clsi Ideas in motion.

A MASTERPIECE OF GERMAN ENGINEERING.

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HIGH REQUIREMENTS CALL FOR THOROUGH UNDERSTANDING OF NEW SOLUTIONS.

If a well-known production company wants to implement the principles of lean production in a future-proof manner, optimum flow of materials is required.
To achieve this goal, many conditions must be met. In addition to providing a suitable process control system, appropriate buildings with the right technology adapted to ensure a precise flow of materials on a demand basis are particularly important.
As each company is unique, it is not possible to rely on standard components. Therefore, what is required are new methods and individual solutions which offer the best cost-benefit ratio imaginable.

Siemens' energy sector in Schaltwerk Berlin depends on solutions like these – and CLSi provides them. The reason for this is simple. Siemens' vision and ambition are perfectly in line with the philosophy of **Complete Logistics Systems international GmbH (CLSi)** based in Leer and the possibilities it can offer. Here, individual inbound and outbound system solutions are developed and built under the **Logispeed** product group label.

The most stringent quality standards are hereby complied with – typically "Made in Germany". A positive aspect is that CLSi, as a subsidiary of the renowned Logaer Maschinenbau GmbH which was founded in 1974, can rely on the extensive knowledge and skills of qualified staff and on state-of-the-art production machines.

We will present the result of our dedicated approach in this report.

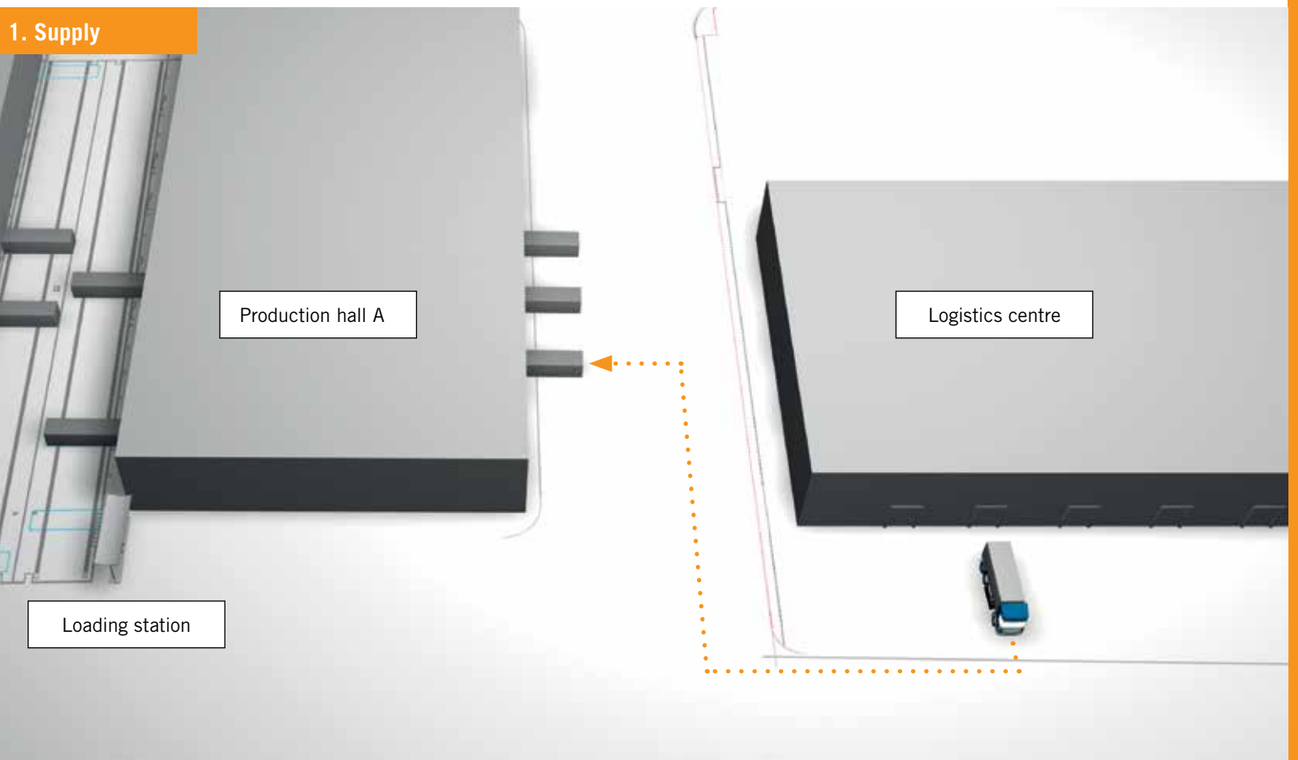
OPTIMIZED FLOW OF GOODS IN THREE STAGES:

1. Supply
2. Production
3. Onward transport

THE GROUNDBREAKING SYSTEM SOLUTION FOR THE “SIEMENS BERLIN” LEAN FACTORY.

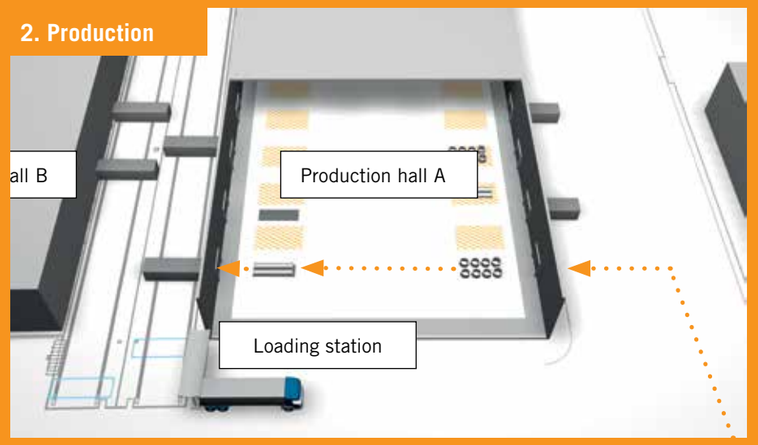
→ INBOUND

1. Supply



OUTBOUND →

2. Production



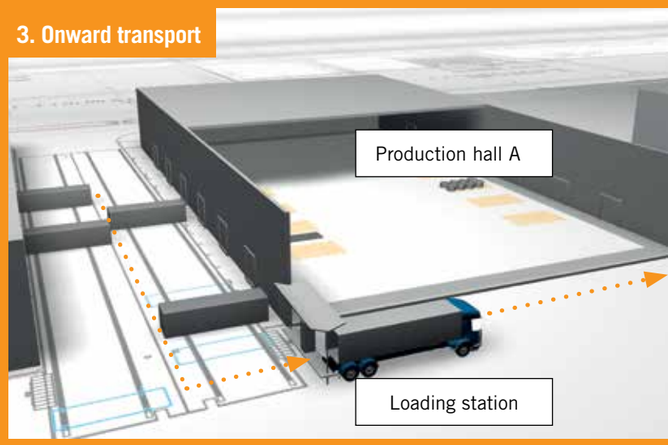
HERE AT CLSi, WE HAVE DEMONSTRATED THAT IN-HOUSE LOGISPEED SYSTEM SOLUTIONS CAN TAKE EXISTING NOTIONS OF INTRALOGISTICS TO A WHOLE NEW DIMENSION OF EFFICIENCY.

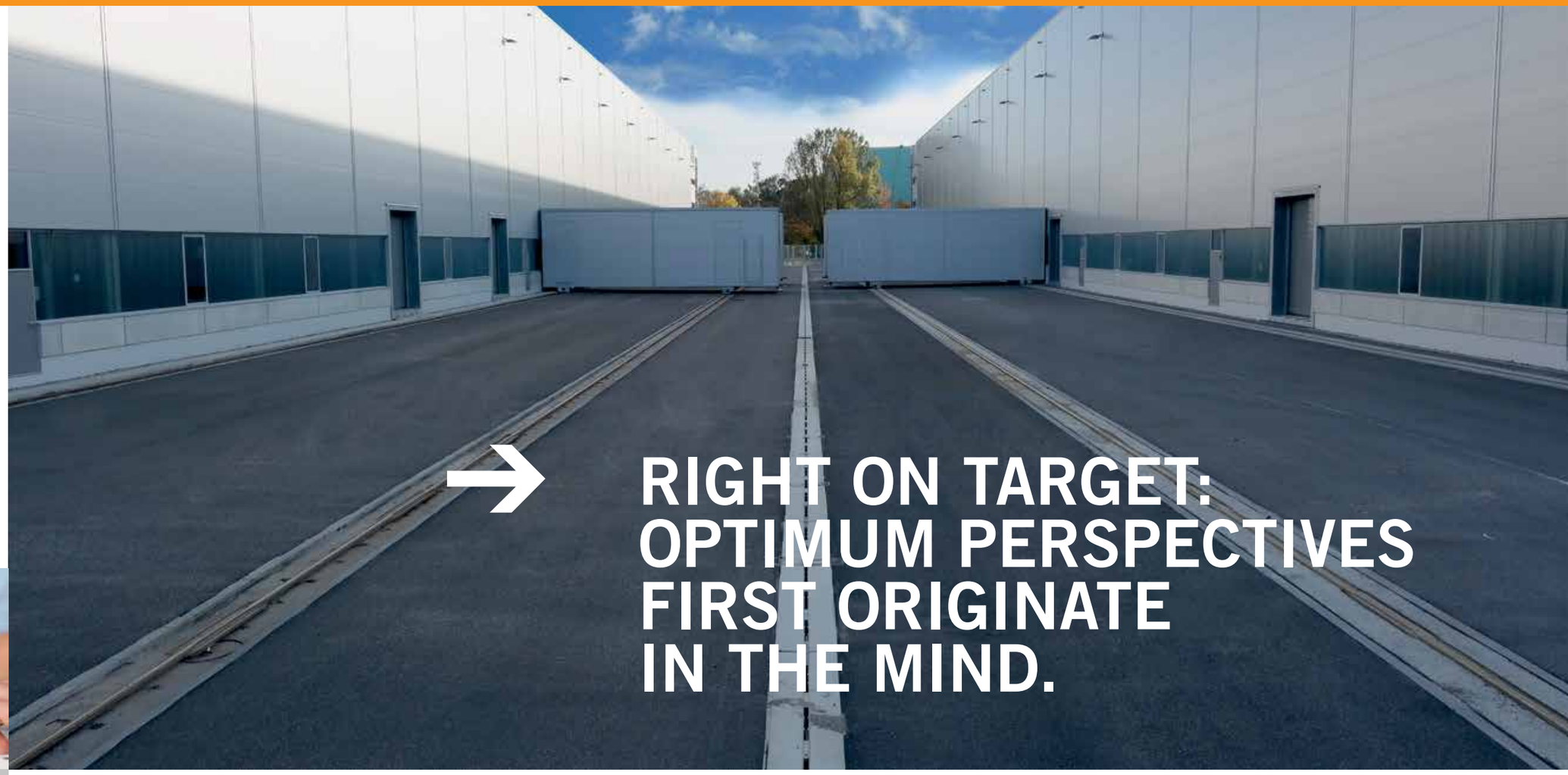
AS THE NATURAL, LOGICAL CONSEQUENCE TO THIS, WE HAVE FURTHER DEVELOPED THIS INNOVATIVE SYSTEM IDEA TO CREATE AN EXTREMELY COMPLEX INBOUND AND OUTBOUND SOLUTION.

THE LOGISPEED SYSTEM COMPONENTS AT SIEMENS BERLIN:

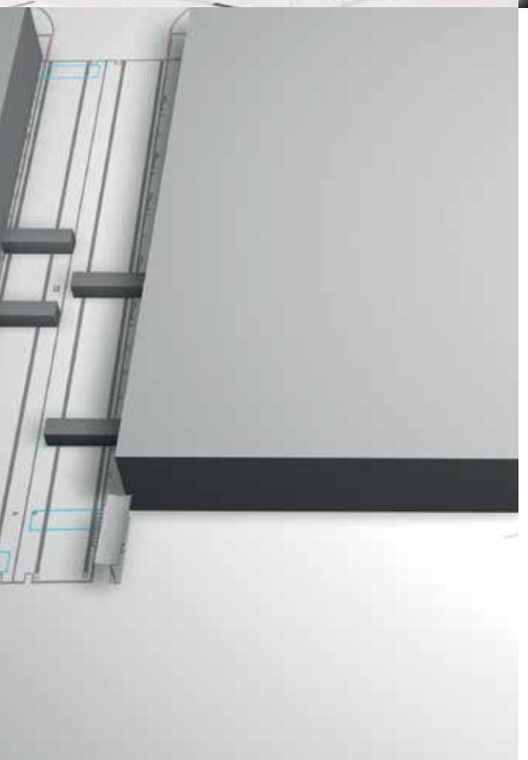
- 3 inbound trucks
- 16 inbound special containers
- 4 outbound shuttles (one pair per hall)
- 2 track systems including power supply
- 2 loading stations each with 2 truck docking spaces
- various cargo bases
- several truck bases
- system control unit (PLC)
- process visualization
- safety fences and safety devices

3. Onward transport





RIGHT ON TARGET: OPTIMUM PERSPECTIVES FIRST ORIGINATE IN THE MIND.



The initial situation at Siemens:

To date, components (switches and switchgears for the high-voltage sector) have been manufactured in spatially separated assembly lines which are surrounded by a central component storage area.

Thanks to the construction of two new production halls, lean assembly with synchronized production lines and sequential logistics according to the principles of lean production will be implemented in future. This will also allow the “Clean Factory” principle to be improved.

The workpieces were loaded via repeated transfer using cranes and panel trolleys until they were finally loaded into the truck. Load anchoring was primarily achieved using conventional methods (wooden blocks, wedges and tension belts) directly on the trailer.

Siemens’ objective:

The aim was to sustainably increase productivity through lean production.

To achieve this goal, a production line was required in which the flow of materials ran smoothly, where there was no intermediate storage and where a direct connection to logistics concepts could be realized.

At the same time, manufacturing under clean room conditions was to be achieved as far as is possible. It was therefore necessary to drastically reduce the entry of physical dirt particles and to compensate for the negative effects caused by the difference between the outdoor and indoor climates.

Our solution for Siemens:

Two new production halls were built. Both halls have a surface area of 9,000 m², whereby the side of the building for loading operations is 151 metres long.
The doors for incoming and outgoing goods are opposite each other.

The supply of individual components from the logistics centre is carried out in special containers using the inbound shuttle, one of the vehicles developed by CLSi for internal traffic.

In response to a limited available surface area between Halls 25 and 26 which are situated opposite each other, a CLSi solution with so-called transverse distributors was selected to ensure an optimum outbound flow of materials.

These track-guided, insulated outbound shuttles (see picture above) act as a connector for the finished products between the preparation stage at the exit ramp and the truck loading station which is arranged next to the front face of the buildings.

1. Supply

Individual components are supplied to the production area from the central warehouse in weather-proof Logispeed special containers (internal diameters [L x W]: 7.8 m x 2.8 m).
These modular containers are moved quickly and precisely from A to B by trucks which have been modified by CLSi – so-called inbound shuttles. The essential modification to the vehicle consists of integrating a forked lifting and lowering hydraulic system in the chassis.

MODULAR: THE SPECIAL CONTAINER FOR THE INBOUND SHUTTLE.

These special vehicles are successfully used in internal shuttle traffic. Once the inbound container reaches the desired target door in the production hall, it is deposited on the ground. At this point, the container is situated at the long side of the building opposite the outbound doors and is thus ready for loading and unloading which is carried out manually using a shop floor vehicle. The flow of materials is performed according to the “just in time” approach. This means that storage at the assembly stations is superfluous.

Doors often allow unwanted dirt particles to enter workshops. In addition, they can be a source of climate problems in production halls. For this reason, an extremely effective door seal is used in conjunction with the Logispeed container to prevent negative effects and which complies with the “Clean Factory” principle.

Finally, the Logispeed inbound shuttle picks up an empty container from one of the other storage positions and transports it back to the central warehouse where it will be loaded once again, depending on demand.

Pictures from top to bottom:
The inbound shuttle once it has left the logistics centre.
The inbound shuttle docking at the inbound door.
The inbound shuttle once it has deposited the special container.

Picture, top right:
Production hall with parked container at the inbound door once the unloading process has been completed.
Picture, bottom right:
Clean, safe and practical – a loaded special container.

2. Production

The goods are secured using tension belts to prevent them from slipping. Depending on the size of the cargo, the belts can be individually adjusted and attached thanks to the numerous fixation points on the cargo base.

The solid pulling and pushing device with quick lock/release ensures that the cargo base can move precisely in both directions, thus saving time.

The Logispeed cargo base slides smoothly into the outbound shuttle.

Time is money – the entire loading or unloading process is completed within a few minutes.

Picture, bottom:
The intuitive control unit with process visualization ensures perfect functioning at the touch of a button.

PRACTICAL: THE CARGO BASE AS A BASIS FOR A PERFECT FLOW OF MATERIALS.

After the production stage, the goods which have been secured correspondingly are made available for further transport at the order picking units in front of the outbound doors.
This is carried out on the time-tested Logispeed cargo bases.

These mobile aluminium platforms mounted on rollers, which measure 10 m x 2.44 m x 51 mm [L x W x H], are designed for loads of up to 10 metric tons within the scope of the Siemens solution and can be loaded with almost any type of goods.

It doesn't matter whether the cargo base is fully or partially loaded – once the picking process has been completed, the cargo bases are moved into the insulated Logispeed outbound shuttle which is docked flush with the building providing a tight seal.

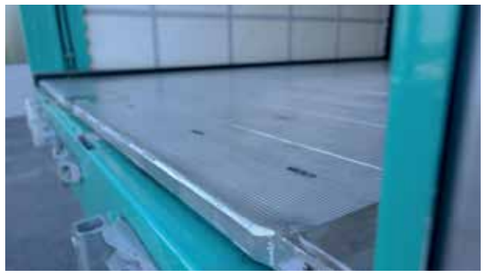
This semi-automatic loading process is carried out using a pushing and pulling device that has been specially designed for this purpose with a quick lock/release that is permanently installed in the outbound shuttle. It can be easily and safely operated via a control panel.

3. Onward transport

The weather-proof transverse distributor – the outbound shuttle – is a track-guided container vehicle. There are two in each hall. This shuttle acts as a connector for the finished products from being made available at the exit ramp to being loaded into the truck at the loading station. This means that the drag angle does not have to be taken into account, which is not the case in traditional systems.

While the Logispeed shuttle takes an empty cargo base from the incoming truck and “parks” it, the second shuttle which is loaded with goods travels from the outbound door to the truck loading station and pushes the cargo base with its secured goods into the truck. The empty cargo base from the first shuttle which has been “parked” in the meantime is then moved to the space in the outbound door area where the picked goods were ready for collection before. In theory, this means that up to six loading processes can be carried out per hall and per hour.
The intelligent Logispeed control system ensures especially large availability of the system components thanks to the wide variety of arrangement options for the shuttle vehicles.

BRILLIANT: THE OUTBOUND SHUTTLE AND THE TRUCK LOADING STATION.



Picture, left:
Overall view of all outbound system components.

Pictures, centre, from top to bottom:
The travel distance of the outbound shuttle is 165 m, which is covered at a speed of max. 60 m/min.

The loading station designed for two trucks with the control unit in the middle is roofed over. This makes work easier for the staff and protects the cargo from the elements.

The dimensions of the Logispeed cargo base correspond exactly to the inside dimensions of the trailer.

The shuttle is equipped with a lifting gear to compensate for the difference in height between the hall floor level and the truck loading edge.

Picture, right:
To ensure that the loading process can be carried out faultlessly, the correspondingly converted trailer is kept at a constant height mechanically.

TARGET MET.

THEREFORE, THE QUESTION THAT IS NOW PREOCCUPYING US IS THIS: WHEN ARE YOU GOING TO GIVE US THIS SPACE TO DEVELOP?
WE LOOK FORWARD TO SEEING YOU FOR AN ADVISORY MEETING ON YOUR OWN PREMISES OR WITHIN THE CONTEXT OF A PRODUCT PRESENTATION WITH NO OBLIGATION AT OUR ENGINEERING CENTRE IN LEER.

PUT US TO THE TEST! WITH YOUR OWN INDIVIDUAL REQUEST.

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