LAMILUX

LAMILUX BUILDING CONTROL SYSTEMS

ENERGY EFFICIENCY – SAFE – COMFORTABLE

Customized Intelligence

Serving the customer is our first priority

COVER IMAGE: MITTELRHEIN FORUM COBLENZ
A new shopping experience is being opened to the public in the heart of Coblenz: the Forum Mittelrhein. LAMILUX designed and built five glass roofs for the tubular light apertures in the roofs of the highly energy efficient shopping mall built by project sponsor ECE. Due to the great amount of daylight intake and the variable and conveniently controllable flap systems for natural ventilation, the central roof makes a major contribution to energy efficiency and sustainable building management. LAMILUX planned and built all of the control-related ventilation technology in the mall and stairwells.

LAMILUX BUILDING CONTROL SYSTEMS

The safety, energy efficiency and comfort of a building are largely determined by building control systems. They are the key for the sustainable and value-oriented construction of the future.

LAMILUX plans and executes the process of equipping buildings with complex and functionally networked building control systems. As a specialised company with long-term experience in small and large-scale projects, we provide the intelligent control and automation of fire safety, energy efficiency and building comfort.

The LAMILUX CI Philosophy

Customer value is the reason for our existence and is the focus of our activities. This requires harmony, identity and a balance between customer value and company strategy.

These guiding ideas for our company's actions and our day-to-day relationship with our customers are described in LAMILUX's company philosophy:

Customized Intelligence - Serving the customer is our first priority:
This requires outstanding performance and leadership in all areas relevant to customers, particularly in the role of:

- **Leader in quality – for the highest customer benefit**
- **Leader in innovation – for always being ahead in technology**
- **Leader in service – for fast, straightforward, reliable and friendly communication**
- **Leader in expertise – for the best technical and commercial advice on the market**
- **Leader in problem solving – for custom made solutions**

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Preliminary planning
Cost estimate

Design planning
Cost calculation

Approval planning
Execution planning

Construction supervision

Property management

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EVERYTHING FOR ALL PROJECT PHASES FROM A SINGLE SOURCE

From small control solutions to comprehensive building automation in large facilities, LAMILUX provides all services in all of the relevant trades from a single source: from planning and designing the electrical and pneumatic control systems and components to their installation, commissioning and maintenance.

USE OUR SYSTEMS TO CONTROL:

- Smoke and heat exhaust systems
- Flap systems for natural ventilation
- Sun protection and light direction
- Sensor-controlled electric light switching
- Control of mechanical smoke extraction systems and the associated flap systems

CONSULTATION AND PROJECT PLANNING

INITIAL CONSULTATION

We provide you with the full extent of our expertise from the very first time we make contact.

We focus on

- Your requirements and requests
- Your project-specific, general conditions
- Analysis of technical and business parameters
- Initial, specific proposals for implementation
- The present and potential future use of the building

PRE-PROJECT PLANNING

We hammer out every detail of your building control system. We use the best components and systems available on the market to develop your individual, efficient control solutions for:

- NSHEV (natural smoke and exhaust ventilation), MSE (mechanical smoke extraction), SDPC (smoke differential pressure control), natural ventilation, sun protection

In addition to determining the ideal type of system (electrical/pneumatic) and system dimensioning, we provide you with a technical and economic feasibility analysis oriented on the optimum.

CALL FOR TENDER

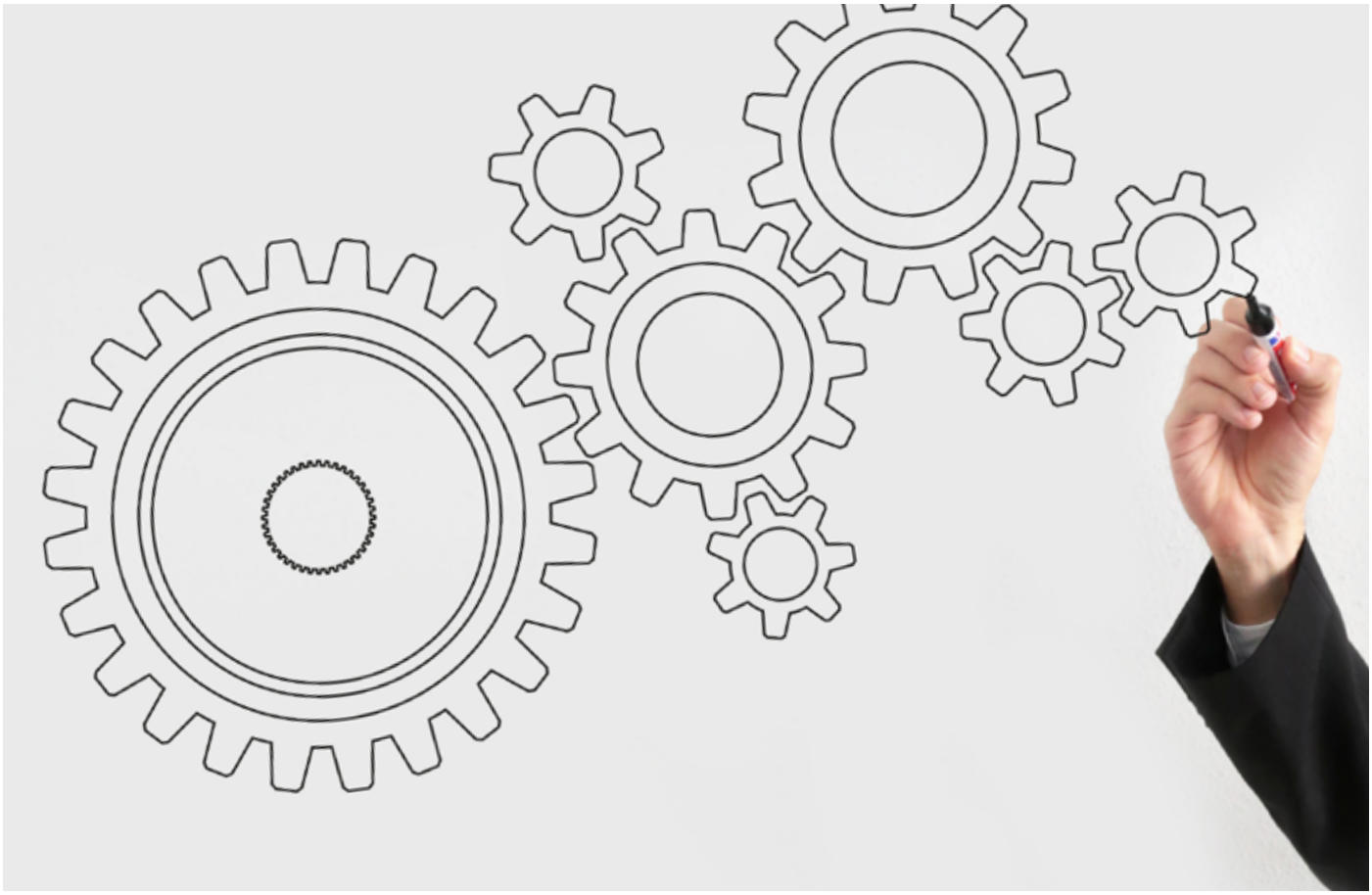
In order to ensure smooth implementation in your interest, we assist you in awarding the project.

- Compilation of service specifications for the entire project with preliminary observations, explanation of interfaces, listing and description of individual items in the main service specifications and information on specific service definitions
- Planning groundwork in conventional formats (such as GAEB)

OFFER PREPARATION

We guarantee you rapid compilation of a detailed, informative offer with market prices.

- Individual, building-specific adaptation for control systems
- Costs specified in a detailed offer depicting the system
- Development of a control solution focused on cost effectiveness and sustainability



DETAILED PLANNING

Our building-related detail planning focuses on smooth implementation and minimising any error potential.

- Arrangement of all interfaces between trades to ensure professional execution on schedule
- Exploitation of synergies with trade-spanning tasks during cooperative work

SYSTEM SUPPLIER

In addition to the development and installation of building control systems (including a comprehensive service package), LAMILUX offers you one of the widest ranges of portfolios and daylight, SHEV and PV systems for energy-efficient and sustainable building shells.

- Rooflight domes, continuous rooflights, glass roof structures
- Flap systems for smoke extraction and ventilation
- Photovoltaic systems integrated into daylight systems and mounted on stands on flat roofs
- Individual control systems for SHEV, ventilation and sun protection
- Wide selection of components available on the market
- System components for mechanical smoke extraction

PROJECT MANAGEMENT

We handle the on-site project management for establishing the building control systems. In addition, project managers at our plant will be available at all times to assist you as your personally assigned contacts.

- Delivery and execution on schedule
- Area-wide network of highly-qualified professional technicians
- Quick reaction and flexible action in the event of construction changes
- Dedicated contact person at the plant
- Project management on site

COMMISSIONING

We plan and accompany the commissioning and acceptance processes for the control systems we design and install.

- Provision of technicians for the performance check
- Arrangement of interfaces between trades
- Expert testing (initial inspection) by an expert accredited under the building code based on the technical inspection regulations of the state in question
- Reporting by the expert with the relevant inspection certificate

SAFETY

The long-standing tradition in the history of our family-owned company, our extensive experience as a manufacturer of daylight and building control systems as well as our consistent success on the market prove that we are a solid and dependable contractual partner.

- We offer you dependable contract execution
- VdS and ISO 9001 certification
- We use our own technicians to ensure the project will be executed reliably
- Quick reaction times
- 100 years of tradition with a great number of corporate and innovation awards

MAINTENANCE

We conduct regular maintenance to ensure that your control systems will function reliably. We ensure smooth technical control processes in your interest to ensure that your building will be safe, comfortable and energy-efficient.

- Trained professional personnel for conducting regular maintenance work
- Network of technicians for quick service on site
- Inventory and adaptation of existing control systems, SHEV and ventilation systems to new building conditions
- Original replacement parts with rapid availability
- Detailed inspection logging

AIR-CONDITIONING TECHNOLOGY

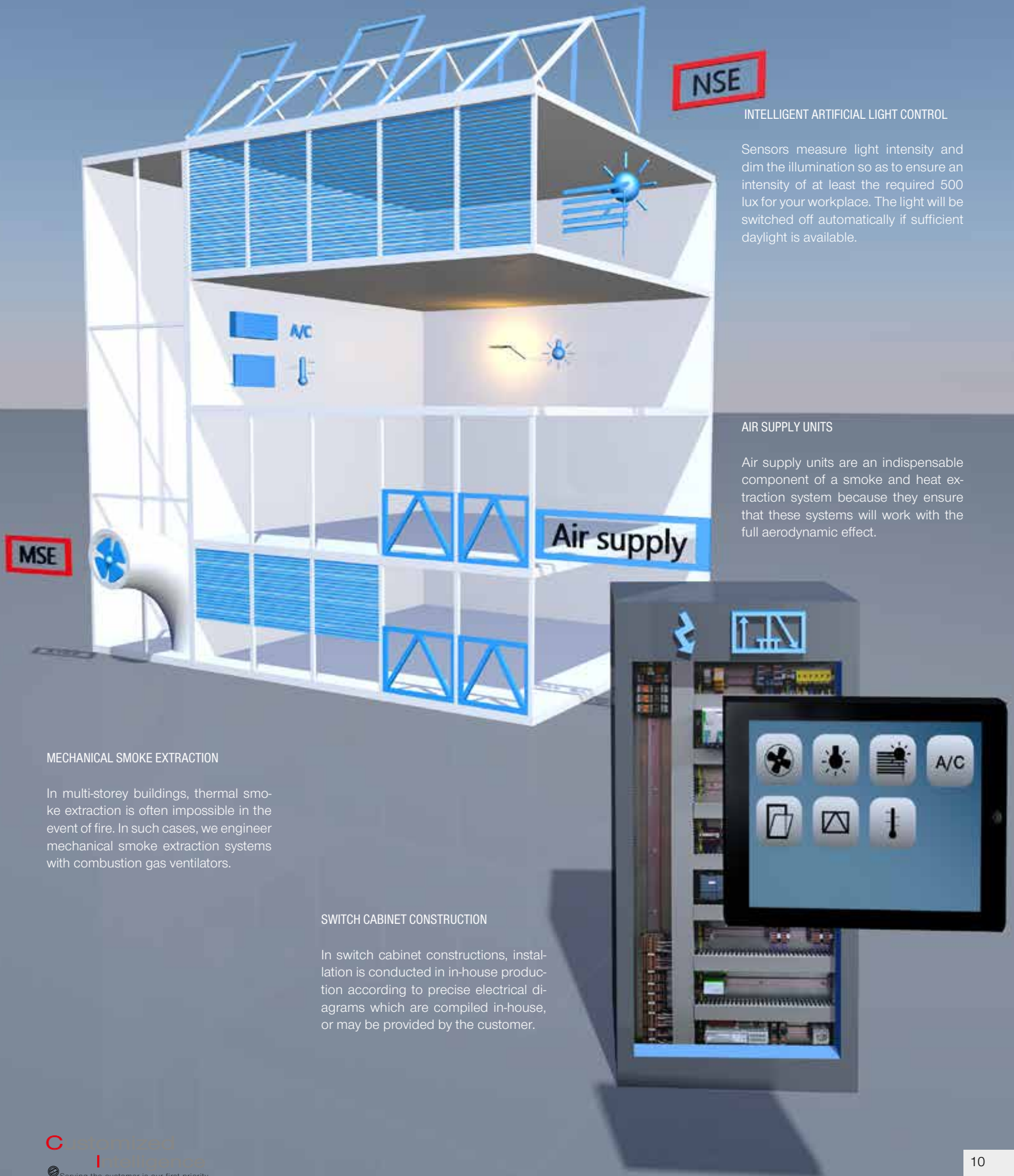
The task of air-conditioning technology is to regulate the temperature, air humidity and air quality at the desired levels – regardless of interior and exterior loads. This is handled by machines and devices which supply or extract heat with suitable air routing.

SHADE SYSTEMS

Daylight directs heat energy into the building as result of the solar effect. This is not done in an uncontrolled way, rather energy input is controlled and regulated by intelligent shade systems. Using energy in this way saves on heating costs.

NATURAL SMOKE AND HEAT VENTILATION

In natural systems, the combustion products are discharged to the outdoors through openings (in roofs or walls) or windows.



INTELLIGENT ARTIFICIAL LIGHT CONTROL

Sensors measure light intensity and dim the illumination so as to ensure an intensity of at least the required 500 lux for your workplace. The light will be switched off automatically if sufficient daylight is available.

AIR SUPPLY UNITS

Air supply units are an indispensable component of a smoke and heat extraction system because they ensure that these systems will work with the full aerodynamic effect.

MECHANICAL SMOKE EXTRACTION

In multi-storey buildings, thermal smoke extraction is often impossible in the event of fire. In such cases, we engineer mechanical smoke extraction systems with combustion gas ventilators.

SWITCH CABINET CONSTRUCTION

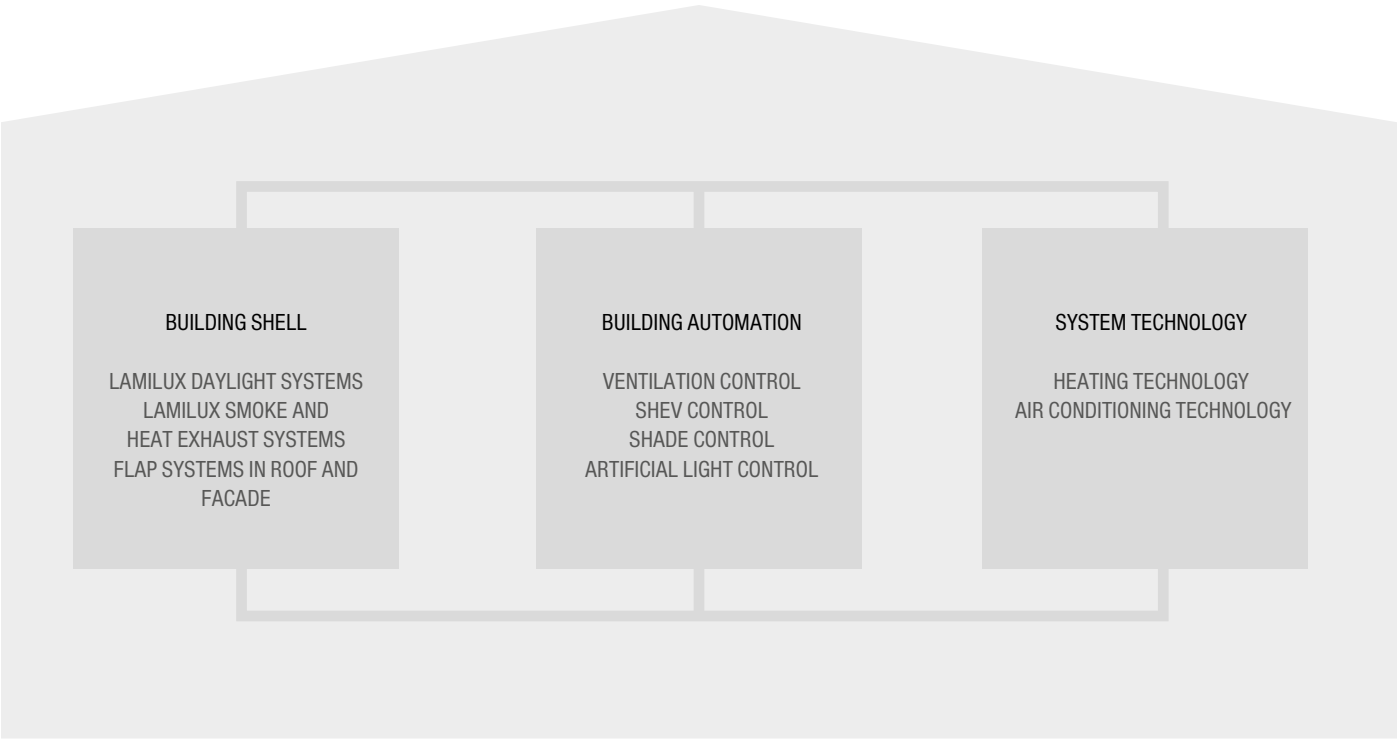
In switch cabinet constructions, installation is conducted in in-house production according to precise electrical diagrams which are compiled in-house, or may be provided by the customer.

LINKING OF SAFETY, ENERGY EFFICIENCY AND COMFORT

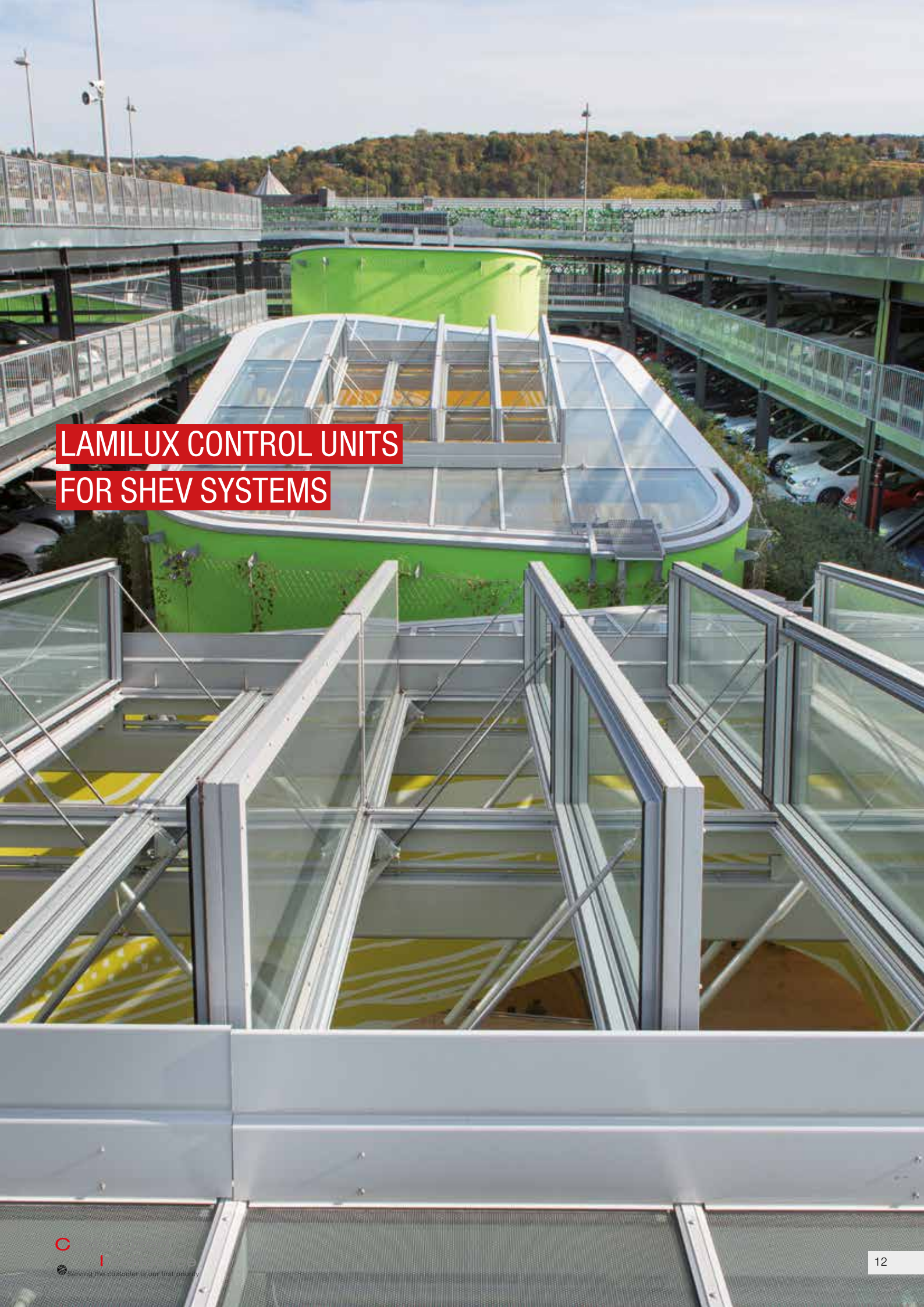
As a system integrator, we link and automate preventative fire protection and climate optimisation, and connect all functions to the building's central control technology. We conduct this for a wide range of building types:

- Industrial, production and sports halls
- Administrative and representational buildings
- Airports and shopping malls
- Cultural and educational buildings
- Domiciles, private and multi-family buildings

Our control solutions range from simple stairwell smoke extraction, SHEV and ventilation control in production halls to technologically sophisticated and complex building control systems in large shopping malls and international airports.



THE INTERACTION BETWEEN THE BUILDING SHELL, BUILDING AUTOMATION AND SYSTEM TECHNOLOGY COMPONENTS FORMS THE BASIS FOR EFFICIENT BUILDING OPERATION.



LAMILUX CONTROL UNITS FOR SHEV SYSTEMS

LAMILUX CONTROL UNITS FOR SHEV SYSTEMS

LAMILUX implements the requirements of comprehensive fire protection concepts for safe smoke and heat extraction by developing intelligent control solutions. And we are at home with all types and sizes of buildings.

OUR SERVICES:

- Development and installation of electrical and electric-pneumatic SHEV control units
- Perfect adaptation of control solutions to the specified fire protection concepts
- Control of the SHEV flaps in roofs and facades
- Project planning and selection of all system components such as switch cabinets (from in-house production), flap systems and drive units
- Control units as stand-alone solutions or integration into building management systems
- Complete installation and wiring

SHEV CONTROL UNIT IN ALL BUILDINGS

LAMILUX control systems ensure reliable SHEV control in buildings of all sizes. We develop our control solutions on an electrical or electric-pneumatic basis – depending on individual, safety related requirements and the building type.

BUILDING TYPES

- Industrial, storage, sports, event and trade fair halls
- Administrative and public authority buildings as well as office complexes
- Cultural and educational buildings as well as nurseries and recreational facilities
- Shopping malls and representational buildings

CONTROLLED AND AUTOMATED SYSTEMS

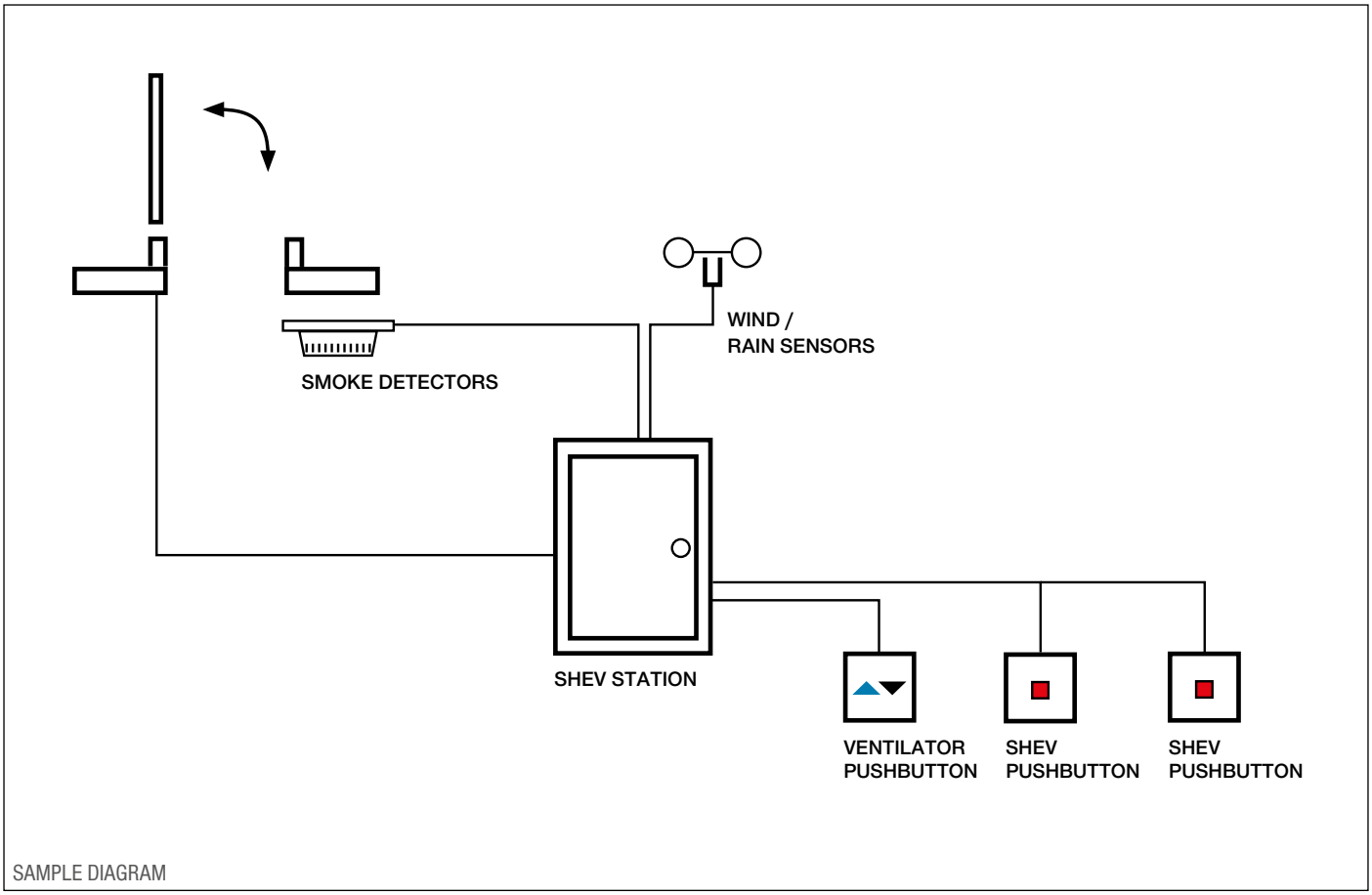
- SHEV domelights and flat roof windows
- SHEV devices in continuous rooflights
- SHEV flaps in glass roof structures and facades
- Air supply units
- Doors

APPLICATION-ORIENTED COMPLETE SYSTEMS:

SHEV IN STAIRWELLS - Page 14

SMOKE EXTRACTION IN LIFT SHAFTS - Page 15

SENSOR SYSTEM FOR WIND-DIRECTION-CONTROLLED SHEV SYSTEMS - Page 16



SAMPLE DIAGRAM

SAFE COMPLETE SYSTEM IN STAIRWELLS

The installation of a demonstrably reliably functioning systems for discharging smoke from stairwells is an important requirement in international building codes. For this purpose, it must be possible to control the smoke and heat exhaust systems (SHEV) electrically as well as off-grid.

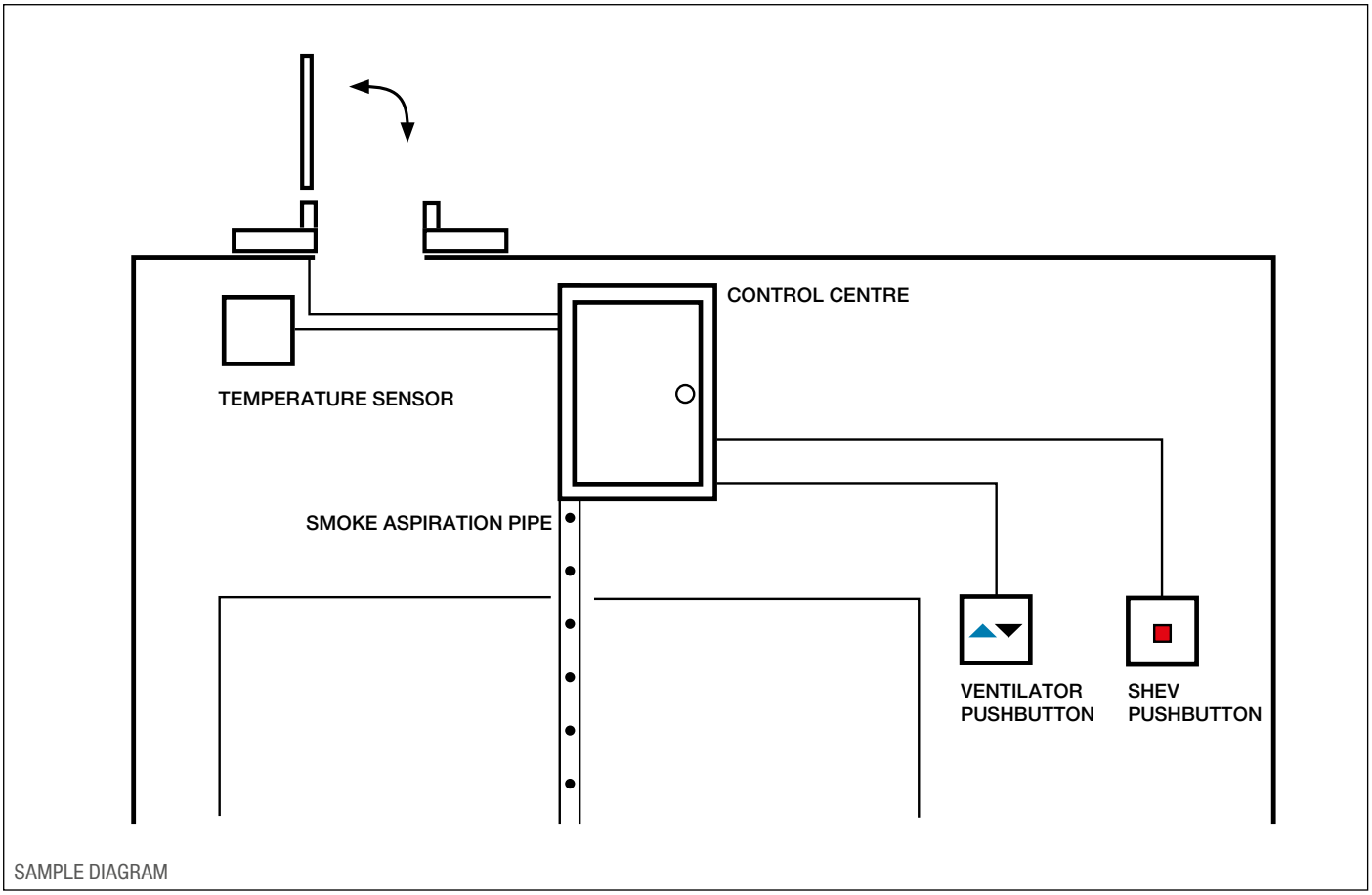
LAMILUX offers complete SHEV solutions specifically designed for use in stairwells which have proven themselves many times in large and small buildings alike.

SYSTEM FEATURES

- Network independent electrical control
- Complete kit with all required motors as well as connection and assembly instructions
- Quick and simple installation by electricians
- Suitable for SHEV flaps in the roof: LAMILUX CI System Rooflight Dome F100 (optionally available PETG glazing for fire protection class B1) or LAMILUX flat roof windows (CI System Glass Element FE/FP/FW) or on-site flap and drive unit combinations
- Also controls SHEV window sashes in facades and roofs
- Also suitable for ventilation functions

SYSTEM EQUIPMENT

- Electric motor (24 V) with integrated power cut-off
- Control unit for a maximum of two motors with control connectors for SHEV and ventilation buttons, as well as various optional peripherals (such as smoke detectors, heat detectors or wind and/or rain sensors)
- Two SHEV buttons with visual display
- Air vent button



SAMPLE DIAGRAM

SMOKE EXTRACTION FOR LIFT SHAFTS

Keeping smoke out of lift shafts is one of the most important statutory fire protection provisions for saving human life in the event of fire.

LAMILUX offers a proven complete system for safe smoke extraction from lift shafts which is used in a wide variety of building types – from administrative and residential buildings to airport terminals and shopping malls. The big benefit of the LAMILUX solution: It offers impressive energy efficiency as well!

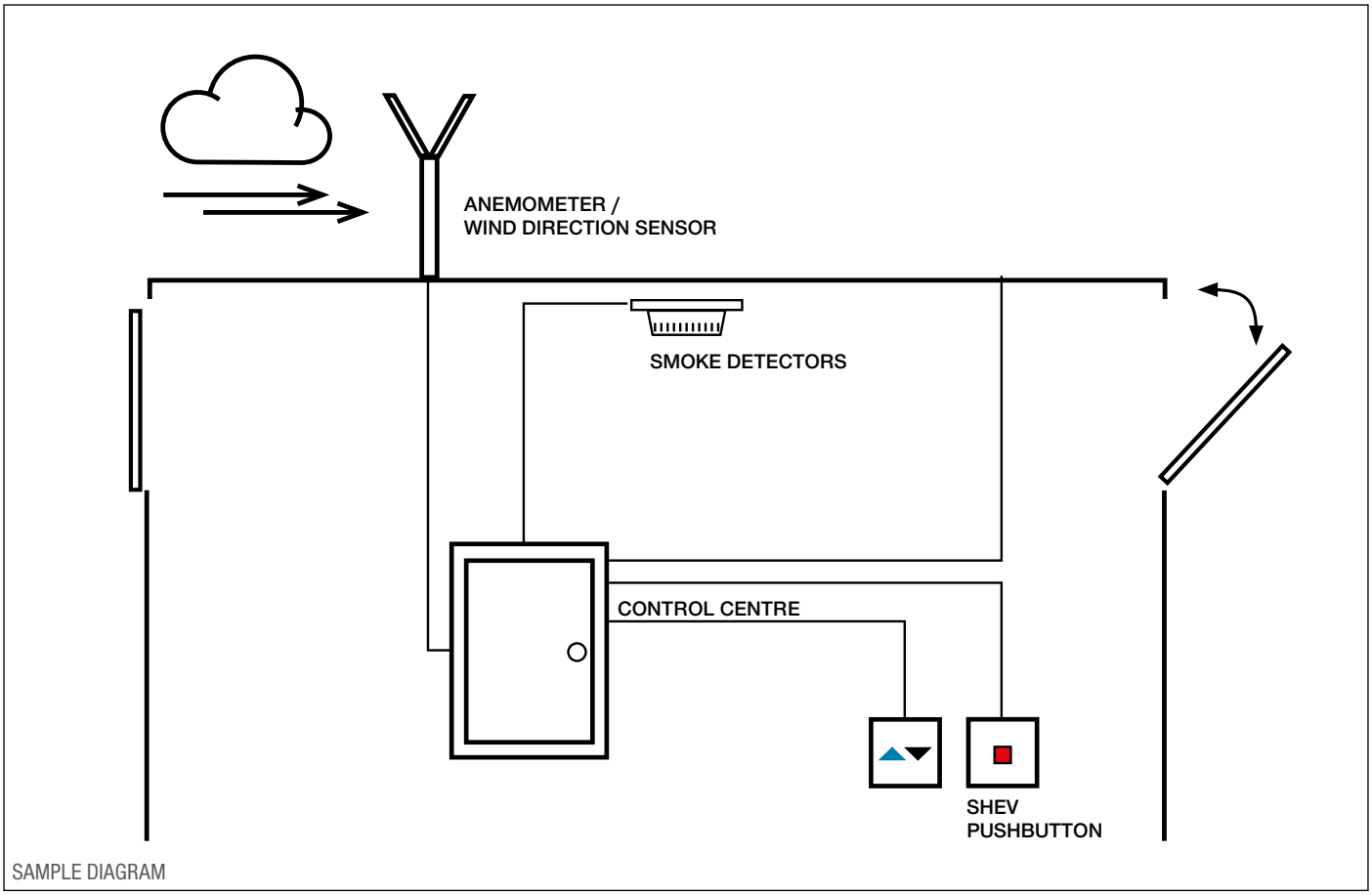
SYSTEM FEATURES

Safety
- Continuous smoke gas monitoring for the whole lift shaft due to a smoke extraction system
- Reliable smoke discharge through a quick-opening SHEV flap in the shaft roof
- Lift car moves to the safest, smoke-free storey in the event of fire
- Optional integration into building control systems for escape route signalling and escape door opening
- System can be retrofitted into existing lifts

Energy efficiency
- Prevents warm air from escaping from the building shell, since the smoke discharge opening is closed by the SHEV flap in normal mode.
- Natural ventilation in normal mode

SYSTEM EQUIPMENT

- SHEV flap consisting of LAMILUX Rooflight Dome
- Smoke detectors on the evacuation level
- SHEV centre with integrated smoke detection system, incl. pipe system over the entire length of the shaft



SAMPLE DIAGRAM

SENSOR TECHNOLOGY FOR WIND DIRECTION-CONTROLLED SHEV

Wind direction-controlled systems for natural smoke and heat extraction ensure that smoke will be discharged from the building through the facade, even during strong winds and storms.

This is also specified in DIN 18232-2, which requires SHEV control in the facade depending on the speed and direction of the wind. LAMILUX meets this normative requirement in its SHEV control units by using highly sensitive and reliable wind sensors (2D anemometers).

SYSTEM FEATURES

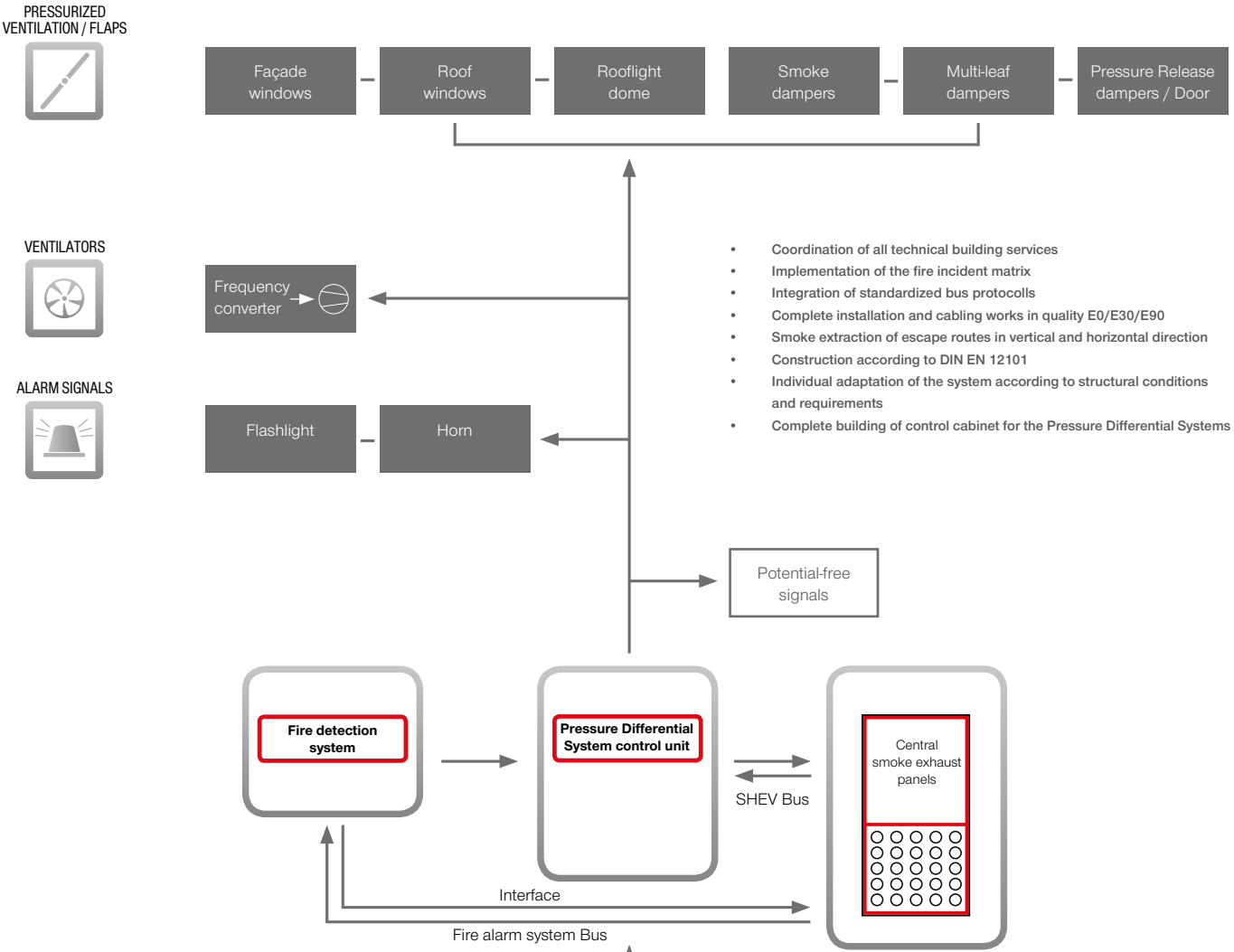
- 2D anemometers for integration into the SHEV control unit as wind sensors: Contact-free, low-maintenance and wear-free determination of wind data via ultrasound (direction / speed)
- System in conformity with DIN 18232-2 and the German High-Rise Building Guidelines (MHHR)
- Control of stagelessly adjustable, automatic low-draught ventilation or night cooling

SYSTEM EQUIPMENT

- Dual sensors are usually integrated in the control units. They offer extremely reliable measurement certainty, since they work independently of one another.
- Can be integrated into the central building control system

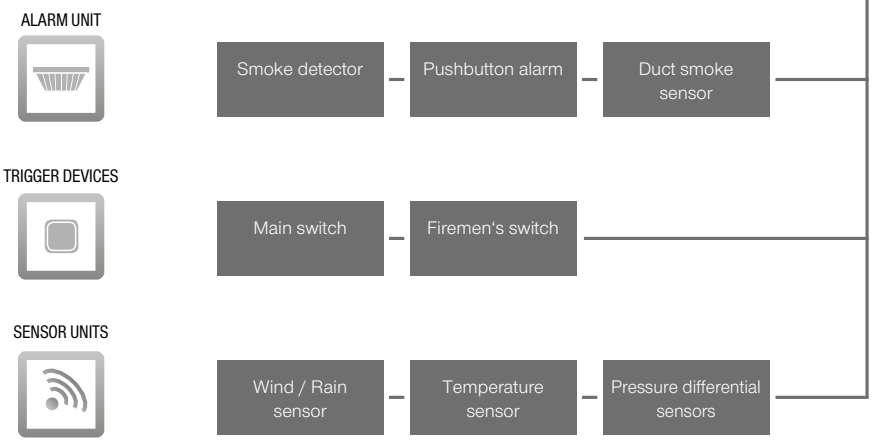
STAIRCASE PRESSURIZED VENTILATION / PRESSURE DIFFERENTIAL SYSTEMS

ACTUATOR TECHNOLOGY / FIELD DEVICES



- Coordination of all technical building services
- Implementation of the fire incident matrix
- Integration of standardized bus protocolls
- Complete installation and cabling works in quality E0/E30/E90
- Smoke extraction of escape routes in vertical and horizontal direction
- Construction according to DIN EN 12101
- Individual adaptation of the system according to structural conditions and requirements
- Complete building of control cabinet for the Pressure Differential Systems

SENSOR TECHNOLOGY / OPERATING UNITS



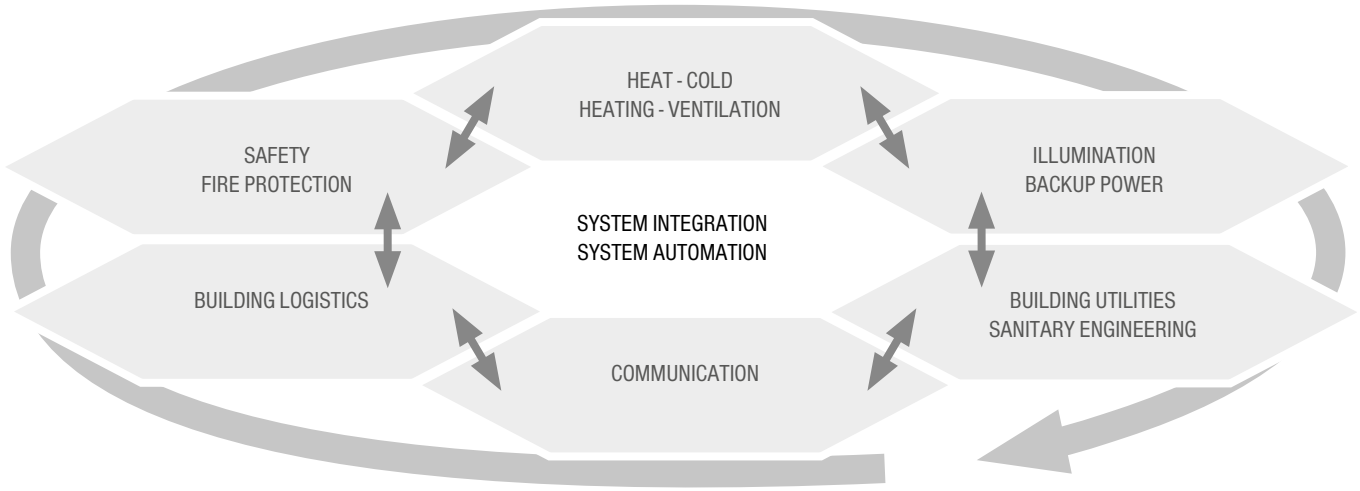
INTEGRATION, CONCEPTUAL DESIGN AND IMPLEMENTATION OF BUILDING CONTROL SYSTEMS

ENERGY EFFICIENCY, COMFORT AND SAFETY

LAMILUX control systems for building automation create a broad potential for high building efficiency and building comfort. We create a logical energy connection between all controllable elements and devices.

OUR CONTROL SOLUTIONS BRING VARIOUS INTERDEPENDENT SYSTEMS IN LINE WITH ONE ANOTHER AND OPTIMALLY COORDINATE THEM TO ONE ANOTHER:

- Flap systems for energy-efficient, natural ventilation in the roof and facade
- Smoke extraction fans
- Fire protection and combination flaps
- Mechanical air outlet flaps
- Shade and light direction devices
- Heat and mechanical climate systems
- Illumination systems



TRADE-SPANNING BUILDING AUTOMATION INCREASES THE ADDITIONAL SAVING POTENTIAL BY UP TO 20% OVER THE BUILDING'S LIFE CYCLE.

We design your individual building control system from small to large dimensions and ensure the perfect coordination, selection and linking of all the necessary components.

INTELLIGENT ENERGY CONTROL

Since the Energy Performance of Buildings Directive (EnEV) is also placing ever-greater requirements on the energy efficiency, control units are an important instrument to achieve greater energy savings. Intelligent control units optimise energy utilisation, since many buildings have already achieved optimal energy efficiency from a purely physical construction/economic point of view.

ELECTRICAL CONTROL SYSTEMS

Electrical control units form the basis for complex SHEV and automation procedures in buildings. Conceived on a modular basis or as an open system, they offer the greatest range of functions in controlling smoke and heat extraction, natural ventilation and sun protection. The electrical control units can also be linked to the central building control technologies via bus connections, which can be used to integrate many additional elements and functions into the control processes.

ADVANTAGES

- Free design of all automation groups of all elements to be controlled
- Free fire incident matrix saving
- Simple hard and software modifications during the building life cycle

SYSTEM POSSIBILITIES

- Can be integrated into the central building control system
- Connection to a PV system for intelligent energy utilisation
- Combination with mechanical smoke extraction and ventilation

ELECTRO-PNEUMATIC SYSTEMS

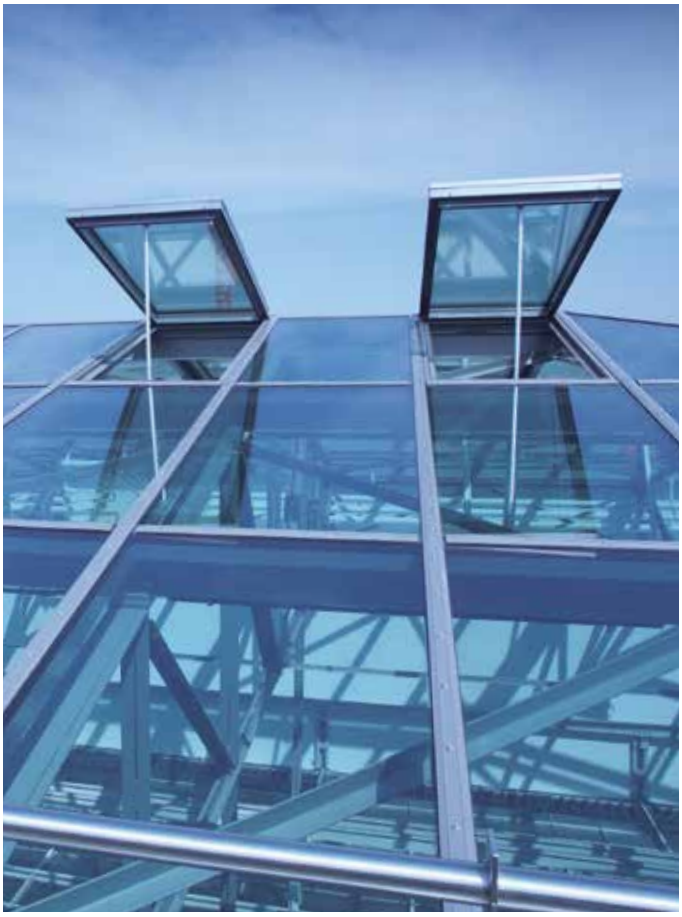
Electro-pneumatic systems offer significant advantages in controlling flap systems in the glass roofs of large-scale buildings. They are based on an electrical control unit which control the compressed air system via electro-pneumatic valves and thus propels the pneumatically operated opening units.

ADVANTAGES

- The cross-sections of the compressed air lines are small, so there is hardly any visible piping
- A large number of flaps makes for great savings compared to an electrical solution
- The stroke movements of the drive units are very quiet
- High frequency of movement and activation rates possible
- Drive units operate with very low wear

SYSTEM POSSIBILITIES

- Electrical SHEV control system with sensor and detection units
- Electro-pneumatic coupling and compressor units
- Compressed air dryers and oil/water separators
- Air pressure tanks / pipe mass storage units
- Piping and pneumatic flap drives



VENTILATION

Natural building ventilation offers great potential for increasing building energy efficiency. However, this requires the flap systems to be intelligently controlled and automated and connected to the central building control system.

The targeted opening and closing ventilation flaps offers outstanding potential for natural, energy-efficient optimisation of the building climate. LAMILUX designs and installs building-specific systems to accomplish this. They are equipped with all electrical control systems, measuring devices and sensors in order to address the individual desired air exchange rates.

SENSORS

- Air quality monitors
- Temperature and time control units
- Wind and rain sensors

CONTROLLED SYSTEMS

- Daylight elements to be opened (rooflight domes, flat-roof windows)
- Flap systems in continuous rooflights and glass roof structures
- On-site flaps and windows in facade

SUN PROTECTION

Daylight intake is an integral part of intelligent concepts for energy-efficient buildings. Natural light saves great amounts of lighting energy and solar heat intake reduces heating costs – especially during the winter months. But despite all of these positive effects, this cannot be allowed to happen uncontrolledly.

LAMILUX uses control units to automate sun protection, thus optimising room temperatures and preventing them from being exceeded. They also prevent glare. This function is already integrated into many electrical LAMILUX control centres and can be activated as an additional comfort function.

SENSORS

- Sun position sensors
- Brightness sensors

CONTROLLED SYSTEMS

- Indoor and outdoor shade mechanisms
- Solar protection screens
- Blinds and slats

VISUALISATION

Everything at a glance – right at your fingertips! Well-arranged operating and control interfaces provide quick information on process flows and system conditions and uncomplicated access to all control units.

CONTROL VISUALISATION

- Display interfaces for laptops, smart phones and tables, or as keyboards
- Streamlined appearance, structured designs
- Individual programming of the user interface
- Information on system statuses can also be accessed remotely

SYSTEM MONITORING

- System and customer-specific diagnosis
- Immediate manual intervention can be made in automation processes, such as ventilation
- Simple operation
- Remote, mobile access
- Individual activation and authorisation
- Uncomplicated software update and other control processes and automation parameters

SMART HOME

Smart, easy-to-operate solutions: LAMILUX now offers its control technologies in the form of compact comfort control packages – intelligent solutions for domiciles and private houses, offices and schools, museums and sales floors.

Simple control elements are used to conveniently control and activate all integral functions of daylight systems such as opening and closing for natural ventilation and the extension and retraction of sun protection systems. Furthermore, various sensors and timing systems can be used to automate important functions, such as the closing of daylight elements during rain and wind, as well as the extension of sun protection blinds.

LAMILUX PLUS PROFESSIONAL – THE INTELLIGENT VENTILATION MANAGEMENT

Scan this to discover more about LAMILUX daylight systems!

ROOFLIGHT DOME F100

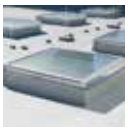
ROOFLIGHT DOME F100 ROUND VERSION
GLASS ELEMENT F100 ROUND VERSION

CONTINUOUS ROOFLIGHT B

GLASS ARCHITECTURE PR60

SMOKE AND HEAT EXHAUST
VENTILATION SYSTEMS

BUILDING CONTROL SYSTEMS



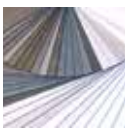
GLASS ELEMENT F

CONTINUOUS ROOFLIGHT W|R

CONTINUOUS ROOFLIGHT S

RENOVATION

SMOKE LIFT TWIN



FIBRE-REINFORCED
COMPOSITES

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