



Pick to Light (P2L)

P2L system is the light navigation system for the production and logistic processes. The main advantages of this system are reducing errors and increasing process efficiency. It is the part of Industry 4.0 trends.

- › ABOUT SMART P2L
- › HARDWARE, SETTING,
CONTROLLING SMART P2L
- › SMART P2L PRODUCTS
- › INSTALLATION OF P2L
- › SMART P2L PROCESSES



About Smart Pick/Put to Light (Smart P2L)

Smart P2L solution is based on configured P2L hardware, which is then managed by control software.

- › **Hardware** installation on constructions (racks, trolleys, workstations, etc.) used in logistics and production processes.
- › **Setting up** Smart P2L is as easy as defining & marking storage positions via our online software.
- › **Controlling** Smart P2L system via API communication interface is possible through almost any ERP/WMS/MES software.

Advantages

1 Smart P2L hardware:

- › Easy installation on existing hardware construction used in logistic, production processes (racks, trolleys, workstations, etc.)
- › Wide portfolio of our standardized P2L products (racks, trolleys, workstations)
- › Low purchase costs

2 Online software for setting up and managing P2L systems:

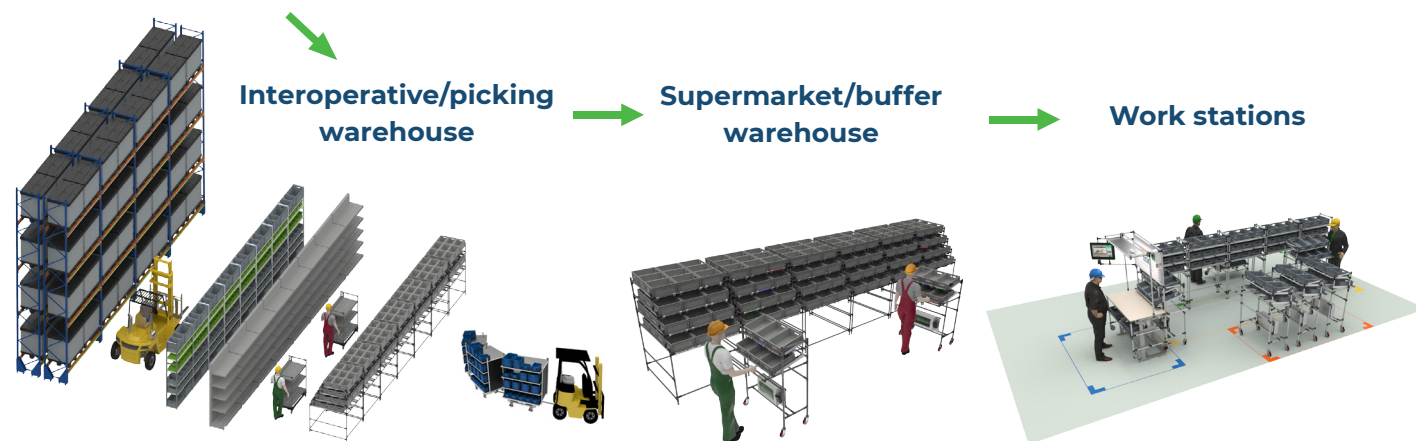
- › Map of warehouses, production halls, production sectors, etc.
- › Smart P2L position layout set-up
- › Smart P2L position management (racks, trolleys, workstations, etc.)

3 Controlling Smart P2L systems via API interface:

- › Universal API interface allows to connect and control our Smart P2L software with third-party software (ERP/WMS/MES)
- › The option to customize Smart P2L software to suit your needs

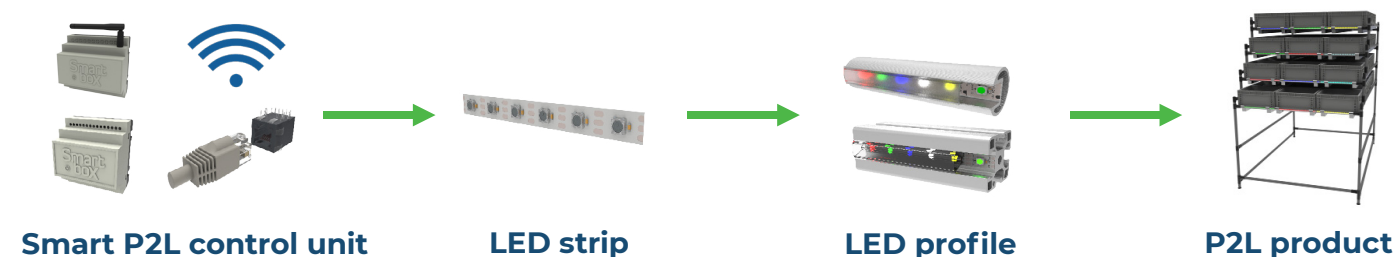
Smart P2L applications examples

Semi-automated central warehouse



Smart P2L hardware

Smart P2L system is based on LED technology. Individual LEDs on the LED strip have their unique ID and are connected to a control unit. Our software allows us to link those addresses to individual storage position via the control unit.



Standardized products video:



Smart P2L settings

Creating & transferring data to an SQL database, containing the individual rack/trolley parameters gathered from our web configurator (position dimensions, ID,...).

Base functions:

- 1 Layout database creation & management:
 - 1 Layout & database of P2L objects (warehouses, production halls or individual sectors)
 - 2 Layout & database of P2L applications (racks, trolleys, workstations, etc.)
 - 3 Layout & database of P2L positions of all P2L applications
- 2 Generates P2L layout graphical interface
- 3 Provides P2L position data to SQL database

P2L set-up video:



Controlling Smart P2L

- a) Third-party software (ERP, WMS, MES,...), communicating via API interface
 - › Protocol HTTP/HTTPS is used for communication
- b) Smart P2L Software (SP2Lsw) – custom software solution
 - › Isolated application
 - › Data input/output can be managed via exported files (csv, xmls, txt,...)

Smart P2L software video:





Smart P2L standardized products

Smart P2L trolleys



Smart P2L trolleys:



Smart P2L racks / kanbans



Smart P2L racks/kanbans:



Smart P2L workstation & workstation accessories



For effective lean manufacturing we offer:

- 1 Shelves
- 2 Trolleys
- 3 Racks



Installation of P2L system on existing hardware

- ## 1 Al - tube profile

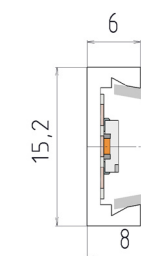
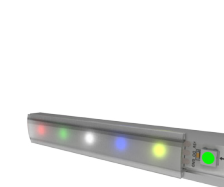
- a) Metal joint
- b) Profile holder



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- ## 2 AI - flat profile

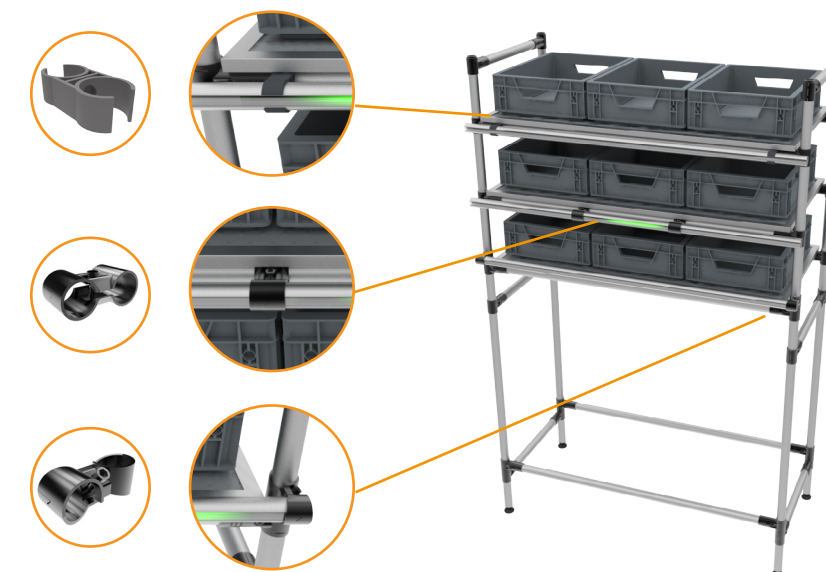
- a) Velcro
- b) 3M double-sided tape
- c) Plastic holder



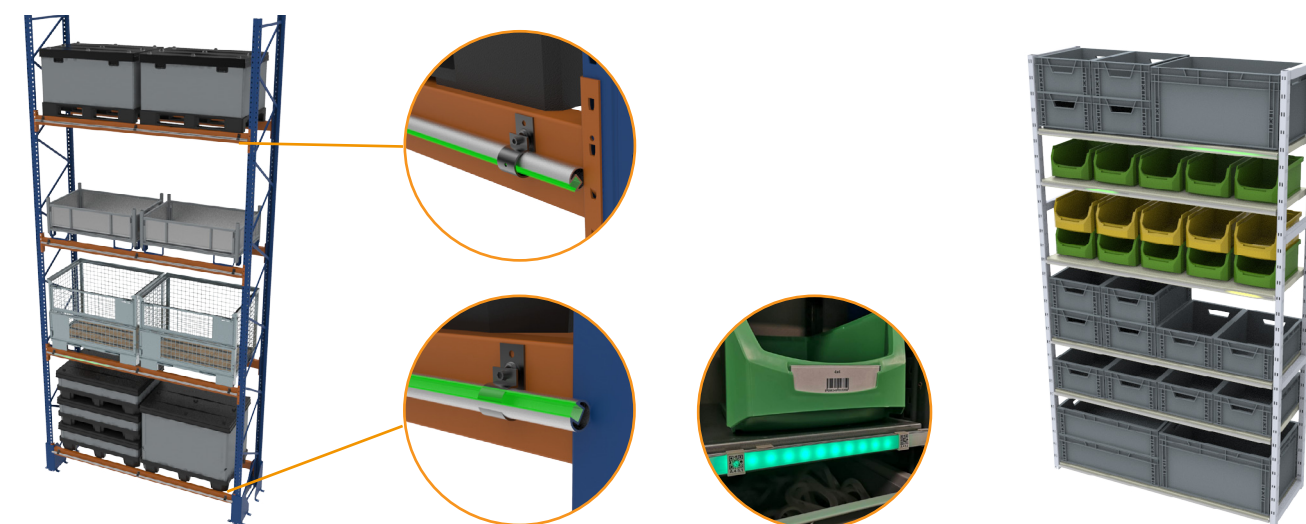
Installation on tube systems

Advantages:

- 1 Easy to install
- 2 Adjustable angle on top/bottom shelves
- 3 Durable
- 4 Easy to replace



Installation on other systems





Smart P2L process example

1 Dynamic P2L position setting:

Dynamic P2L position setting is based on defining the size of the position according to stored box/part size. The position size is set during logistic processes (storing, picking, ...) by defining a size manually or by choosing box/part from a database. Dynamic position layout can be created from pick list (products positions could have pre-defined size). Dynamic position setting allows to use of the defined position in following processes.

Use:

a) Picking goods from P2L racks and putting to P2L trolleys

b) Picking goods from P2L trolleys and storing them to P2L racks

2 P2L position pairing:

P2L position pairing is based on highlighting both positions simultaneously – its source position and its target position.

Use:

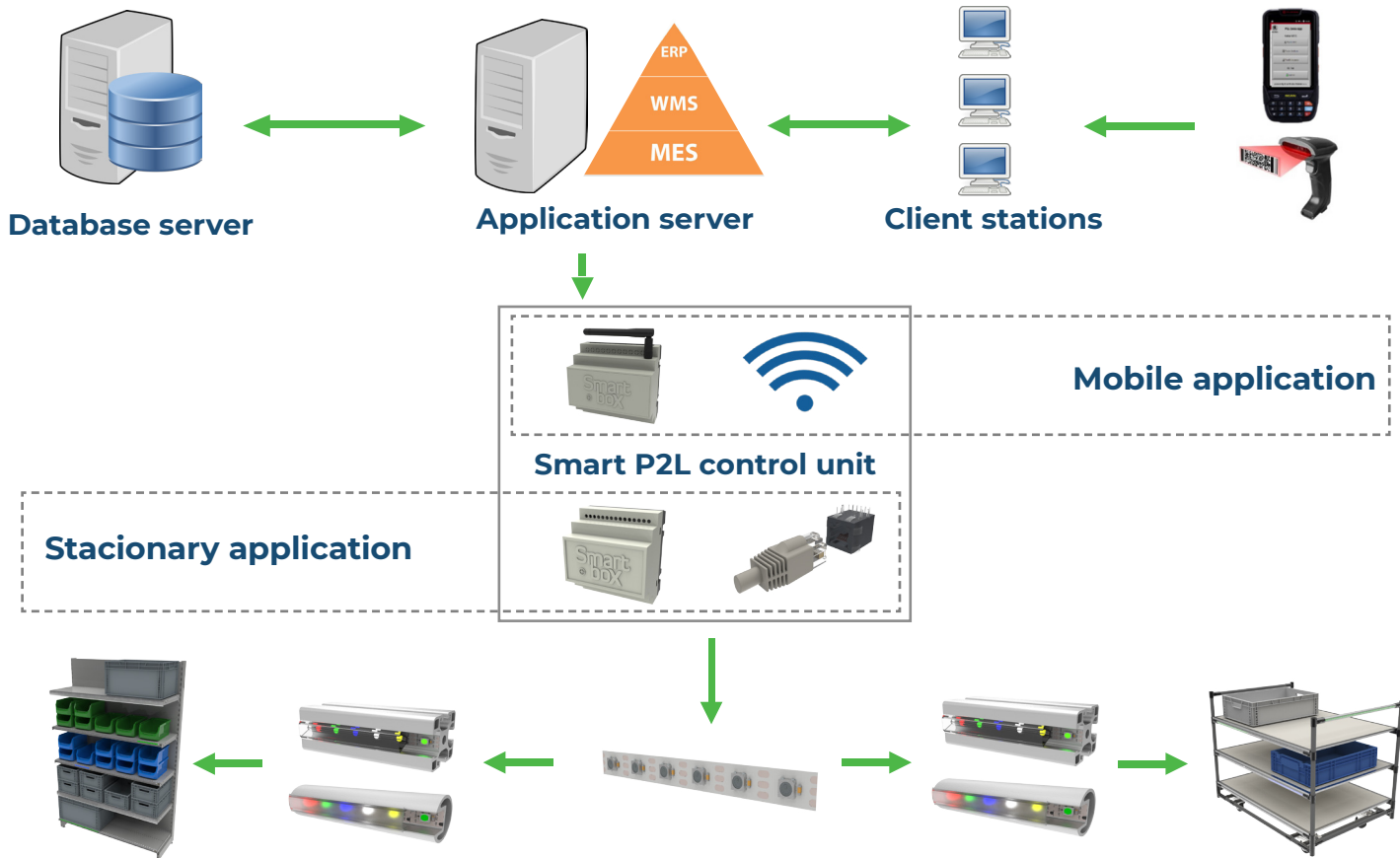
a) Picking goods from P2L racks and putting to P2L trolleys

b) Picking goods from P2L trolleys and storing them to P2L racks

3 Use in production processes:



Communication architecture schema



Smart communication application description

- › Communicates with WMS via HTTP protocol
- › Is set by data from configurational software
- › Acquires data from MySQL database
- › Provides communication with P2L units
- › Answers WMS requests
- › Runs on every major software platform via JavaScript

Adressing position showcase:

HTTP POST
Body:
{
 "position": "A.5.1",
 "color": 1,
 "style": 0
}

position – code defined by web configurator – represents active position
color – color definition
style – light style

Response
{
 "batteryState": " 12.3"
}

About Smart Product Solution s.r.o.

Smart Product Solution s.r.o. operates on the market since 2012. We offer a wide spectrum of standardized and custom products, as well as our services suited for all sections of the industry logistics.

Our focus lies on analysing, development, production & following delivery of custom solutions applied to logistic proceses in various sections of the industry such as automotive, pharmaceutical, food, etc.



PRODUCTS

Our products are based on frequency of specific requests from customers, and are standardized for you. Our products are divided into standard, customer and custom.



ACCESSORIES

All accessories used in our products are also available separately. The offer is complemented by components used in customer configurations.



SERVICES

Our services offered together with our products are based on the individual phases of customers projects and are complemented by services of our partners.



APPLICATIONS

Products together with our accessories and services create applications.