireless lift status transmitter (LST)
- integrated cycle counter for monitoring the motors
- emergency power supply batteries for securing the ventilation function in case of power failure (optionally for spring return actuators, obligatory when using DC motors)
- convenient commissioning thanks to 230 V plug-in connection
- simple connection of additional components thanks to 8 RJ45 sockets with LED status displays/line status (fault and alarm)

<table>
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<th>Connection sockets</th>
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<tbody>
<tr>
<td>Smoke MR</td>
</tr>
<tr>
<td>Smoke SHAFT</td>
</tr>
</tbody>
</table>

- Smoke MR: To connect a point smoke detector in the machine room
- Smoke SHAFT: To connect Lift Beam or a point smoke detector in the lift shaft
- COM 1: Outputs / Inputs
- PB Display: To connect an alarm and ventilation key with display function
- COM 2: Outputs / Inputs
- Switch: To connect other components (thermostat, humidity sensor, etc.)
- M2: To connect a multi-leaf damper (includes RJ45 switch, connection of 2 dampers possible)
- M1: To connect a multi-leaf damper (includes RJ45 switch, connection of 2 dampers possible)

### Technical data

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<td>Current OUT</td>
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<tr>
<td>Potential-free contacts</td>
<td>max. voltage 60 V DC max. current 1 A</td>
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<tr>
<td>Thermostat setting</td>
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<td>Cycle counter</td>
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<td>Housing colour</td>
<td>RAL 7035 light-grey</td>
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</table>
REPORTING THE LIFT STATUS [-2-]

LIFT STATUS TRANSMITTER LST [-2.1-]

As addition for the central unit, it contains the entire intelligence in a compact housing. The Lift Status Transmitter (LST) detects the presence of passengers in the lift cabin and controls the air quality in the lift shaft and thus in the cabin. Ventilation mode and ventilation time can be adjusted to the needs of the building users (lift users) at any time.

By monitoring lift use, the LST automatically detects changes in building use and adjusts the ventilation automatically to the demand. It constitutes a closed unit that communicates with the central unit or with the remote radio receiver (LSR) via a wireless radio transmitter (LST). Its range (when visual contact is available) is 60 m, otherwise an LSR must be provided.

If no status information (e.g. breakdown, travel, stop) is available via potential-free contacts of the lift control, this module will perform demand-optimised ventilation of the lift shaft.

An integrated temperature sensor measures the ambient temperature exactly where the measured result is most important - directly at the cabin and not at any point inside the shaft. The air quality sensor is integrated into the LST and transmits information regarding the hygienic air demand to the receiver unit via a radio transmitter. The transmitter is equipped with a built-in acceleration sensor. It can thus detect the movement of the lift and send this information to the receiver unit. A lift breakdown is determined intelligently by the innovative sensors. The module can be supplied with power by the 230 V AC voltage present on the roof via an integrated separate fuse. Alternatively, a lithium battery is also available, which serves as an autonomously functioning power supply for about 3 years.

- Ventilation mode and time are set via DIP switches, without the need for tools.
- Light-emitting diodes inform on the status of the transmitter, if required

LIFT IN [-2.2-]

Direct connection (via RJ45 cable) to potential-free contacts of the lift control for information on the status (e.g. breakdown, travel, stop) of the lift. NO contact, which opens in the event of a collective fault and in Maintenance mode.

Should this not be possible, a lift status transmitter must be provided.

SMOKE EXHAUST KEY [-3-]

In addition to permanent monitoring of the lift shaft by the smoke detection system, it must be possible for an alarm to be triggered by a smoke exhaust key on the main evacuation level and smoke extraction to be initiated.

- with integrated ventilation function
- for manual triggering in case of smoke
- Status display via LED
SMOKE DETECTOR [- 4.1 -]

Optical fire alarm working by the scattered light principle

- Operating voltage: 8 - 28 V DC
- Alarm current: 9.2 mA
- Type of protection: IP40
- VdS approval: G292226
- with individual display: Alarm

Number depending on shaft height (maximum 32 m)

- up to 8 m: 2 smoke detectors (1 end + 1 normal)
- 8 - 20 m: 3 smoke detectors (1 end + 2 normal)
- 20 - 32 m: 4 smoke detectors (1 end + 3 normal)

LIFT BEAM [- 4.2 -]

Motorised infrared smoke detector with optical light beam for active early fire detection

- CE-certified to EN 54-12
- Automatic alignment of the infrared beam (Auto-Align)
- Compensation of building movements and contaminations (Auto-Optimise)
- Alarm and fault delay adjustable
- Supply voltage: 24 V DC
- Operating current: max. 50 mA
- Optical wavelength: 850 nm
- Angle deviation of the detector from/to: max. 0.3 degrees
- Angle deviation of the reflector from/to: max. 5 degrees
- Supply voltage: Optical axis
- Operating current: Optical axis
- Supply voltage: < 50 m: 150 x 350 mm
- Operating current: > 50 m: 250 x 350 mm

Configuration depending on shaft height (maximum 200 m)

- 08 - 49 m: 1 controller, 1 beam, 1 small reflector
- 50 - 99 m: 1 controller, 1 beam, 1 large reflector
- 100 - 149 m: 1 controller, 2 beams, 1 small reflector and 1 large reflector
- 150 - 200 m: 1 controller, 2 beams, 2 large reflectors
NRWG MULTI-LEAF DAMPER

Uncontrolled outflow of heat and energy through permanent openings can be prevented by NRWG multi-leaf dampers. The dampers used ensure effective control of ventilation, but also reliable smoke extraction, if required. To do so, the functionality of the system must also be ensured in adverse weather conditions.

Testing is based on EN 12101-2 - Regulations for natural smoke and heat exhaust ventilators. The sizes of the smoke exhaust openings are regulated by the individual Regional German Building Codes and by the requirements of the lift standard. The smoke outlets must be fitted in positions where the wind cannot have a negative influence on the escaping smoke (MBO/LBO).

BRIEF DESCRIPTION

NRWG multi-leaf damper, consisting of dimensionally stable profiled frame made of 1.5 mm galvanised sheet steel, with joint flow-favouring hollow-body blades adjustable in opposite directions made of torsion-resistant aluminium profile:
- for smoke exhaust and ventilation
- inspected and certified to EN 12101-2
- housing and damper leaf leakage to DIN EN 1751
- with spring return actuator or DC motor
- JK-180MB for flush-mounted assembly on wall/ceiling
- JK-190 for surface mounting on wall/ceiling

Note

A detailed description of the NRWG multi-leaf dampers can be found in the relevant SCHAKO product documentation.

MODELS

JK-180MB

JK-190
OVERVIEW CENTRAL UNIT
WEATHER PROTECTION GRILLES

ALAS (with JK-180MB)

Fastening points

Detail

Einbaudetail Bolostiegenglastaseho

Verschraubung bauseit vernetzt

ALAS selected according to damper size (free cross-section)

Please note: The free cross-section of the NRWG multi-leaf damper has been adjusted to that of the ALAS.

<table>
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<tr>
<th>JK-180MB</th>
<th>360</th>
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WEATHER PROTECTION HOOD

- Flat-roof plinth with connection point on multi-leaf damper
- Roof hood or louvre hood as weather protection
- Access possible to NRWG for maintenance and actuator replacement
- To be mounted before attaching the thermal roof insulation (connection to insulation on site)

FREE CROSS-SECTION (FQ) - ROOF HOOD

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FREE CROSS-SECTION (FQ) - LOUVRE HOOD

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MODELS

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<th>Louvre hood</th>
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Construction subject to change
No return possible

Plinth model

rectangular (JK-180MB)

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square (JK-190)

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Other dimensions on request

Hood model

Roof hood

rectangular (JK-180MB)

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Louvre hood

rectangular (JK-180MB)

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SPECIFICATION TEXTS

General preliminary remarks

Lift law
A sufficient amount of breathable air must be supplied to lift users and other persons who are working in the lift shaft or machine room or stay in the lift cabin. The harmonised European standards for person lifts require adequate ventilation of the shaft, and machine rooms must be also adequately ventilated. Lift shaft ventilation systems must also fulfil the requirements of Machinery Directive EC/2006/42 and be CE-certified accordingly.

Building law
The Energy Saving Ordinance EnEV requires that the exterior surfaces of buildings are designed such that they are permanently air-impermeable according to the state of the art. The thinking behind this regulation is that unnecessary heat energy losses through uncontrolled escape of heated building air via previous permanent openings in the lift shaft head should be generally avoided. At the same time, according to the current Regional German Building Code, not only smoke extraction but also ventilation of the lift shafts must be guaranteed for reasons of safety and hygiene.

Hazards in the absence of ventilation
If smoke exhaust openings are simultaneously used for shaft ventilation, the thermal of the air in the shaft could become impaired by closing the opening. This could endanger the fresh air supply to persons inside a lift cabin that has become stuck as a result of a fault. In particular in low-energy houses, energetically redeveloped houses and those built according to the passive house standard, building planning must ensure that sufficient air is supplied.

Moreover, provisions must be made that the work area of the lift maintenance personnel is not adversely affected by poor air quality inside the shaft. The basic safety and health requirements from the Lifts and Machinery Directives require that the environmental conditions under which persons are working in the lift shaft (assembly/service companies, inspection organisations) do not present a health risk.

Risk analysis
On the one hand, CE certification of the lift shaft ventilation system (Directive EC/2006/42) requires a risk analysis. On the other hand, lift shafts involve many other risks, apart from the risk of falling, such as risk of crushing, risk of shearing, risk of limbs being drawn into the shaft, risk during lift maintenance, risk of breakdown with people being trapped inside, etc. This is why the relevant requirements regarding operational working safety must be observed. Accordingly, only specialised personnel may work in lift shafts and machine rooms. The installer has to take all of this into account by preparing a risk analysis with respect to the installation of a lift shaft ventilation system as specified by the Lifts Directive (EC/95/16).

Wiring
For on-site wiring of system components, the cable used must be installed in shielded and halogen-free design according to DIN 0472. All cables must be permanently monitored for short-circuit and cable breakage. The contractor's service includes delivery, ready-to-use installation of all components and commissioning of the system. All cables installed for the system components must be of the plug-in type, and their installation shall be done by the contractor.

Inspection prior to commissioning
Ventilation and smoke removal systems in lift shafts must be checked for compliance with the requirements of the Lifts and Machinery Directives prior to commissioning. This check is carried out as part of placing the lift on the market, while observing Article 0.2.5. of EN 81-1/2 or as a check following a change by an Approved Monitoring Body (ZÜS), taking into account the same article.

Patent rights and registered utility models
The provider confirms that by providing this offer he has obtained all the information available on all patent rights and registered utility models for this system and has not infringed on any patent right. If, after placing the order, it is demonstrated that a patent right was infringed on, the provider shall be liable for any damage resulting from such an infringement. This also includes any claims for damages, renovation costs to obtain an approved system and any costs for experts.
System certification
A closed system for smoke control and ventilation of lift shafts shall be delivered. This system requires a VdS system check to VdS 2594, taking into account directives VdS 2593 (energy supply systems), VdS 2581 (control units), standard draft for control units prEN 12101-9 and the requirements of energy supply systems according to the standard DIN EN 12101-10. Moreover, the system must meet the special requirements of systems for smoke removal in lift shafts according to VdS Leaflet 2895.

Furthermore, the system must be certified in accordance with Machinery Directive EC/2006/42 CE. The required detailed risk analyses must be laid open by the contractor in the offer.

Description of the system
The lift shaft smoke extraction and ventilation system consists of the following components:
- Emergency-power-supplied central unit with integrated status indicator for normal operation, fault, smoke detection and ventilation and operating unit for system settings and maintenance work.
- Linear smoke detector for smoke detection over the entire shaft height.
- Control key for status display (control, ventilation, fire alarm, fault), for manual RWA alarm triggering for smoke and heat exhaust and for manual ventilation.
- Natural smoke and heat exhaust ventilators certified to EN 12101-2 (hereinafter referred to as NRWG), such as multi-leaf dampers with electromotive actuator for horizontal and vertical installation in the lift shaft ceiling or lift side wall.
- Optional ventilation hood for ventilation isolation, which as part of the ventilation concept is connected to the NRWG multi-leaf damper and forms a unit.
- Optional motorised supply air damper for use in low-energy buildings, including spring return motor for installation in the shaft pit area.

Functional description

Requirements to be met in case of smoke detection
Upon detection of smoke in the lift shaft or in the machine room (if available), the central control unit must immediately activate the NRWG multi-leaf damper in the shaft head and machine room (if available), in order to allow it to open completely. At the same time, the supply air damper in the shaft pit area (if available) must be activated, in order to promote the formation of a thermal in the shaft for smoke removal or ventilation.

For further processing, the central control unit shall additionally report an alarm to the shaft control. Furthermore, this information can be made available to the fire alarm system or a GLT (building control system). In addition, the central control unit must be able to process a contact from an external fire alarm system.

Ventilation demand requirements
For compliance with the Lifts Directive, three ventilation stages are required:
- In the event of a lift breakdown with people trapped inside and maintenance work in the lift shaft or machine room area (if available), the central control unit shall detect the ventilation demand and immediately activate the NRWG multi-leaf damper in the shaft head and machine room (if available), in order to allow it to open completely.
- According to demand, the central control unit shall perform hygienic ventilation of the lift shaft for a short period once an hour only if it is in use. This hygienic ventilation shall be adapted intelligently to the varying times of use of each building via the monitoring of lift use.
- The air quality shall be measured permanently and directly on the cabin exterior via a VOC sensor, independently of the cabin position in the shaft, and result in the immediate opening of the NRWG multi-leaf damper as soon as 1500 ppm are reached.

For ventilation control, the information on lift travel and lift malfunctions (breakdown/maintenance) shall be reported individually for each lift cabin, independently of the manufacturer of the lift, by an autonomous lift status transmitter communicating with the central control unit by radio.

Requirements to be met when the temperature is exceeded
When the adjustable allowed temperature in the shaft, at the lift cabin or in the machine room (if available) is exceeded, the central control unit shall immediately:
- activate the NRWG multi-leaf damper in the shaft head and machine room (if available), in order to allow it to open according to demand as a preventive measure,
- simultaneously activate the supply air damper in the shaft pit area (if available), in order to promote the formation of a thermal in the shaft for heat removal.

The air temperature shall be measured permanently in the shaft head and directly on the cabin exterior via a temperature sensor, independently of the cabin position, and result in the immediate opening of the NRWG multi-leaf damper as soon as the temperature reaches 30 °C.

Requirements to be met in case of power failure or disconnection
The system is supplied with emergency power via a maintenance-free battery. In case of power failure, it must be guaranteed that the ventilation and smoke removal openings can still be reliably opened. This can be done, for example, via battery-backing of the central control unit or spring return actuators (currentless OPEN).

During a malfunction in the central control unit, it must be permanently guaranteed that the relevant openings still open and that the lift is notified via a fault contact.
**RWA SYSTEM WITH VENTILATION FUNCTION**

Lift shaft ventilation and smoke removal system

Dimensions of the lift shaft to be monitored:
- Shaft height: ................. m
- Floor area (L x B): ................. m

### 1 - Central unit (central control unit)

**Performance features**
- Integrated battery emergency power supply
- Smoke detector remote reset, cable monitoring for short-circuit and interruption
- Integrated earth-fault monitoring
- Integrated temperature sensor
- Connection possible for optical and acoustic alarm units
- Connection possible for temperature controls and air quality sensor
- Potential-free transmitter contact for reporting alarms and faults to the lift control
- 2 smoke detection lines (shaft and machine room)
- 2 actuator groups for connecting spring return motors or 24 V RWA actuators
- Radio receiver unit for communicating with the lift status transmitters
- 2 inputs for connecting the contacts for lift breakdown and maintenance mode provided by the lift control
- Connections of all components via RJ45 plug connections
- Fault and alarm display (LED) individually for each cable connection

**Technical data**
- Power supply: 230 V AC / 50 Hz, 90 VA
- Protection type: IP30
- Temperature range: -5 °C ... +50 °C
- Housing: robust, non-flammable plastic housing

**Product** ................. SCHAKO
**Type** ................. GREENKIT

Deliver central unit and mount it ready-for-use in the shaft head area.

<table>
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<th>1 unit</th>
<th>Price per unit</th>
<th>Total price</th>
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**2 - Lift Status Transmitter**

for extended ventilation control functions

Autonomous transmitter unit for detecting and reporting lift use (breakdown, maintenance, travel), presence of passengers in cabin and for monitoring air quality and air temperature at the cabin.

**Performance features**
- Motion detection of the lift car
- Setting of ventilation mode and ventilation cycles dependent on demand via DIP switches
- Breakdown detection with persons trapped inside
- Monitoring of the air quality at the cabin by integrated VOC sensor
- Temperature measurement via temperature sensors at the cabin
- Fail-Safe: When no radio contact with the central unit is available, automatic opening of the NRWG
- Maintenance mode: Automatic opening of the NRWG

**LED displays**
for maintenance, communication and functional checks

**Technical data**
- Power supply: 230 V
- Battery-backed
- Frequency: 868.3 MHz
- Range: at least 60 m (when visual contact is available), for a higher shaft or when no visual contact is available radio repeaters must be included in the offer
- Temperature range -5 °C ... +50 °C

**Product** ................. SCHAKO
**Type** ................. GREENKIT

One transmitter unit per cabin, all required units must be specified in the total price.
Deliver and mount ready-for-use.

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<th>...... units</th>
<th>Price per unit</th>
<th>Total price</th>
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3 - Motorised infrared smoke detector with optical beam for active early fire detection in lift shaft

The system comprises three components: one infrared transmitter/receiver unit, one infrared reflector and one control unit.

A clearly delimited beam is passed from the transmitter to a reflecting prism, which reflects the infrared beam to the receiver for evaluation. If the beam is interrupted by fire smoke, this will trigger an alarm. CE-certified to EN 54-12, specially developed and inspected for use in the lift shaft.

- Integrated LASER for selective teach-in of beam and reflector
- Auto-Align - Automatic alignment of the infrared beam
- Auto-Optimise - Compensation of building movements and contaminations
- Alarm and fault delay adjustable

Technical data
- Supply voltage: 24 V DC
- Operating current: max. 50 mA
- Optical wavelength: 850 nm
- Angle deviation of the detector from the optical axis: maximum 0.3 degrees
- Angle deviation of the reflector from the optical axis: max. 5 degrees
- Relative humidity (non-condensing): 93 %
- IP54
- Operating temperature: -5 ... +50 °C
- Simple alarm and fault verification without additional consumables
- Connections via RJ45 plug-in connection

Please keep in mind that the available free clearance for the optical beam is small. In shafts up to 50 metres in height, it must be ensured that the infrared smoke detector works perfectly at a clearance between cabin and shaft wall 15 cm in depth and 35 cm in width. In shafts more than 50 metres in height, perfect operation of the infrared smoke detector must be ensured with a clearance of 25 cm in depth and 35 cm in width.

Product .................................. SCHAKO
Type .................................. Lift Beam

Deliver and mount ready-for-use.

1 unit  Price per unit .................... Total price ............

4 - Manual control for ventilation and smoke exhaust incl. status display

Functions
- RWA "OPEN", RWA "Reset"
- Ventilation "OPEN", Ventilation "CLOSED"
- as required by current MBO

Displays
- Readiness (green)
- RWA alarm triggered (red)
- Fault display (yellow)
- Ventilation (blue)

Technical data
- Power supply: 24 V DC (18 - 28 V)
- Enclosure: elegant, particularly robust surface-mounted aluminium enclosure
- Colour: RAL 2011, orange
- Connection via RJ45 plug-in connection
- Integrated connection for fire alarm on main evacuation level

Scope of delivery
- Lockable housing with operating unit
- Labelling sheet
- Break-type glass and key

Product .................................. SCHAKO
Type .................................. RT45 LT-PM

Deliver and mount ready-for-use.

1 unit  Price per unit .................... Total price ............

5 - Point smoke detector for active early fire detection in the machine area

Technical data
- Operating voltage: 8 - 28 V
- Alarm display: LED red
- Protection type: with PG base plate
- At least IP30
- Enclosure: ABS plastic white
- Idle current: max. 55 µA
- Verification possible via smoke spray

The arrangement of the point smoke detectors in the shaft must have been declared approved via a Declaration of Conformity by an Approved Body.

Product .................................. SCHAKO
Type .................................. PM

Deliver and mount ready-for-use.

1 unit  Price per unit .................... Total price ............
6 - NRWG multi-leaf damper

**JK-180MB**

Multi-leaf damper, housing leakage and leakage with closed damper leaf to DIN EN 1751, consisting of a dimensionally stable profiled frame made of 1.5 mm galvanised sheet steel, frame depth 180 mm with joint flow-favouring hollow-body blades adjustable in opposite directions made of torsion-resistant aluminium profile. The blades are adjusted by means of external plastic gear wheels arranged on one side.
- with sintered bearing
- TÜV inspected according to VDI 6022 Sheets 1+2 and DIN EN 1751
- With mounting plate for flush-mounted installation in wall and ceiling

Electric actuator with spring return (currentless OPEN)
- 20 Nm, 24 V AC/DC, 0-10 V DC, RJ45 plug (-E72)

**DC motor**
- 10 Nm, 24 V DC, RJ45 plug (-E71)

**Accessories**
- Wall anchor package 1 (-M1)

Tested and certified to DIN EN 12101-2 in at least the following model:
Re1000, SL0, T(00), WL1500, B300, type B with double function.

**JK-190**

Multi-leaf damper, housing leakage and leakage with closed damper leaf to DIN EN 1751, consisting of a dimensionally stable profiled frame made of 1.5 mm galvanised sheet steel, frame depth 190 mm with joint flow-favouring hollow-body blades adjustable in opposite directions made of torsion-resistant aluminium profile. The blades are adjusted by means of external plastic gear wheels arranged on one side.
- with sintered bearing
- TÜV inspected according to VDI 6022 Sheets 1+2 and DIN EN 1751
- For wall / ceiling installation (surface-mounted)

Electric actuator with spring return (currentless OPEN)
- 20 Nm, 24 V AC/DC, 0-10 V DC, RJ45 plug (-E72)

**DC motor**
- 10 Nm, 24 V DC, RJ45 plug (-E71)

**Accessories**
- Wall anchor package 2 (-M2)
- Wall anchor package 3 (-M3)

Add-on parts JK-190
- Mounting bracket corner mounting (-EBW-E)
- Mounting bracket edge mounting H side (-EBW-R-H)
- Mounting bracket edge mounting B side (-EBW-R-B)
- Support sheet (-AB)

Tested and certified to DIN EN 12101-2 in at least the following model:
Re1000, SL0, T(00), WL1500, B300, type B with double function

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**Weather protection grille**

External air intake or return air grille with fixed, rain-repellent blades and back-fitted wire mesh grid.

**Option**
- Frame and blades made of galvanised sheet steel, with galvanised steel wire mesh grid.

**Product**
- SCHAKO type ALAS

**Option**
- Frame and blades made of natural or natural colour anodised aluminium (E6/EV1), with wire mesh made of galvanised steel.

**Product**
- SCHAKO type ALAS-Alu

**Option**
- Frame and blades made of copper, with wire mesh grid made of stainless steel 1.4301 (V2A).

**Product**
- SCHAKO type ALAS-Cu

**Accessories**
- --- perforated mounting frame (-ER) made of primed angular steel 30/30/3 (unperforated with pre-delivery)
- --- self-regulating plastic heating strip
- --- self-regulating plastic “top” heating strip

**Nominal size**

**Acceptance**

System acceptance and handover of the system in the presence of the client and delivery of all required documentations.

**Maintenance**

Annual maintenance of the system by a service company authorised by the manufacturer, including all required consumables, excluding any spare parts
ORDER DETAILS

GREENKIT - Smoke extraction and ventilation system for lift shafts

Technical documentation

Order details |

If no order details are given, the model highlighted in colour will be delivered!
**PRIOR TO ASSEMBLY AND COMMISSIONING**

Each SCHAKO product comes with instructions on [Safety / Transport / Disposal] and [Installation / Commissioning / Maintenance].

**MARKING**

The product is labelled with the following marking in accordance with the Construction Products Regulation (BauPVO) EU 305/2011:

![CE](image)

The operating safety of the devices is only guaranteed when used in accordance with their designated use.

**DISPOSAL**

The devices have been prepared in accordance with the RoHS directive restricting the use of certain hazardous substances in electrical and electronic equipment (2002/95/EC). After final decommissioning, the components of the system must be properly disposed of by a competent body.

**TESTS AND STANDARDS**

The GREENKIT smoke extraction and ventilation system for lift shafts fulfills the requirements of the standards and directives listed below.

**Patent**

- Patent protection EP 1890956

**Applied standards**

- RoHS 2002/95/EC
- REACH 1907/2006
- EMC 2004/108/EC
- Low voltage 2006/95/EC
- EN 12101-2
- EN 12101-10
- EN 54-7
- EN 54-12

**Leaflets**

- VdS Leaflet 2895
- VDMA – ZVEI Guidelines

**GREENKIT - Smoke extraction and ventilation system for lift shafts**

Technical documentation

Prior to assembly and commissioning | Maintenance

**MAINTENANCE AND FUNCTION**

It is recommended performing regular maintenance and functional checks of the entire smoke and heat exhaust ventilation system. Maintenance must be performed in accordance with legal regulations (at yearly intervals). Accordingly, functional checks should also be carried out at regular intervals. Maintenance must always be performed by personnel trained for this purpose.

**Note**

Impure and humid air may impair permanent operational safety. If maintenance agreements are concluded for RWA systems, the functional checks of the NRWG should be included in these maintenance agreements.

**GREENKIT**

Maintenance work and functional checks must be carried out at regular intervals and documented according to the assembly manual or the instructions contained in the system operator's documentation.