smart Installation
Pluggable, decentralized electrical installation for sustainable building

Building a green future.
## smart Installation with Wieland.

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The EPBD (Energy Performance of Buildings Directive) is restricted only to the energetic aspects of a building, which reflect in the mandatory energy pass, for example. Investors and users, however, place more and more focus on holistic sustainability. Basic ecological, economical and functional data, which are not depicted in the EPBD, are also used for the evaluation.

These criteria are generally hard to evaluate by the investor or tenant. Within the last years, improvements have been made in this respect, due to the development of various certification systems, which independently evaluate the sustainability of a building for a comparison. Two systems have currently established themselves on the German/European market. On the one hand, the LEED (Leadership in Energy and Environmental Design) by the USGBC (U.S. Green Building Council) originally from the US and, on the other hand, the DGNB (German Sustainable Building Council).

Even if the main focus of both systems are different, smart installation concepts with gesis help improve the sustainability of a building in many areas. Regardless of whether aiming at increasing energy efficiency or flexibility of use, Whether focusing on supply or decentralized automation of the user. gesis supports you in achieving your certification target.

Certification procedure?
Green building certification is voluntary, as opposed to meeting the EPBD and issuing the energy pass. The project will be certified by the respective organization. Generally, construction and renovation projects are already accompanied by qualified auditors at an early stage, which ensures, that the targeted certification level is reached. The actual certification is then performed via point systems using checklists.

Pluggable, decentralized power supply with gesis®
The smart Installation concept with consistent three-phase power supply as close to the consumer as possible, not only saves copper, but the voltage drop is also reduced. This favors the evaluation criteria EA-1 (optimizing the energy efficiency) for LEED certification as well as points 16 (building-related costs in the life cycle) and 17 (stability of value) for DGNB certifications.

Furthermore, the pluggable and reusable version of the installation has positive effects. The assessment regarding reuse of building materials (5%/10%, MR-3.1/MR-3.2) from the LEED check lists can be improved. Clearer still are the advantages in the case of a DNGB certification, where not only the assessments from the areas socio-cultural and functional quality (point 28) or technical quality (point 42) are improved;
due to the industrial pre-fabrication of large parts of the electrical installation, the process quality and the quality assurance of the building construction (point 50) are optimized.

Finally, the planning process accompanying the smart Installation concepts has a positive impact on the overall evaluation. On the one hand, credits for the LEED system can be scored for innovative planning (ID 1.1-1.5) which is not possible with a conventional electrical installation from a central main-distribution. On the other hand, points 43-45 (process quality / quality of planning, quality of project preparation (43), integral planning (44), optimization and complexity of the planning approach) are improved.

**Decentralized building automation with gesis®**

Designing the building automation as smart Installation yields further results favorable for certification. The energy consumption, for example, can be minimized, which is a minimum requirement of the LEED system (point EA-P2). For the DGNB the ecological quality is an intrinsic priority, which can be improved in points 1-5 (effect on global and local environment) due to the lower primary energy consumption when using gesis ELECTRONIC.
The clear structures of a smart installation are evident and improve the energy balance of a building.

\[ \text{gesis}\textsuperscript{® NRG} \]

the flexible busbar for efficient infrastructure cabling

\[ \text{gesis}\textsuperscript{® RAN} \]

the project-specific distribution unit for smart Installation
Cabling based on smart installation concepts creates clear installation structures. In combination with the pluggability this leads to a quickly and safely installable system. Cost reduction after the initial installation also occurs for maintenance and change of use during the life cycle of the building.

Due to the consistent three-phase wiring up to just before the consumer also reduces the voltage drop which increases the energy efficiency.

### Advantages distributed:
- lower voltage drop due to three-phase current up to just before the consumer
- smaller main-distribution/utility rooms
- reduced copper demand
- structured cabling

### Advantages pluggable:
- less prone to errors
- safe installation
- industrially pre-assembled quality
- flexible
- reusable
- faster installation
- structured cabling

### Conclusion:
Reduced energy consumption and costs in construction phase and life cycle of a building.
The decentralized structures of a smart installation are evident and further increase the space efficiency of a building.

**gesis® RC**
batteryless radio technology for wireless sensors

**gesis® EIB V**
flat, pluggable KNX actuators for limited space
Modern automation systems reduce the primary energy consumption of a building. Smart installation concepts additionally implement the basic idea of a bus-based system by placing the components close to the consumers.

In combination with pluggability this leads to a flexible system whose functionality can be adapted quickly and easily to change of use throughout the life cycle of a building.

A consistent implementation can also improve the space efficiency of a building due to smaller utility rooms.

Advantages distributed:
- smaller main-distribution/utility rooms
- considerably reduced wiring expenses
- reduced copper demand
- safety (to some extend fully functional during a bus failure)
- flexible to change of use
- structured cabling

Advantages pluggable:
- less prone to errors
- safe installation
- industrially pre-assembled quality
- flexible
- reusable
- faster installation
- structured cabling

Conclusion:
Reduced energy consumption and costs in construction phase and life cycle of a building.
Building MK1 at Arnulfpark in Munich is the first office building in Germany awarded platinum according to LEED V3.0. The neighboring building MK2 was awarded LEED gold.

Wieland has accompanied the electrical planner from an early stage on and provided support in realizing the smart Installation concept. Therefore, the planner was able to develop the optimal solution for the required application. Easily comprehensible overviews enhanced the comprehension and acceptance of the investor.

The required flexibility with a large number of possibly rented areas on each floor were significantly supported by the smart Installation concepts.

The pluggable automation components at distributed locations enable a quick realization of short term changes of use. For the optimal conceptual design the planner was supported by Wieland project managers.

Wieland components:

- **gesis® EIB V** for distributed, directly pluggable control of the roller blind drives and reception for EnOcean wireless radio switches
- **gesis® RAN** for distributed, directly pluggable control of the roller blind drives
- **gesis® RM** modular automation system for cost-efficient and flexible extension of the **gesis** RAN-distribution unit, tailored to the locally required functions
- **gesis® DALI** for cable saving, flexible lighting control
- **gesis® RC** for manual control of lighting and roller blinds with EnOcean switches
- **gesis® CON** for structured, pluggable cabling of lighting and roller blind drives

▲ For connecting the batteryless EnOcean radio system to the KNX building automation, decentralized, directly pluggable gateways were used.

▲ The smart Installation concept was simulated beforehand using **gesis** PLAN and introduced to the client.
The optimal types and numbers were agreed with the planner using easily comprehensible overviews.
Documented sustainable construction.

Further references

Süddeutscher Verlag, Munich

The first office building in Germany to be awarded LEED gold, is the administrative building of Süddeutscher Verlag in Munich. Since many properties have already been equipped with Wieland technology, the smart Installation concepts were also favored for the new buildings. In close cooperation between client, electrical engineer and the Wieland project management, an infrastructure based on flat cable systems was created for supplying the decentralized, pluggable distributor units and floor-boxes. The distributor units contain the automation components used for controlling the distributed air conditioning, lighting and sunlight protection.

Wieland components:

- **gesis® RAN**: for distributed, directly pluggable control of lighting, roller blind drive, air conditioning as well as for decentralized distribution and safety units for the 230/400 V infrastructure in the raised floor.
- **gesis® CON**: for supplying the 230 V infrastructure up to the desk and for wiring the bus technologies for air conditioning, lighting and roller shutters (DALI and LON).
- **gesis® NRG**: for supplying the 230/400 V infrastructure in the raised floor.

Photographer: Claus Graubner; architects: GKK+Architekten Prof. Swantje Kühn, Oliver Kühn.
Neue Börse, Eschborn

“The Cube”, the new Deutsche Börse head office in Eschborn, is the first high-rise office building in Germany awarded LEED platinum. Based on positive experience from several other projects, the contractor from HKL favored the familiar smart Installation technology with pre-assembled gesis® RAN distribution units. Furthermore, the thermal drives were supplied by Wieland with pre-assembled, pluggable connection cables, which were mounted and assembled quickly and safely on site.

smart Installation concepts were also used for wiring the dimmed lighting and the floor-boxes. For example, a pluggable design was chosen as the supply for the floor-boxes. For safe differentiation two different sets of coding are used for standard electrical power supply and IT network. To minimize line loss, the three-phase cables were installed as close to the consumer as possible.

Wieland components:

gesis® RAN for distributed installation of the single-room controllers for controlling the heating/cooling ceilings

gesis® CON for safe and quick connection of thermo drives via pre-assembled cables as well as for the pluggable version of the lighting and floor-box cabling

The single room controllers were installed decentralized in the floor using preassembled gesis® RAN distribution units.

A pluggable version was chosen for the wiring of the dimmed lighting.
### Technical data:

#### Protective devices
- **Overvoltage protection**
- **Other protective devices**

#### Building automation
- **Number of binary inputs**
- **Lighting control type**
- **Number of groups**
- **Blind / shutter control type**
- **Number and groups**
- **Heating control**
  - **Control type**
  - **Number of outputs**

#### Miscellaneous
- **Equipment**
  - e.g. power supply units, system components, for bus topology, additional mounting rails

#### Switched DALI
- **dim. 230 V AC (RLC)**
- **1 – 10 V**

#### Electrical connections (between rooms)
- **Network / bus signal**
- **Supply**
- **Distribution**

---

### Switches and sockets

#### Switches and sockets combinations from top to bottom:
- **Medium height from bottom in cm**
- **Number of inserts (max. 4)**
- **Number of sockets (child protection)**
- **Number of single buttons (1 NO)**
- **Number of double buttons (2 NO)**

#### Other switching equipment
- **Combination 1:**
- **Combination 2:**
- **Combination 3:**
- **Combination 4:**

---

### Protective devices
- **Switches or contactors**
- **Main switch**
- **Auxiliary contactor (for emerg. shutdown)**
- **Auxiliary contacts**

#### Main switch:
- **Nom. current**
- **NC:**
  - 2-pole: 10 A
  - 4-pole: 16 A

---

### Installation column (body, doors, mounting panel)

#### Dimensions (in cm) of body:
- **Height**:
- **Door top**:
- **Top**:
- **Width**:
- **Door center**:
- **Bottom**:
- **Depth**:
- **Door bottom**:

#### Other dimensions:
- **Height adjustment cover** (10 cm steps)
- **Housing aperture for incoming lines on front** (open in cm from top/bottom)
- **Front** (open in cm from top/bottom)
- **Cover/bottom** (open/closed)

#### Other housing apertures:
- **Colors (similar to RAL)**
  - **Cream white** (RAL 9001)
  - **Light gray** (RAL 7035)
  - **Graphite black** (RAL 9011)
  - **Signal black** (RAL 9004)
  - **Brilliant blue** (RAL 5007)

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### Other connections
- **Network, 1-phase**
- **Conductor cross-section**
- **Bus signal**

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### Other connections
- **Network, 3-phase**
- **Conductor cross-section**
- **Bus signal**

---

### Technical data:

#### Protective devices
- **Overvoltage protection**
- **Other protective devices**

#### Building automation
- **Number of binary inputs**
- **Lighting control type**
- **Number of groups**
- **Blind / shutter control type**
- **Number and groups**
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  - **Control type**
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- **Combination 2:**
- **Combination 3:**
- **Combination 4:**

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- **Main switch**
- **Auxiliary contactor (for emerg. shutdown)**
- **Auxiliary contacts**

#### Main switch:
- **Nom. current**
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  - 2-pole: 10 A
  - 4-pole: 16 A

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- **Door top**:
- **Top**:
- **Width**:
- **Door center**:
- **Bottom**:
- **Depth**:
- **Door bottom**:

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  - **Brilliant blue** (RAL 5007)

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### Other connections
- **Network, 1-phase**
- **Conductor cross-section**
- **Bus signal**

---

### Other connections
- **Network, 3-phase**
- **Conductor cross-section**
- **Bus signal**
Our experience, your advantage.
Optimizing the application.

Time is money – and mostly limited
Using our calculation lists and questionnaires you can quickly and safely generate a calculation for your applications. Download the Wieland optimization tools from our website, or – even more simple – get the calculation aids directly onto your smartphone or tablet using the following QR code.
The gesis PLAN demonstration and planning software is a tool for conveniently designing and calculating pluggable electrical installations with gesis. The software supports specialist planners as well as system integrators, architects and clients in the electrical design of buildings.

The software imports the existing DWG/DXF drawings of the rooms and building parts to be installed. The required consumers, such as lamps, sockets, roller blinds etc., are placed into the 3D view on the PC, and gesis® ELECTRONIC components, gesis® RAN distributor units and gesis® NRG flat cables are wired with only a few mouse-clicks. The recommended connector encoding is automatically taken into account, and the compliance with standards is checked. The installation is also calculated regarding permitted currents, voltage drops or selectivity. Possible problems are immediately indicated by the software. As a result, the planner receives an item list with exactly calculated cable lengths and price details.

The gesis® PLAN software serves as efficient planning aid for functional buildings with flexible use of space and facility management and its usage is not only reasonable for new buildings. For building renovation it supports the reliable preliminary planning through exact calculations. Without expert knowledge the user can start right away; software wizards guide him accurately through the various screens.

The uniquely convenient solution does not only take into account the electrotechnical installation requirements, but is also capable of simulating the spatial conditions due to beams, additional walls, columns, and automatically takes them into account for cabling.

This is based on the experience of many years by the Wieland project support. It is possible to plan not only individual rooms, but also stories and entire buildings.
The flexible use of buildings does not only require an appropriate design during construction. The documentation of the installed systems must meet these requirements.

Documenting the installed components plays a vital role. Wieland generates assembly and wiring plans for each individual distributor unit. All designations for inputs and outputs as well as details on the installation location are documented here.

We strictly follow your specified needs and requirements. You will receive a complete documentation of your plant, which you can use to plan inspections, maintenance and extensions in advance without taking an inventory on site.

This creates planning safety across the entire lifecycle of the building.
Spanning various industries and products.
Automation technology

Industries

Wieland connects.

Wieland 100 years in Bamberg.

Wieland is one of the most important employers in Bamberg and the surrounding area. The centennial book shows the electrotechnical development at Wieland and their environment in a lively way, regional and world wide.
smart Installation solutions by Wieland.
Further information.

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- DIN rail terminal blocks fasis, selos -991 Industrial multipole connectors revos PCB terminals and connectors wiecon, appliance terminals, european terminal strips, housings for electronic components
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  Phone: +49 951 9324-990

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Additional information for pluggable installation:
gesis CON
The Art of Plugging Part No. 0600.1

gesis IP+
Part No. 0690.1

Decentral Electronic:
gesis ELECTRONIC
Everything follows a system Part No. 0700.1

gesis RAN
Intelligent distribution Part No. 0409.1

Installation column
Electronics with pay back Part No. 0404.1

Information about Wieland products in general:
Wieland Product Overview Part No. 0003.1

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contacts are green

Informational material for downloading from our websites

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Industrial technology

Solutions for the control cabinet
- DIN rail terminal blocks
  - Screw, tension spring or push-in connection technology
  - Wire cross sections up to 240 mm²
  - Numerous special functions
  - Software solutions interfacing to CAE systems
- Safety
  - Safe signal acquisition
  - Safety switching devices
  - Modular safety modules
  - Compact safety controllers
  - Application consulting and training
- Network engineering and fieldbus systems
  - Remote maintenance via VPN industrial router and VPN service portal
  - Industrial Ethernet switches
  - PLC and I/O systems, standard and increased environmental conditions
- Interface
  - Power supply units
  - Overvoltage protection
  - Coupling relays, semiconductor switches
  - Timer relays, measuring and monitoring relays
  - Analog coupling and converter modules
  - Passive interfaces

Solutions for field applications
- Decentralized installation and automation technology
  - Electrical installation for wind tower
  - Fieldbus interfaces and motor starters
- Connectors for industrial applications
  - Rectangular and round connectors
  - Aluminium or plastic housings
  - Degree of protection up to IP68
  - Current-carrying capacity up to 100 A
  - Connectors for hazardous areas
  - Modular, application-specific technology

PC board terminals and connectors
- Screw or spring clamp connection technology
- Spacings: 3.5 mm to 10.16 mm
- Reflow or wave soldering process

Building and installation technology
- Building installation systems
  - Main power supply connectors IP 20/IP 65... IP 68
  - Bus connectors
  - Low-voltage connectors
  - Power distribution system with flat cables
  - Distribution systems
  - Bus systems in KNX, LON and wireless technology
  - DIN rail terminal blocks for electrical installations
  - Overvoltage protection