wieland

PLUGGABLE ELECTRICAL INSTALLATION SYSTEMS

Enable greater time savings and flexibility.

CONTENTS

YOUR BENEFITS

+ Cost and installation time are calculable
+ Safety first – no misplugging possible
+ Flexible room configuration – securely plugged now and in the future

1. INTRODUCTION

An organizational planning department's normal day consists of deadline pressures and customer orders that require flexibility and agility to deliver innovative building construction concepts to demanding clients in a way that achieves the goals of their production schedule. With numerous variables that can shift throughout the planning process, cost calculation and process projection becomes a dynamic challenge requiring insightful solutions. These realities are also rendered more complex by smaller teams performing these tasks with increased expectations in uncertain times.

This is precisely where the challenge lies: increasingly complex and ambitious building and room concepts are in demand, but there is less qualified specialist staff available for them - an alarming sign that cannot be ignored: a meaningful indicator of a rising shortage of skilled workers is the development of general employment rates in the German economy, especially in the electrical sector: at the end of 2019, the German electrical and electronic industry had a total of 885,400 employees, of which only 5% were trainees - an overall decrease of 5,000 employees compared to the previous year, with a further declining tendency according to the employment plans of the electrical and electronic industry (source: ZVEI, press releases March).

To ignore the landscape of the current situation would be a grave mistake for many businesses. Instead, the identification of challenges and working towards solutions is how planning departments enable organizations to pivot in order to adapt to evolving situations through interfacing with key stakeholders and partners. Through cost-benefit analysis and process management considerations, these planners are faced with an emerging question: how can increasingly complex building concepts, tighter deadlines, strained financial and personnel resources and fluidity of existing business concepts be implemented in a faster and more productive way than in the past?

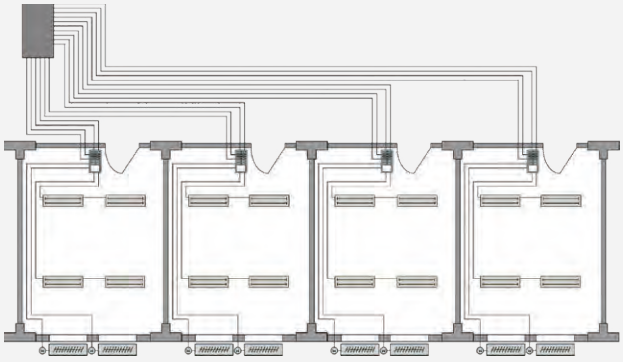
The solution is an innovative technology – pluggable electrical installation systems.

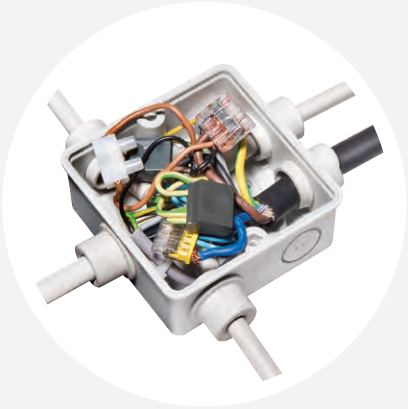
2. **FIVE OPTIONS** FOR PLUGGABLE ELECTRICAL **INSTALLATIONS SYSTEMS.**

Dismantling, stripping, re-wiring, a tedious and time-consuming exercise. The result of this frustration? A tangled mess of cabling and wiring that grows out of control over years of extensions on top of extensions, leading to untidy, neglected distribution and junction boxes.

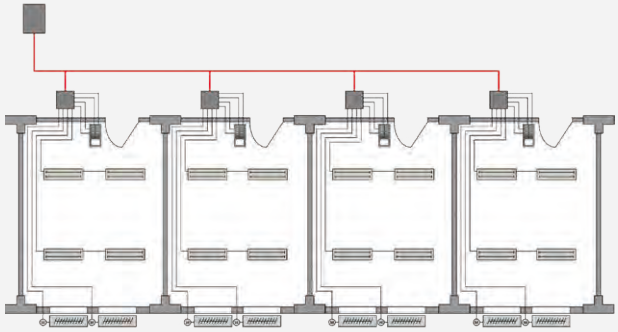
At this point, nerve-racking work steps are pre-programmed, where maintenance or changes to the existing utilization concept are pending. Time and cost-intensive installation processes threaten and bind not only financial resources but also valuable personnel capacities. A solution to this complex problem is offered by pluggable electrical installation systems. A plug & play solution means securing the power supply via system distributors, innovative connectors and flexible busbars, and moving away from traditional wiring.

CONVENTIONAL INSTALLATION





WIELAND SMART INSTALLATION



The benefits of decentralized structures in a smart installation are evident and also increase space efficiency of the building.

A complex energy distribution or room automation can only be simplified if a decentralized cabling structure is selected. In combination with pluggability, this leads to a system that can be installed quickly and safely. In other words: the complexity of the cabling is significantly reduced, thus increasing the clarity of the installation, and changes or extensions are considerably simplified. The result: individual components can be installed separately from each other and they can be expanded into a clearly structured system in just a few steps, which also makes maintenance easier.

SUMMARY:

Thorough decentralized planning simplifies the project process in such a way that your efforts will be amortized by reduced times for project monitoring and troubleshooting. Five benefits lead to success thanks to consistent three-phase cabling right up to the consumer:

1. **A structured and clear cabling is realized.**
2. **The wiring effort and thus the copper fraction is reduced.**
3. **More flexibility is provided for extensions and changes.**
4. **Sub-distributions can be sized smaller.**
5. **Voltage drops and fire loads can be reduced.**

These opportunities help guarantee reduced energy and cost expenses during the construction and life cycle of a building:

- **70 % time saving through fast and structured installation**
- **30 % cost saving due to the low time expense**
- **Low error rate due to industrially prefabricated components**
- **Flexible modular system that can be extended quickly and safely at any time**
- **Reusable**

3. FIELDS OF APPLICATION.

Planning is the conceptual foresight of possible future events.

3.1. OFFICE BUILDINGS (including office furniture electrification with integrated socket outlets)

OUTPUT:

Conventional office areas are characterized by a rather rigid office layout, which is not very adaptable – especially to unforeseen events.

REQUEST:

Office space must be more transformable, particularly regarding:

- **Number of employees (ex. the reduction or increase of jobs depending on the current employment situation)**
- **Functionality (e.g. open plan offices, separation of discrete spaces in the form of quiet individual offices or meeting rooms for conferences, brainstorming, presentations)**
- **Room automation (office lighting, air conditioning, sun protection)**

INNOVATIVE PLUG CONNECTIONS OF A MODULAR SYSTEM ARE SUITABLE FOR THE FAST REALIZATION OF A WELL THOUGHT-OUT OFFICE ARCHITECTURE:

The entire energy supply, including lighting installation, climate control and room automation, can be networked via a decentralized, smart electrical installation: a pluggable concept ensures clear structures, because cabling and plug systems are quickly installed and easy to handle. This means: no more headaches about how future office concepts should be implemented. The entrepreneurial benefit is not only for the office operators, but above all for planners and installers. The obvious benefits are reduced time, reduced costs and increased efficiency.

3.2. SHOP FITTING

When considering the needs of a modern, efficient shop system, nothing is more important than a modular installation that offers greater security through a reduced and simplified maintenance cycle. This system also enables additional adjustments and expansions that can be implemented quickly and safely, with a core requirement always considered: that components be pluggable.

THE GENERAL ADVANTAGES – BOTH FOR PLANNERS AND INSTALLERS – OF PLUGGABLE INFRASTRUCTURE CABLING IN SHOP FITTING ARE:

- Decentralized energy supply
- Energy consumption in any position in the showroom
- Elimination of manually wired junction boxes

POTENTIAL OPTIMIZATION POLICIES LIE ABOVE ALL IN THE FIELDS:

- Shelving systems
- Lighting
- Infrastructure Cabling

SHELVING SYSTEMS

Shelves for product display have evolved. The requirement for the shelving is that they represent highly intelligent sales systems using displays, sensors and IoT technology information (inventory, price changes etc.) to provide services for retailers. The core of such a smart shelf must therefore be an intelligent connection technology that extends from the electrical distributor directly to the shelf. Conventional technologies however cannot achieve this completely.

Pluggable electrical installation systems are the solution: they prove their worth especially when a shelf unit has to be converted or repositioned. This is the only way to guarantee that simple and quick conversion and adaptation to new spatial conditions in the shop can be carried out quickly and cost-effectively – all this without the need for additional specialized staff. A plus in security combined with this flexibility offers real added value: clear cabling structures not only ensure a clear overview and faster troubleshooting, they also make sure that all shelf areas are locally safeguarded separately. During operation, this means that if an error occurs somewhere, the entire power supply will not fail in the entire store area, but only in a small, clearly defined area. This drastically minimizes the cost and time required for repairing the defect.
Additional safety for the devices connected in the shelves are provided by pluggable local surge protection.

LIGHTING

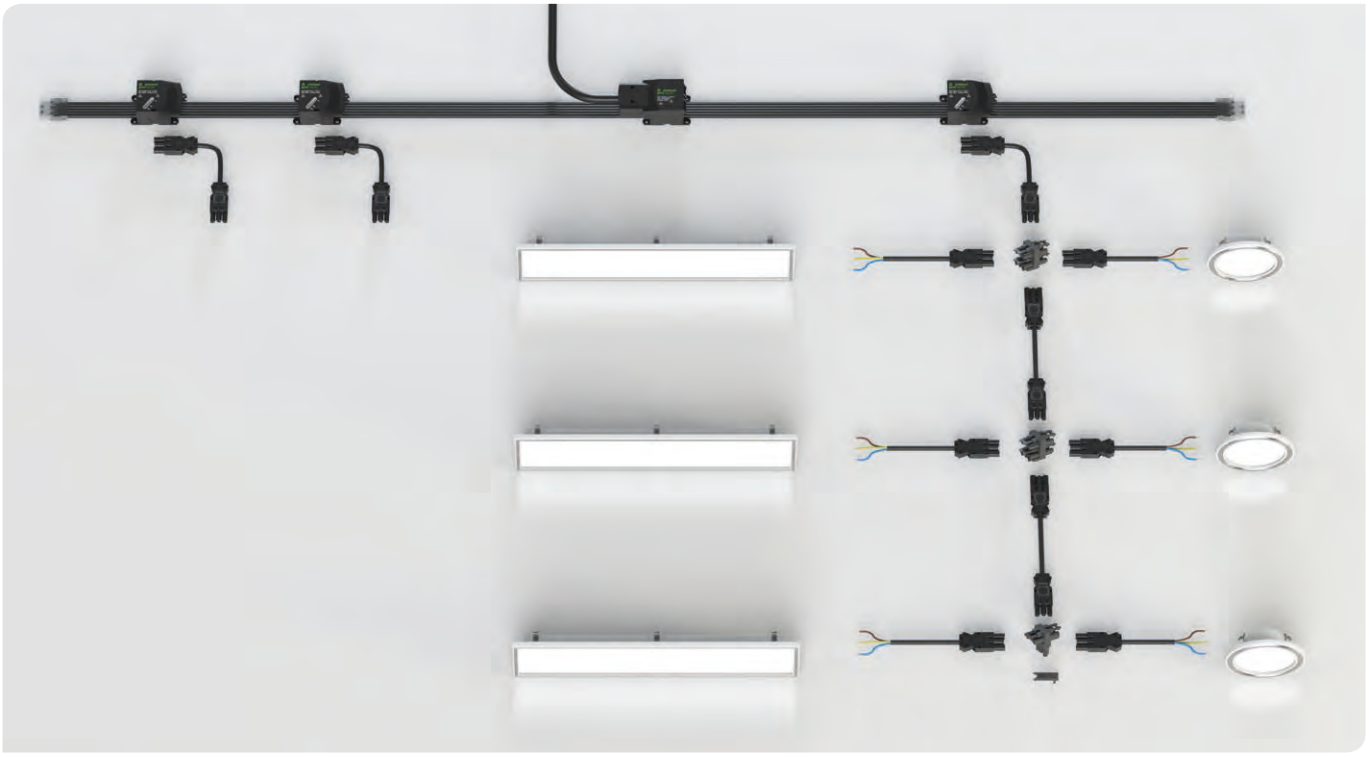
Since keywords such as "experience-oriented shopping" or "customer enthusiasm" have shaped the consumer world, boring sales rooms have become a thing of the past. In other words: those who are not able to present their shop spaces and products in the right light, will not succeed in making their products permanently attractive. This will not increase the customer‘s length of visit, decision-making ability and desire to buy.

A PLUGGABLE ELECTRICAL INSTALLATION OFFERS THREE ADDITIONAL BENEFITS:

1. Due to the pluggability of electrical installation systems the time and cost expense of repositioning the lighting fixtures is significantly reduced.

2. 1/3 circuits can be quickly and easily installed and supplemented by the use of bus bars and adapters with phase selection.

3. Different lighting control systems (dimming applications such as DALI or Tunable White) can be implemented without additional effort using special connectors. This is especially true for particularly room-intensive shop concepts such as furniture stores or supermarkets.



3.3. MODULAR PREFABRICATION

Despite the fact that the wishes of property owners are becoming more and more individual, prefabricated houses are currently experiencing a real boom. Current numbers prove this to be true: in 2019, every fifth building permit was granted for a prefabricated house, which corresponds to a plus of approx. 21,000, i.e. about 3,000 more than in 2018 (source: Wirtschaftswoche, online edition, updated on 24.03.2020)

THE REASON WHY: PREFABRICATED HOUSES ARE CONSIDERED CHEAPER AND QUICKER TO BUILD THAN CONVENTIONAL HOUSES. SIGNIFICANT BENEFITS OF MODULAR PREFABRICATED CONSTRUCTION:

1. Standardized elements or modules are prefabricated
2. and assembled at the construction site.

During electrical installations, many challenges can arise that threaten expensive delays or stoppages.
Traditional installation methods relied on kilometres of cabling requiring manual work, however with prefabricated structures, installation is much faster. Pluggable electrical installation systems become a natural fit for prefabricated industries.

BENEFITS:

- System distributors, cables and distribution blocks are delivered pre-assembled
- No more cutting and dismantling of cables, which reduces the amount of waste and disposal problems
- Construction logistics become more efficient
- Quick and safe installation can be carried out without additional qualified staff

3.4. OUTDOOR AREAS

Serious factors that complicate the planning and implementation of outdoor concepts:

- Temperature changes
- Humidity
- UV rays
- Foreign objects
- Mechanical strain

Different rules apply to electrical installation in outdoor opposed to indoor areas. It is:

- Extremely safe
- Particularly resilient

because it is exposed to other environmental influences.

Robust plug connections, device connections, cables and distributors are required to reduce the susceptibility to failure and ensure long-term operational reliability. Pluggable electrical installation systems meet precisely these requirements because:

- They are prefabricated
- They do not have to be opened during installation, which prevents the intrusion of liquid and dirt
- They are color- and mechanically coded

In areas of application with higher requirements for protection against humidity and dust, smart plug & play solutions increase safety and flexibility on the one hand and reduce work, time and costs on the other. For example:

- **Warehouses**
- **Industrial halls**
- **Humid areas**
- **Gardening and landscaping (greenhouses, lighting)**
- **Parking garages**
- **Charging stations for electric vehicles**
- **Outdoor event areas**
- **Lighting (streets, gardens, parks)**

3.5. FUNCTIONAL BUILDINGS (in general)

Today, the most diverse utilization structures in almost all functional buildings are required. This is especially true for the following types of buildings:

- Office and administration buildings
- Education: elementary, secondary and post-secondary
- Healthcare: hospitals, nursing homes

In general, planning offices and installers are faced with a specific challenge when it comes to the electrical installation of functional buildings. These five factors make planning and implementation difficult:

1. **Complexity:** complex requirements make a structured implementation of the installation necessary.

2. **Networking:** although most functional buildings are divided into individual areas, they must be strongly connected to each other. Everything is connected to anything, but must also function separately.

3. **Momentum:** functional buildings undergo minor or major changes of use during their life cycle. These changes are not always predictable in the long term, so flexibility is required.

4. **Incomprehensible:** not all information on the different buildings or areas of use is always accessible in the case of functional buildings.

5. **Multi-purpose:** functional buildings are generally "multi-purpose buildings", i.e. they have a large number of different space concepts, each of which initially has to fulfill its own task, but must be integrated into the overall concept (e.g. university: in addition to lecture halls, there are rooms for lecturers, administrative offices, library, assembly hall, cafeteria, laboratories, technical rooms, stores for materials, waste disposal).

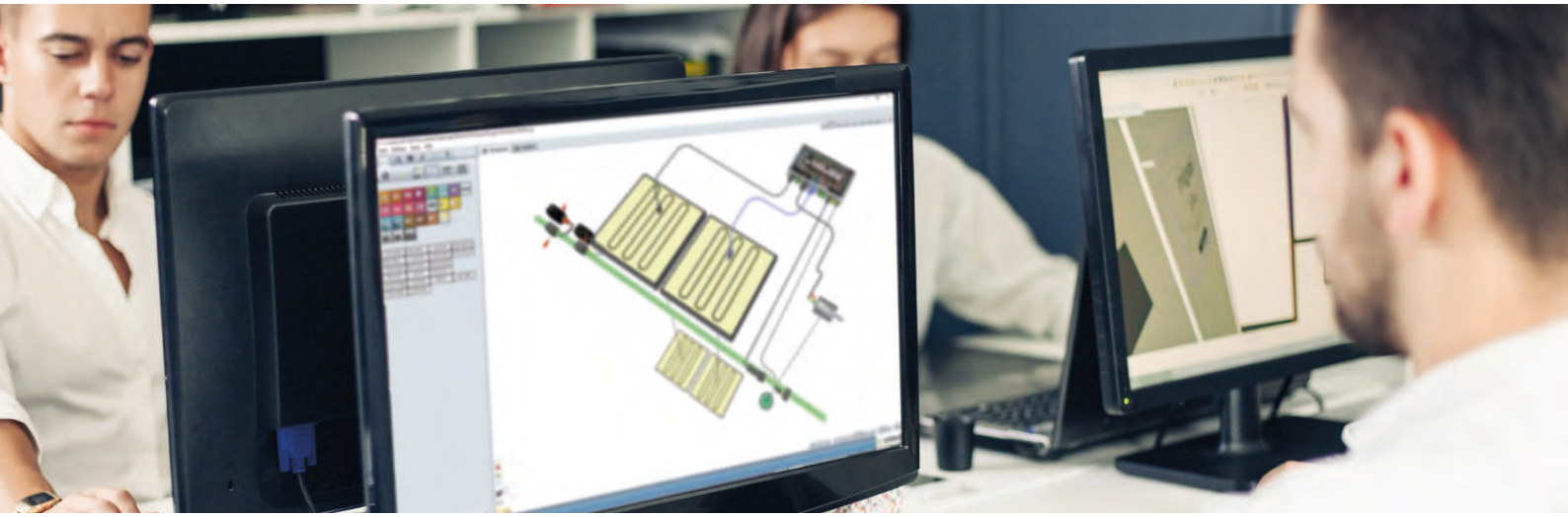
THE SOLUTION TO THESE CHALLENGES:

Pluggable and decentralized electrical installation systems!

YOUR BENEFITS IN FUNCTIONAL BUILDINGS:

- Shorter planning and implementation times
- Reduction of overall electrical installation complexity
- Clear structures in energy supply
- Holistic sustainability
- More flexibility in case of use modifications

4. SERVICES AS ADDED VALUE.



OUTPUT:

An increasing number of guidelines and specifications dominate the daily business of planning offices and electrical installers, because building planning and electrical installation have to comply with legal and technical requirements, for example:

+ **Low voltage directive VDE 0100.**
+ **German "EnEV" energy saving ordinance .**
+ **Construction Products Regulations of the EU (abbreviation CPR), in which new fire classes for cables are introduced, but their application is not yet fixed in Germany.**
+ **DIN EN 61535 - "Installation connectors for fixed installation". In this respect, there are always debates as to where permanent installation ends.**

CONCLUSION

In this "jungle of guidelines", planning tasks are becoming increasingly complex and time-consuming. This is why professional project preparation at an early planning stage is becoming more and more important.

SUPPORT IS MAINLY NEEDED IN THREE AREAS:

Planning tools for optimization

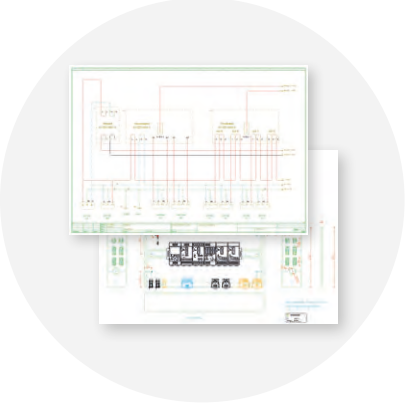
Calculation tools for generating part-lists or a configurator for the system distributors ensure time savings in the planning phase and transparency in material requirements and cost structure.

3D presentation software

Visualization contributes to problem solving. Programs that illustrate the electrical planning of buildings in a convenient way therefore play a key role. Only in this way can the true potential of pluggable electrical installations be understood.

Documentation

In order to achieve 100 percent flexibility in the use of buildings, it is necessary to not only have an appropriate technical design, but also a complete documentation of the installed systems. Planning and handling reliability can only be guaranteed if precise and comprehensive documentation is prepared and available.



5. OUTLOOK: LIFETIME-PARTNERSHIP.

Any planner or installer who takes the innovative path of a pluggable, decentralized electrical installation needs conclusive concepts. A lifelong technology partnership makes sense and is a strategic benefit so that the path does not lead into the unknown and all optimisation potential can be uncovered and exploited.

SUPPORT FOR:

- Consulting and planning
- Sampling
- Education and training
- After-Sales-Service

These tools and services enable a future with reduced energy and cost expenses in planning, construction and change of use in the life cycle of a building.

MORE IMPORTANTLY:

- Planning ahead is made easier!
- Planning and implementation run more smoothly!
- Trial and error processes and annoying work overtime are not only reduced, but can be completely avoided from the very beginning!

The future belongs to smart installation concepts – and to those who use them!

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