

The Pallet 4.0

Groundbreaking project on the logistics market.

The Pallet 4.0, or the Smart Pallet, is a new product, which, beside its basic transport and goods storage functionality is also an information carrier, a sensory system, a logistics data exchange node. The Pallet 4.0 is a highly scalable product offering many possible configuration variants.

The Pallet 4.0 fits in perfectly with the ideas of Industry 4.0, the Internet of Things (IoT), introducing new tools to raise security and logistics process control. This solution is supported by modern logistics management platforms.



What is the Pallet 4.0?

The wooden Pallet 4.0 is manufactured on a modern, fully controlled process line. This technology enables greater reliability and mechanical resistance of the pallets. **Inside the pallet there is electronic circuitry** executing e. g. the following functions:

- sensor systems responsible for measurement of ambient conditions,
- product identification systems, including a patent-protected serial number encoding system,
- radio communications circuitry,
- power supply systems using Energy harvesting technology.

Characteristics

Thanks to the use of innovative electronics, **the Pallet 4.0 communicates with external devices, e. g. phones**, making it possible to e. g.:

- identify the pallet serial number, transport document reference number, operation history, form and ownership. In connection with logistics management systems, data on the logistics process is exchanged,
- register ambient conditions, such as:



temperature



humidity



goods weight



mechanical damage,
impacts



pallet tilt

The radio identification system is necessary at autonomous high-rack warehouses. Quick data readouts by transport equipment, marker resistance to mechanical damage and high data memory capacity allow for fail-safe warehousing processes at robot-serviced warehouses.

The Pallet 4.0 is also characterised by greater strength, meaning an increased number of loading cycles, limiting potential losses due to the breakdown potential of ordinary palletst.

Structure

The pallet 4.0 may be composed of several components :

- a wooden pallet,
- robust connectors, installed on a modern technological line,
- electronic circuitry installed in the pallet components,
- mobile radio communications equipment (smartphone, RFID UHF reader),
- fixed readout devices,
- **an open service application including public libraries (API),**
- dedicated logistics systems integrators.



Wooden pallet:

Thanks to assembly precision and suitable materials, the following was achieved:

- **high reliability** (ca. 30% higher than currently available pallets),
- **long life** (thanks to better stress neutralisation),
- **better pallet stability** (due to the tight fit of the pallet components thanks to suitable assembly processes),
- **pallet parameter repeatability** (thanks to the utilisation of detailed technical inspections).

The electronic circuitry is composed of:

- **a microprocessor platform** (unique character confirmed by the patent process, characterised by very good flexibility),
- **a communications system,**
 - o the hardware layer (using the BLE protocol i. e. due to very low energy consumption)
 - o the software layer (using the OPC UA standard, allowing pairing with ERP and MES system).

Note that we are presently experiencing very low pallet assembly precision levels on the market, as indicated by current tests. **The Pallet 4.0 should be used in at least four loading cycles**, which would cover loading of the pallet with goods, loading with the goods on the truck, and unloading.

Mobile application



Allows direct readout of pallet data, hence it is NOT NECESSARY TO PURCHASE DEDICATED EQUIPMENT. The provided communications protocols allow independent product development, adaptation of the data format to customer systems and free integration with logistics platform.

Do You have questions? Are You interested in our product?

Contact us!



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