



PULSEPRO

ASYS  
GROUP



PULSE PRO

# Smart Factory Manager

Smart Software Functions to Optimize  
your Production.

PULSE PRO

# Smart Factory Manager

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Discover the compact software solution from ASYS to optimize your production. PULSE PRO offers six software modules that will help you to control automated material flows in the shop floor, to achieve a dynamic just-in-time supply for each production step and to track all data flows.

PULSE PRO is easily operated via a cockpit and meets the highest demands for simple handling. The high quality usability is based on the tasks of the operators. Even with complex contents and functions, the users find their way to their goal quickly and easily.

# Software Modules

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## Observe & Control

Performance of the entire Shop Floor

10 – 13

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## Material

Automate, Control, Trace all Material Flows & Types

14 – 17

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## Plan & Execute

Precise Order Planning of the entire Shop Floor

18 – 21

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## Product Change

Stop Losing Time on Product Changeover

22 – 25

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## Program Preparation

Offline Programming of Machine

26 – 29

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## Factory Connect

Import & Export of Data

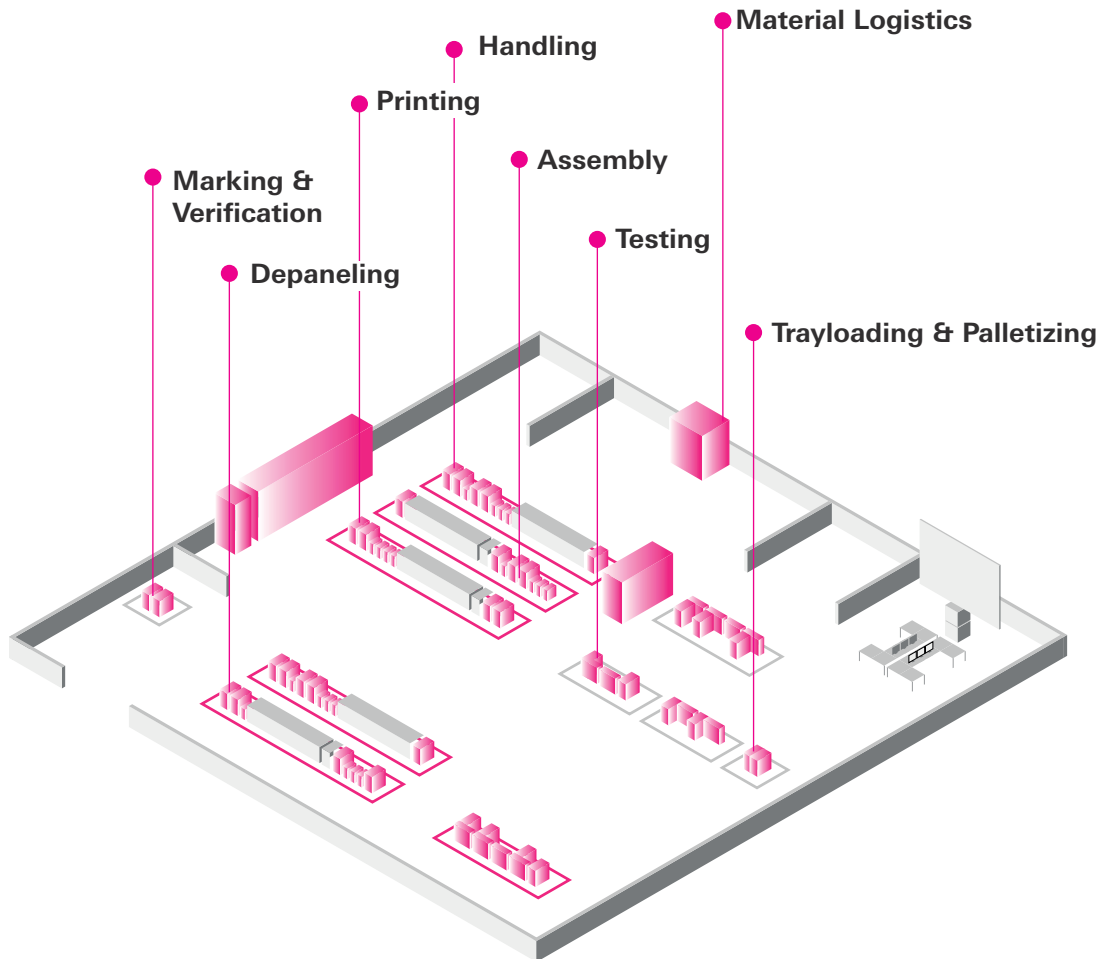
30 – 33

We offer with our machines  
over 75% of the entire  
Smart Factory.

Smart Factory

# Machine Layer

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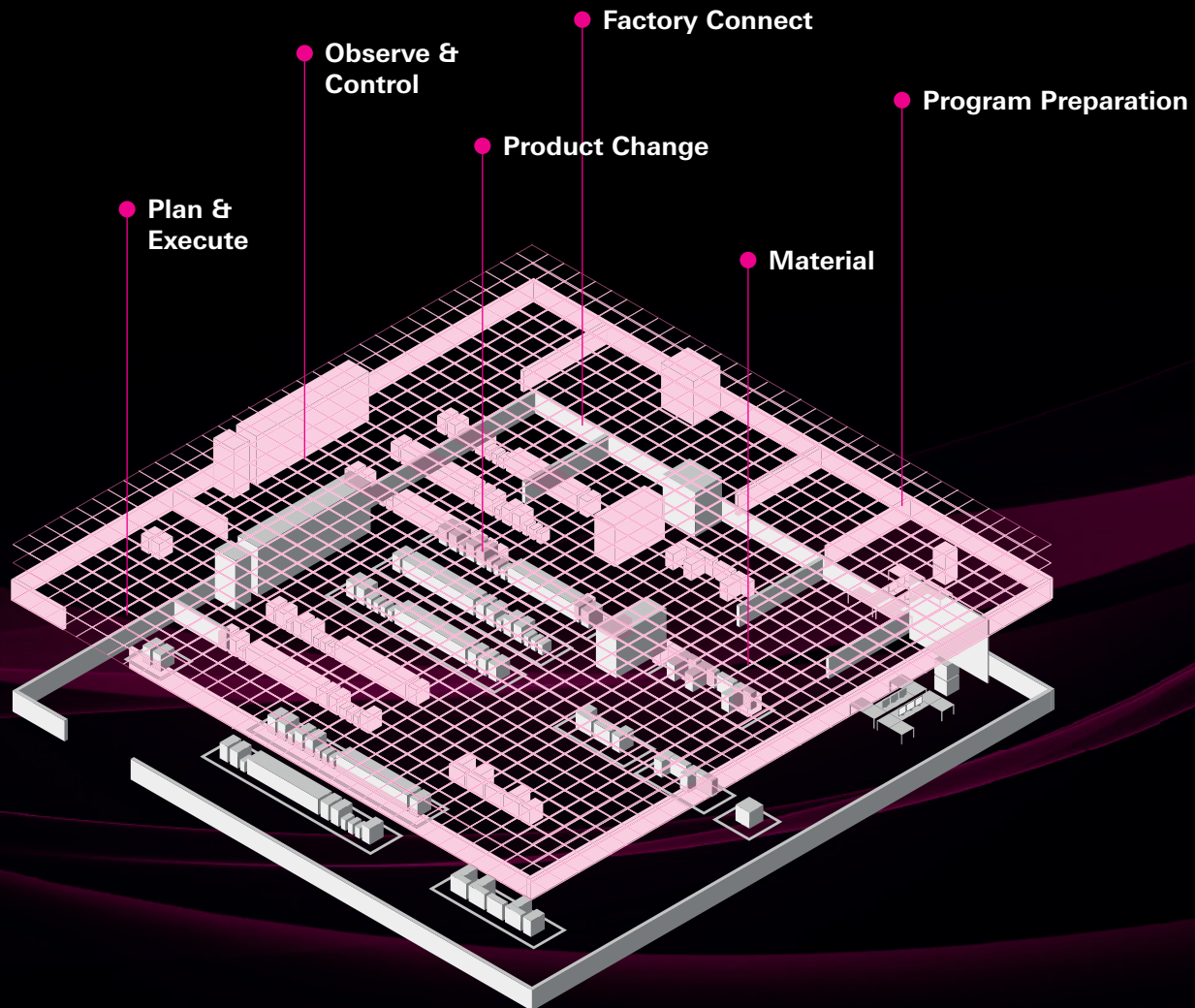


PULSE PRO Software  
solutions for the entire  
Smart Factory.

Smart Factory

# Software Layer

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PULSE PRO

# Advantages at a Glance

All functions in a uniform look & feel

All software functionalities in an organized and modular structure

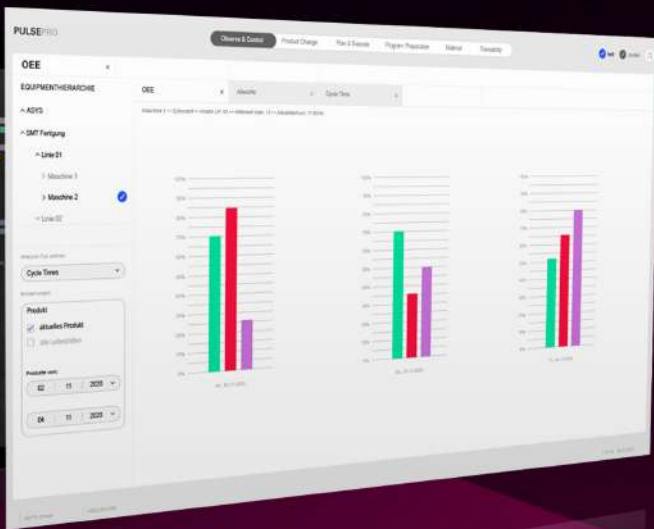


Easier control and visualization of automated material flows on the entire shopfloor

Operator has the production in sight and is able to achieve an optimum of productivity

Various functions with solutions on all layers

Closing the gap between Shopfloor and MES/ERP



**PULSEPRO**

# Modules & Functions

Modules	Description	Functions	Function Area		
			Machine	Line	Factory
<b>Observe &amp; Control</b>	Performance overview of the entire shopfloor	Shopfloor Statistics	●	●	●
		Smart Alerts	●	●	●
		Monitoring Cam	●	●	●
		Line Observer	●	●	●
		Dashboard Material	●	●	●
		Dashboard Line Materialflow	●	●	●
<b>Product Change</b>	Stop losing time on product changeover	Product Change		●	
		Product Change Lite		●	
<b>Plan &amp; Execute</b>	Precise order planning of the entire shopfloor	Order Control		●	●
		Order Planner		●	●
		Manual Workstation		●	●
		Pre Setup Area		●	●
<b>Program Preparation</b>	Offline programming of machine	INSIGNUM Programming	●		
		DIVISIO Programming	●		
		SERIO Programming	●		



Modules	Description	Functions	Function Area		
			Machine	Line	Factory
<b>Material</b>	Automate, control, trace all material flows & types	Material Locator	●	●	●
		Component Manager	●	●	●
		Advanced Component M.		●	●
		Carrier Manager	●	●	●
		MSL Manager	●	●	●
		Mobile Robot Manager			●
		Fleet Manager OMRON			●
<b>Factory Connect</b>	Import & export of data	Sync Factory Calendar			●
		Import Order Data			●
		Import Order Sequence			●
		Import Material Data			●
		Sync SAP – Material			●
		CFX – Connect Smart Alerts	●	●	●
		ASYS Socket Interface	●		

Cycle Time x Material Locator x

EQUIPMENTHIERARCHIE

ASYS

SMT Fertigung

Linie 01

Maschine 1

Maschine 2

PROPERTIES

Analysertyp wählen

CYCLE TIME

Einstellungen

aktuelles Produkt

alle Leiterplatten

Die Werten:

50

Produkt vom:

30 06 2020

Produkt bis:

04 09 2020

automatische Aktualisierung

Cycle Time x OEE x Abwärts x

Maschine 2 - Zykluszeit - Anzahl LP: 55 - Mittelwert über: 10 - Aktualisiert um: 17:53:54



PASS FAIL TREND

SEMI E 10 x

EQUIPMENTHIERARCHIE

ASYS

SMT Fertigung

Linie 01

Maschine 1

Maschine 2

Linie 02

EINSTELLUNGEN

Analysertyp wählen

SEMI E 10

Zeitraum

Programm & Trend

aktueller

Tag

vorheriger

1 Tag

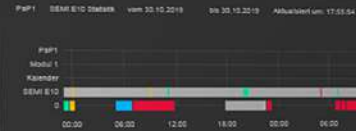
Datum vom:

30 06 2020

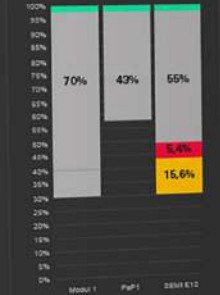
Datum bis:

04 09 2020

automatische Aktualisierung



ARBEITSZEITZUSTÄNDE: ANTEILE



STATISTIK

marktanteil

Durchschnitt

Durchschnitt

Zustand

Durchschnitt

Durchschnitt

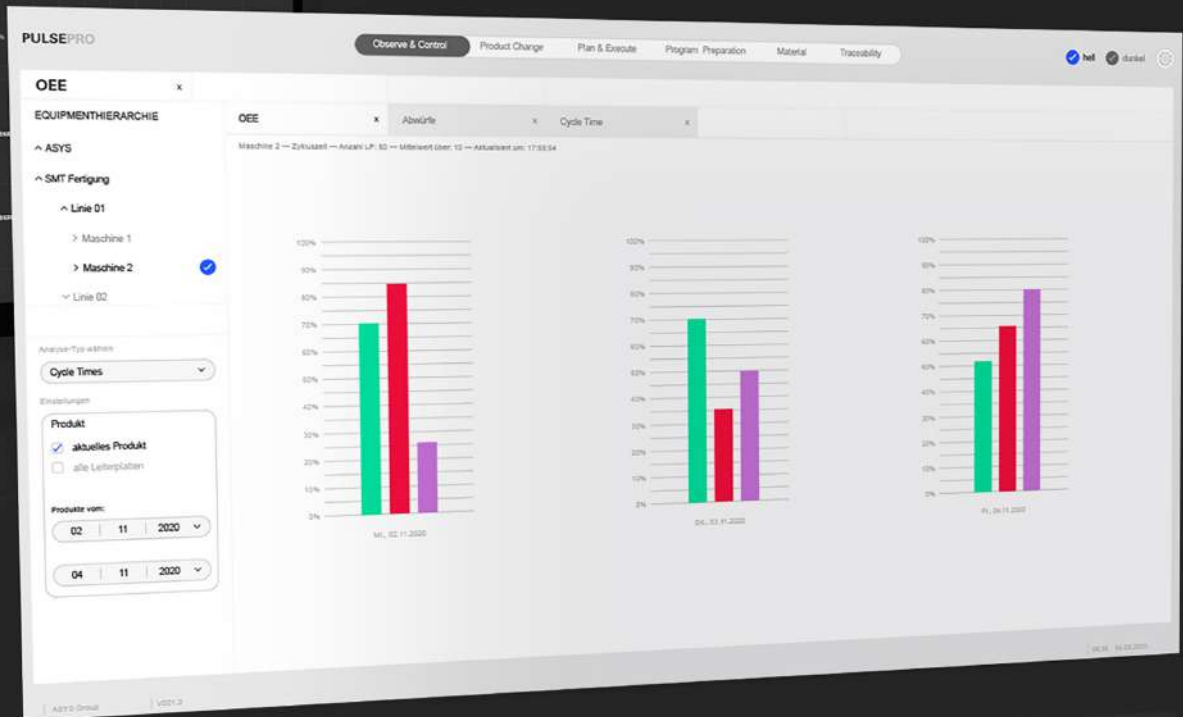
Software Module

# Observe & Control

Performance of the  
entire Shopfloor



Category	Value
Operative Betriebszeit	0:00:00:41
Verfügbarkeit	0:00:00:29
Auslastung	0:00:00:14
Zykluszeit	0:10:00



# Observe & Control

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## Observe & Control

The PULSE PRO module „Observe & Control“ offers a variety of monitoring possibilities to keep the overview of all connected machines. The operator always knows what is going on in every situation. The data is put into relation and is summarized according to standardized specifications. The tool maps the performance of the entire shop floor. Interrelationships become clearer, bottlenecks and downtimes are clearly visualized and can be effectively addressed or even avoided with foresight. Always following the goal of keeping production running and increasing productivity.

## Module Highlights

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**Monitoring of the entire electronics production across all machines / lines**

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**Acquisition of complete machine / process data**

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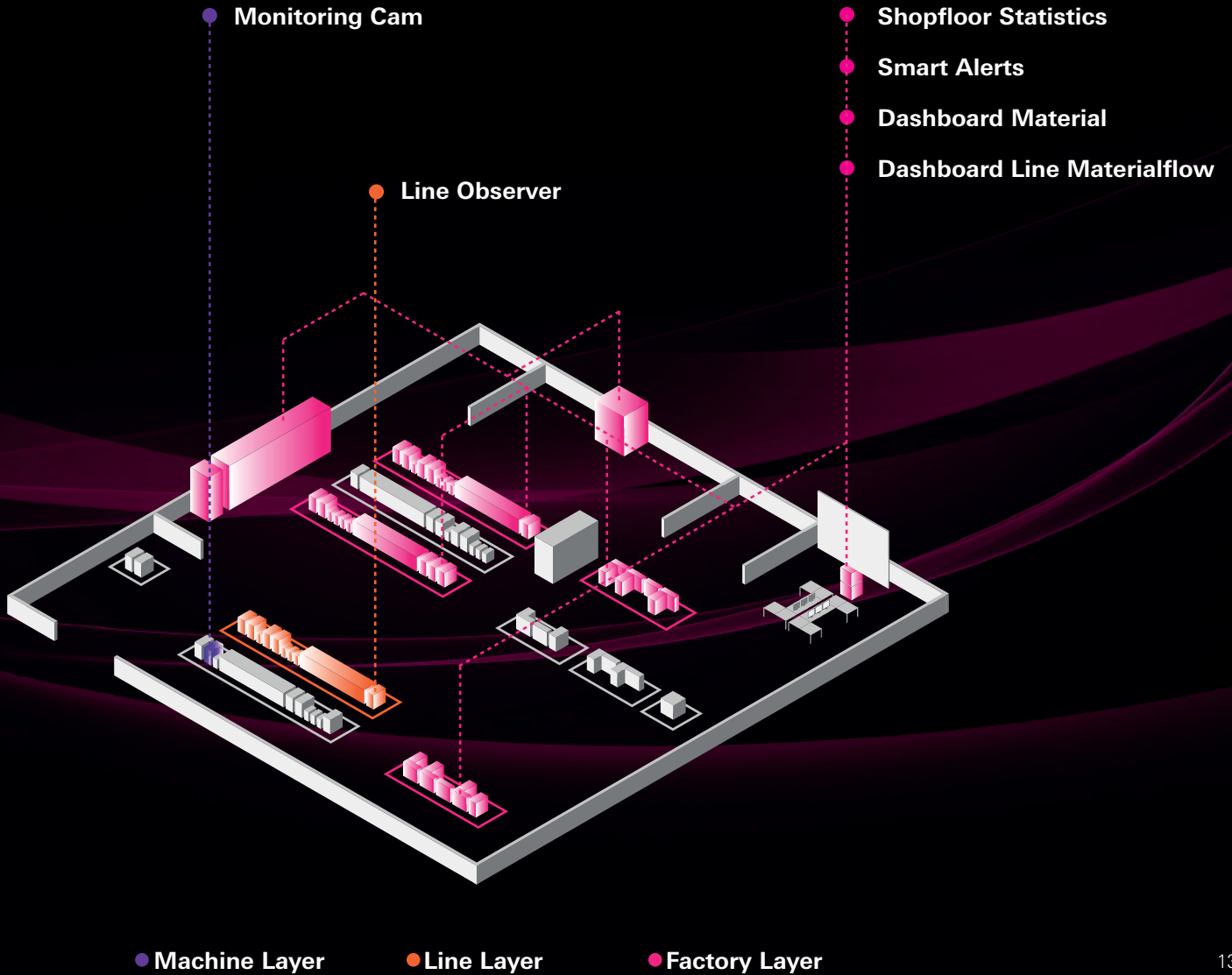
**Increase of transparency, productivity and quality**

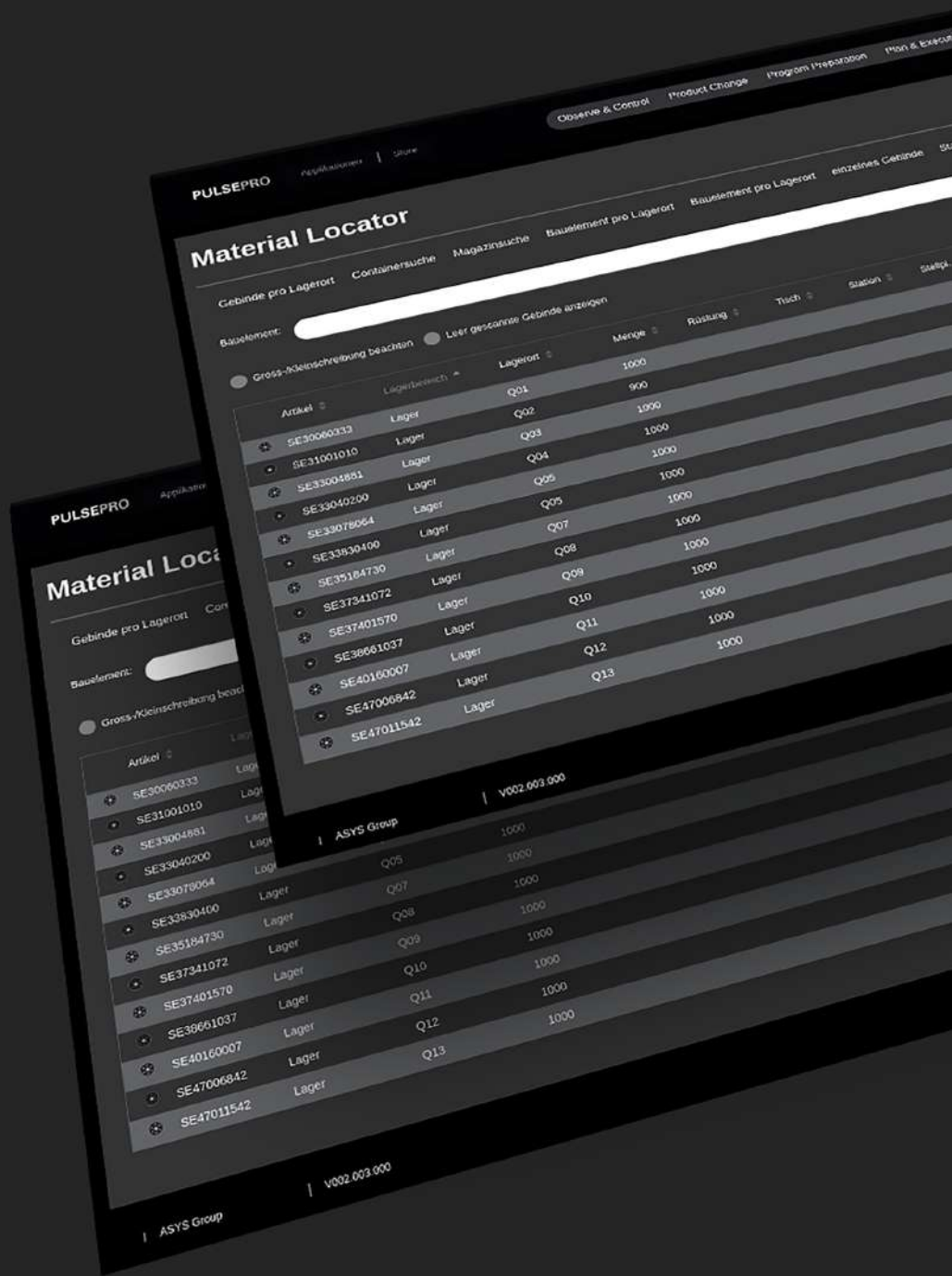
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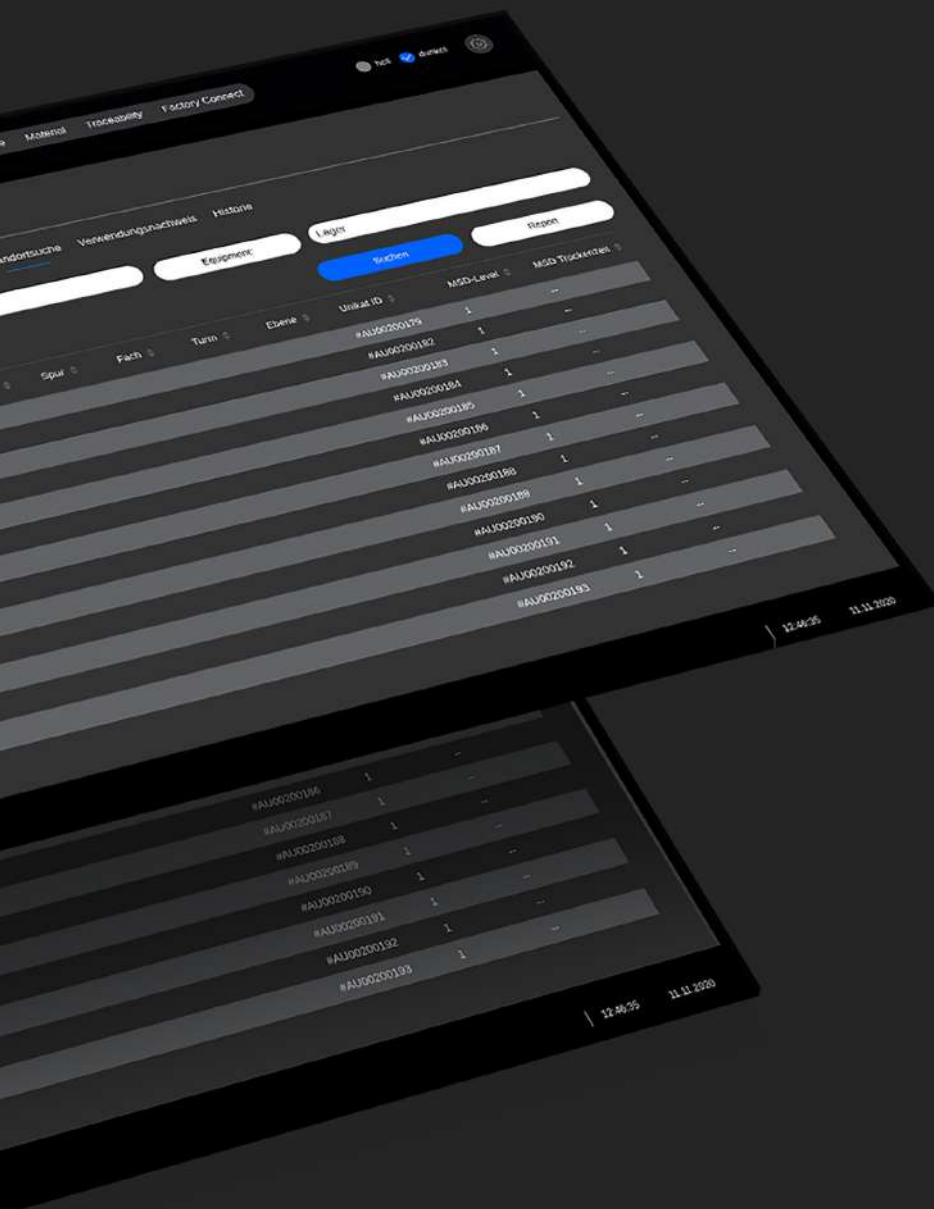
**Cost reduction through support in process optimization**

Observe & Control

# Functions







Software Module

# Material

Automate, control,  
trace all material  
flows & types

# Material

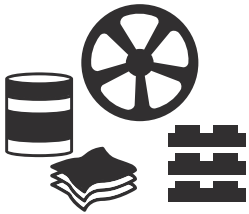
## Module Highlights

**Overview of quantities and states of all materials in the entire shopfloor**

**Autonomous magazine control and material replenishment for components and printed**

**Monitoring the floor life time of moisture-sensitive components**

**Integration and connection of all modules for autonomous transport**



### Material

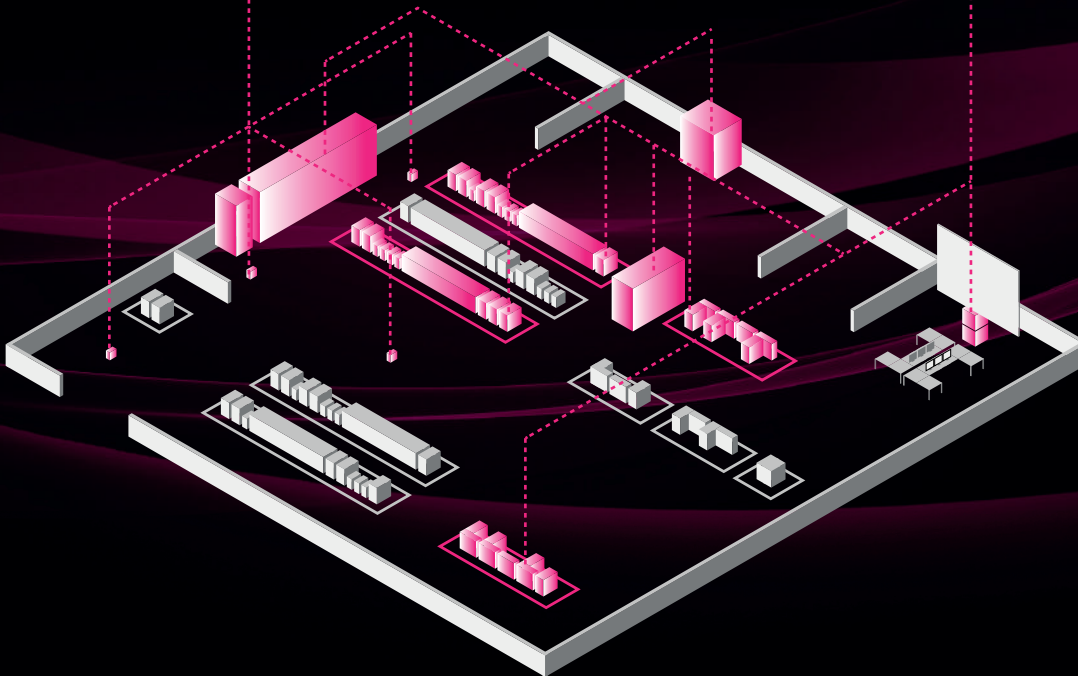
The quantities and states of all materials on the entire shopfloor are clearly documented in the PULSE PRO module „Material“. All component reels, trays and PCBs are managed on the basis of Unique ID (UID) and the replenishment of material is controlled autonomously, which reduces the operator's workload. Furthermore, the floor life time of moisture-sensitive components is monitored. Based on the order planning, full or empty magazines are autonomously controlled within the entire shopfloor between lines and storage locations. Therefore all modules are integrated and connected for autonomous transport.



# Functions

- Mobile Robot Manager
- Fleet Manager OMRON

- Material Locator
- Component Manager
- Advanced Component Manager
- Carrier Manager
- MSL Manager



● Machine Layer

● Line Layer

● Factory Layer



# Plan & Execute

Precise Order Planning of the entire Shopfloor



**PULSEPRO** Applikationen | Store

Observe & Control    Product Change    **Plan & Execute**    Program Preparation    Manual    Traceability

### Order Control

**EQUIPMENTHIERARCHIE**

- ASYS
- SMT Fertigung
  - Linie 01
    - Maschine 1
    - Maschine 2
  - Linie 02

**STEUERUNG**

- Leitlinien belegen
- Leitlinien im verbleiblich freigeben
- Logbuch einlegen
- Logbuchbelegte zum Auftrag einlegen
- Logbuch entfernen
- Logbuchentwurf erfassen
- Sperrung freigeben
- Gasperfor Anschlagung freigeben
- Ausschleiden
- Aufschlagung in Zwischenbelegte integrieren
- Einlegen
- Aufschlagung einlegen
- Maschinenansicht
- Übersicht zur Maschinenansicht
- Fehlerliste
- Übersicht der Fehlerliste
- Fehlerliste
- Übersicht der Fehlerliste
- Fehlerliste
- Übersicht der Fehlerliste

**GEPLANTE ARBEITSGÄNGE**

Auftrag	Modul	Information	Stückzahl	Lieferdatum	Lief. Mod.	Lagerort	Status	Produktionsdauer
3244789212	8800099			06.01.2021	23.02.2021	Lager	Engpass	0:02:43:30
3244789212	8800099			05.01.2021	23.02.2021	Lager	Engpass	0:02:43:30
3244789212	8800099			05.01.2021	23.02.2021	Lager	Engpass	0:02:43:30
3244789212	8800099			05.01.2021	23.02.2021	Lager	Engpass	0:02:43:30

**DETAILIERTER PLAN**

Auftrag	Modul	Information	Stückzahl	Lieferdatum	Lief. Mod.	Lagerort	Status	Produktionsdauer
3244789212	8800099	Asplanen		05.01.2021	23.02.2021	Lager	Engpass	0:02:43:30
3244789212	8800099	Ergebnisplan		05.01.2021	23.02.2021	Lager	Engpass	0:02:43:30
3244789212	8800099	Ergebnis-Auftrag		05.01.2021	23.02.2021	Lager	Engpass	0:02:43:30
3244789212	8800099	Barodenkett drucken		05.01.2021	23.02.2021	Lager	Engpass	0:02:43:30
3244789212	8800099	Filter		05.01.2021	23.02.2021	Lager	Engpass	0:02:43:30
3244789212	8800099	Bar		05.01.2021	23.02.2021	Lager	Engpass	0:02:43:30

**UNGEPLANTE ARBEITSGÄNGE**

Auftrag	Modul	Information	Stückzahl	Lieferdatum	Lief. Mod.	Lagerort	Status	Produktionsdauer
3244789212	8800099	Leitlinien		05.01.2021	23.02.2021	Lager	Engpass	0:02:43:30
3244789212	8800099	Logbuch einlegen		05.01.2021	23.02.2021	Lager	Engpass	0:02:43:30
3244789212	8800099	Logbuch erfassen		05.01.2021	23.02.2021	Lager	Engpass	0:02:43:30
3244789212	8800099	Sperrung freigeben		05.01.2021	23.02.2021	Lager	Engpass	0:02:43:30
3244789212	8800099	Ausschleiden		05.01.2021	23.02.2021	Lager	Engpass	0:02:43:30
3244789212	8800099	Fehlerliste		05.01.2021	23.02.2021	Lager	Engpass	0:02:43:30
3244789212	8800099	38 Pico Sun	240	05.01.2021	23.02.2021	Lager	Engpass	0:02:43:30
3244789212	8800099	58 Pico Sun	240	05.01.2021	23.02.2021	Lager	Engpass	0:02:43:30
3244789212	8800099	58 Pico Sun	240	05.01.2021	23.02.2021	Lager	Engpass	0:02:43:30
3244789212	8800099	58 Pico Sun	240	05.01.2021	23.02.2021	Lager	Engpass	0:02:43:30
3244789212	8800099	58 Pico Sun	240	05.01.2021	23.02.2021	Lager	Engpass	0:02:43:30
3244789212	8800099	58 Pico Sun	240	05.01.2021	23.02.2021	Lager	Engpass	0:02:43:30
3244789212	8800099	58 Pico Sun	240	05.01.2021	23.02.2021	Lager	Engpass	0:02:43:30
3244789212	8800099	58 Pico Sun	240	05.01.2021	23.02.2021	Lager	Engpass	0:02:43:30
3244789212	8800099	58 Pico Sun	240	05.01.2021	23.02.2021	Lager	Engpass	0:02:43:30

ASYS Group    V002 003 000

# Plan & Execute

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## Plan & Execute

All orders on the entire shopfloor are precisely planned in the PULSE PRO module „Plan & Execute“. The orders and production times are clearly displayed in Gantt diagrams. The automatic planner distributes selected production orders on n-SMD lines and can be optimized manually. The result is influenced by the planner by parameters (e.g. weighting of the delivery date, number of setup changes, etc.). The different simulation results can be created, deleted and compared. The best simulation result is transferred to the live planning.

## Module Highlights

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**Automatic order planning for SMD lines in a separate simulation area**

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**Optimal distribution of orders**

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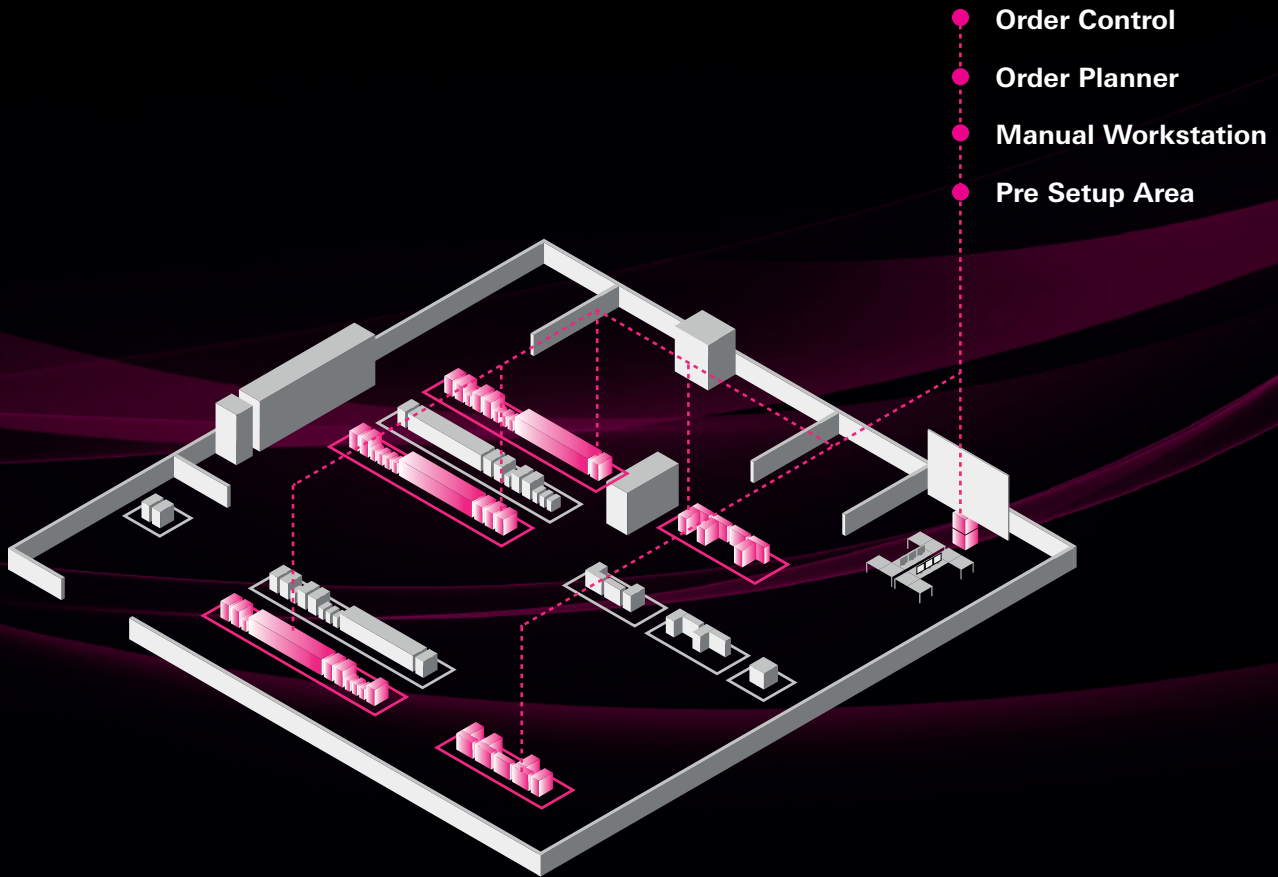
**Clear presentation of orders and production times in Gantt diagrams**

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**Optimal transparency of current and planned order processing**

Plan & Execute

# Functions























● Machine Layer

● Line Layer

● Factory Layer

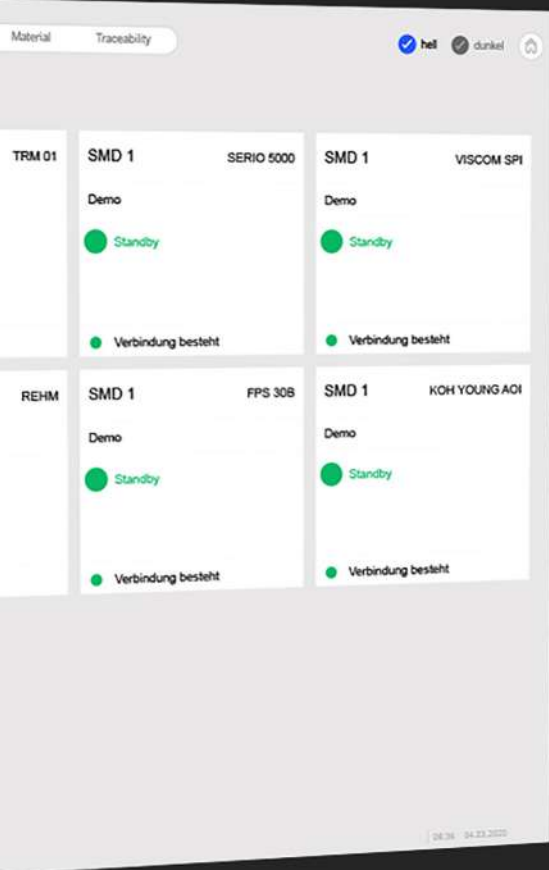
### Product Change

<p>SMD 1      AES03 Speed</p> <p>Demo</p> <p> Fehler 10 Not-Halt Schalter gedrückt</p> <p> Verbindung besteht</p>	<p>SMD 1      LSB03</p> <p>Demo</p> <p> Standby</p> <p> Verbindung besteht</p>	<p>SMD 1      INSIGNUM 4000</p> <p>Demo</p> <p> Standby</p> <p> Verbindung besteht</p>	<p>SMD 1</p> <p>Demo</p> <p> Standby</p> <p> Verbindung besteht</p>
<p>SMD 1      TRM 01</p> <p>Demo</p> <p> Standby</p> <p> Verbindung besteht</p>	<p>SMD 1      Fuji NXT 2</p> <p>Demo</p> <p> Standby</p> <p> Verbindung besteht</p>	<p>SMD 1      TRM 01</p> <p>Demo</p> <p> Standby</p> <p> Verbindung besteht</p>	<p>SMD 1</p> <p>Demo</p> <p> Standby</p> <p> Verbindung besteht</p>
<p>SMD 1      TRM 03</p> <p>Demo</p> <p> Warnung PCB Inspektion</p> <p> Verbindung besteht</p>	<p>SMD 1      AMS 03 Speed</p> <p>Demo</p> <p> Fehler 10 Magazin voll</p> <p> Verbindung besteht</p>		

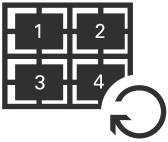
Software Module

# Product Change

Stop Losing Time on  
Product Changeover



# Product Change



## Product Change

In the PULSE PRO module „Product Change“ the product change at the line is triggered by only one click. The parameters are sent to all machines of the line and all settings are stored in a global database. These can be checked, changed and duplicated at any time. This results in a faster NPI (New Product Introduction) compared to programming on single systems. All ASYS Group machines as well as third party systems can be integrated.

## Module Highlights

**Product change of a line  
in a few minutes**

**Simple, controlled product  
changeover of the entire line**

**Faster NPI compared to programming  
on individual systems**

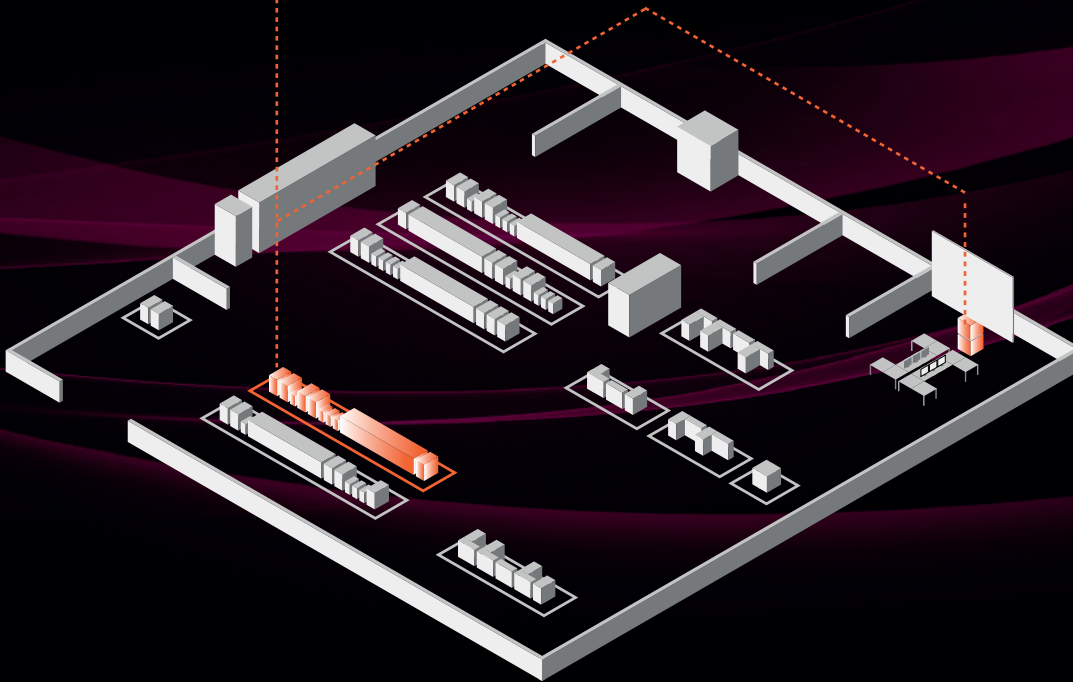
**Avoidance of  
transmission errors**



Product Change

# Functions

- Product Change
- Product Change Lite



● Machine Layer

● Line Layer

● Factory Layer

Offline Programming x

SIMPLEX PRO


<b>Produktgröße</b> 600 x 600 x 5 [mm] Länge x Breite x Höhe	<b>Program-Produkt</b> AAC_14581_437 201402150441004	<b>Taktzeit</b> 0:00:000 [s] Sekunden	<b>Teilanzahl</b> 0 [Stk] Gut (Stk)	<b>Sicherheitsstatus</b> OK	<b>Reisepfug</b> 20.0 [m]
--------------------------------------------------------------------	------------------------------------------------------------	---------------------------------------------	-------------------------------------------	--------------------------------	------------------------------

**ANSICHT**

Kamera  Leiterplatte

**SEITE**

Seite 1  Seite 2



**Aktion**

X-Position 12.00.2019 01.01.2019

Y-Position 12.00.2019 01.01.2019

Position  Mark  Bookmark



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www.ahs-group.com

**KAMERA**

Anschleuse

Fiktional

Seite 1

Seite 2

Top Funktion  Neu

Listenparameter  Kamera Scanner  I/O  Aktion  Erstellen  Markieren  Top-Lage  Bookmark  Barcode  Bild aufnehmen

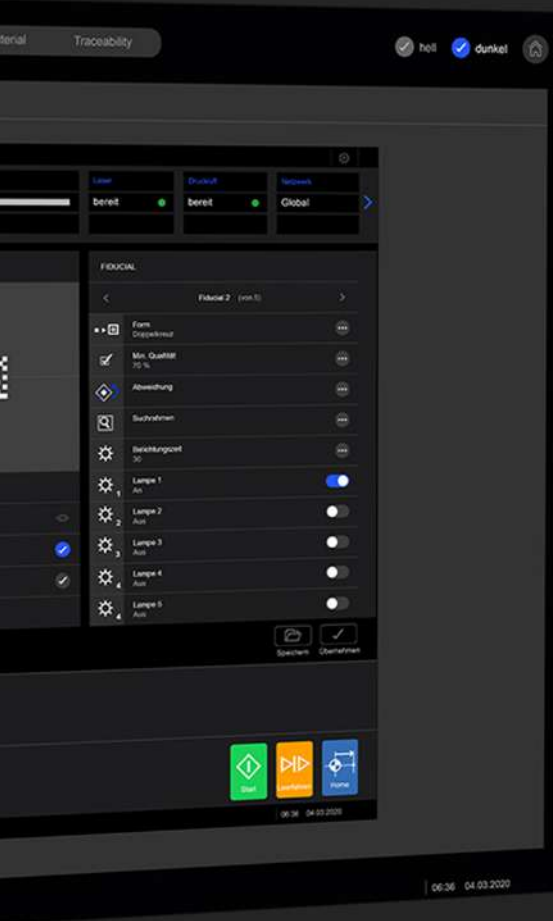
Produktion  Rezept  Handbetrieb  Maschine  Autom. Einfahren  Autom. Ausfahren  Wunde-Station  Bild aufnehmen  Marke erkennen  Marke lernen

User: Operator | V002 003 000 | Seriennummer: 2027406229984

Software Module

# Program Preparation

Offline Programming of  
Machine



# Program Preparation

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## Program Preparation

With the offline programming tools in the PULSE PRO module „Program Preparation“, the machines can be programmed at a PC workstation while another program is running. This reduces the downtimes significantly.

## Module Highlights

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**Offline programming during production**

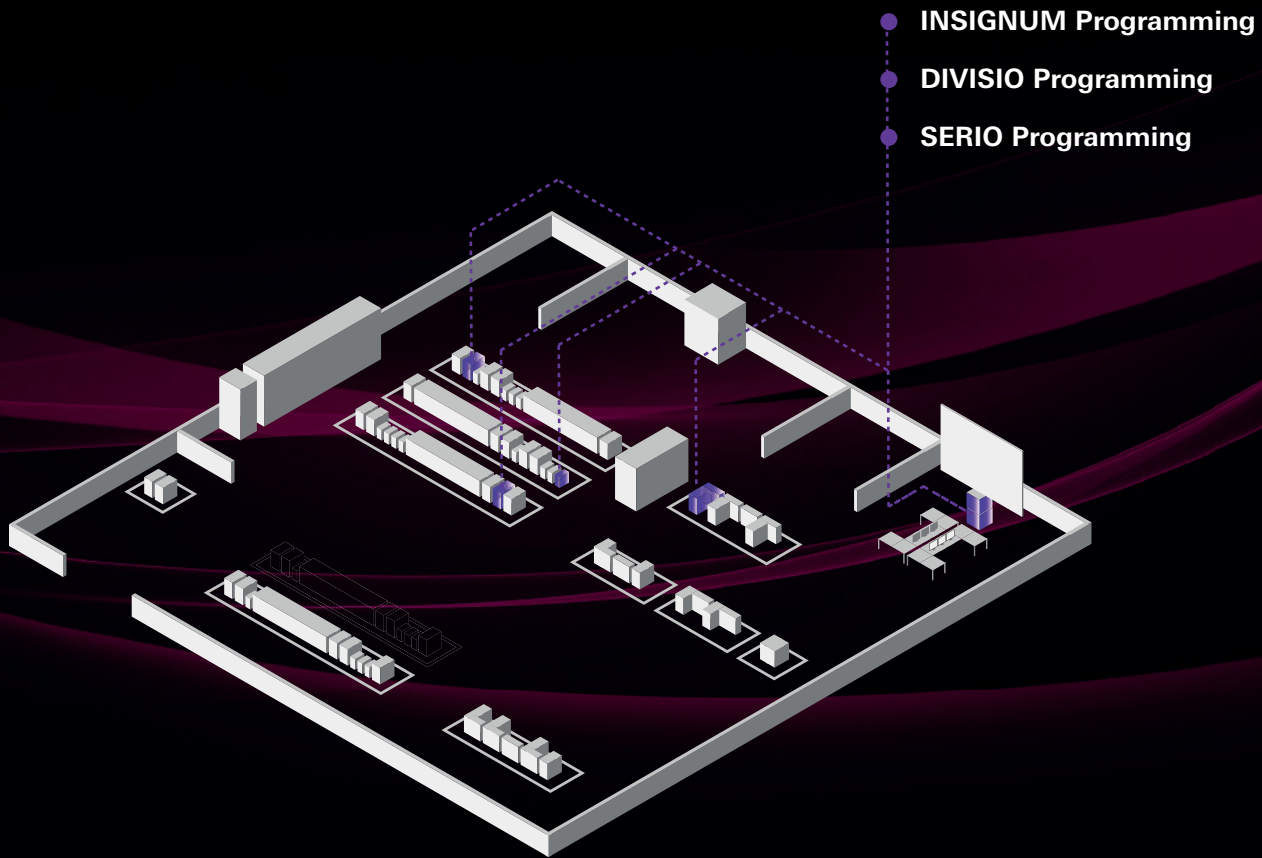
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**No production stop**

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**No multiple programming required**

# Functions



Factory Connect

MES / ERP



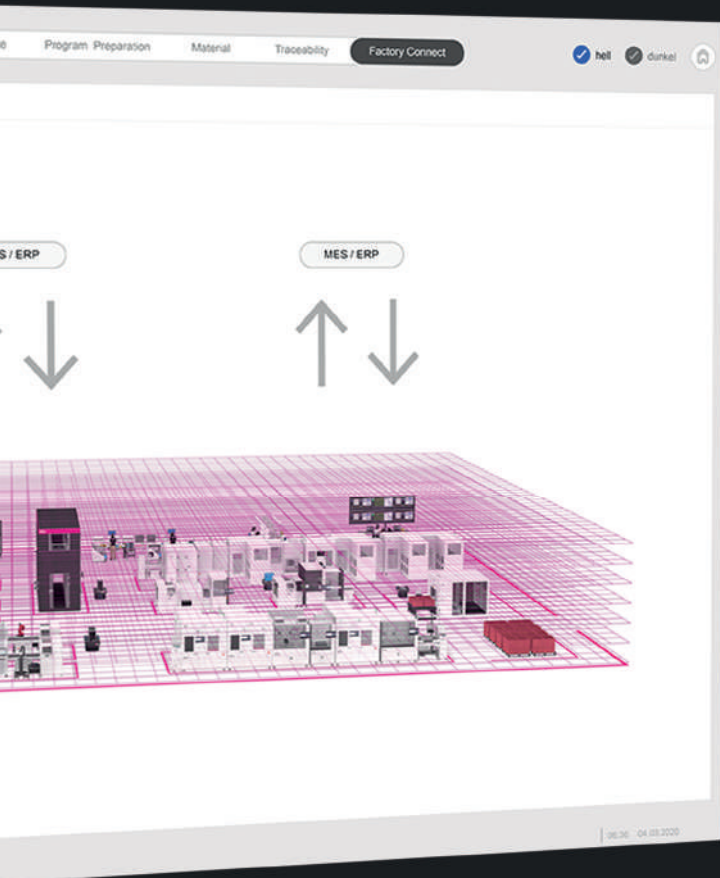
ME



Software Module

# Factory Connect

Import & Export of Data



# Factory Connect



## Factory Connect

In the PULSE PRO module „Factory Connect“ data can be exchanged with an ERP/MES interfaces. The order data and material data (UID and RFID) can be imported from a superior system for detailed order planning. For a timely and optimal disposition, production accounts in the ERP system are adjusted and changed depending on the material movement in the production. Status and error messages from machines can also be automatically transferred to a higher-level system via the CFX interface (PULSE interface). Furthermore, an interface is provided for synchronizing a higher-level factory calendar.

## Module Highlights

**Automatic transfer of order data and material data from higher-level system for order and material management in PULSE PRO**

**Transfer of an externally created detailed order planning in PULSE PRO**

**Synchronization of a superior factory calendar**

**Reconciliation and modification of production accounts in the ERP system depending on material movements in production for real-time and optimal disposition**

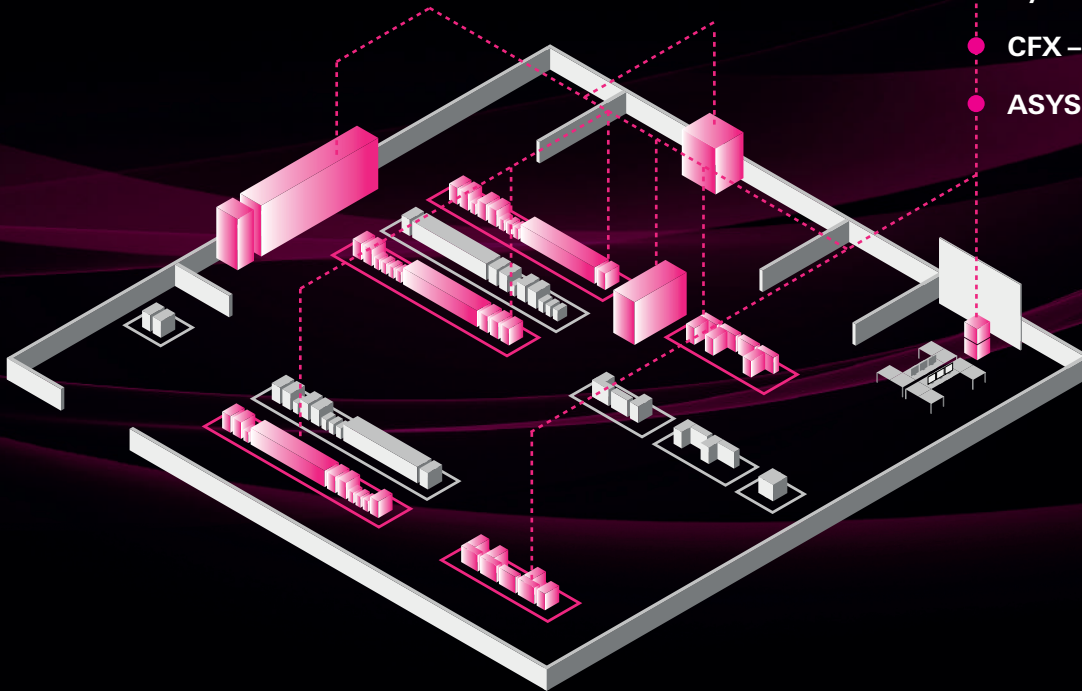


# Functions

MES/ERP



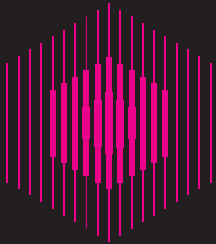
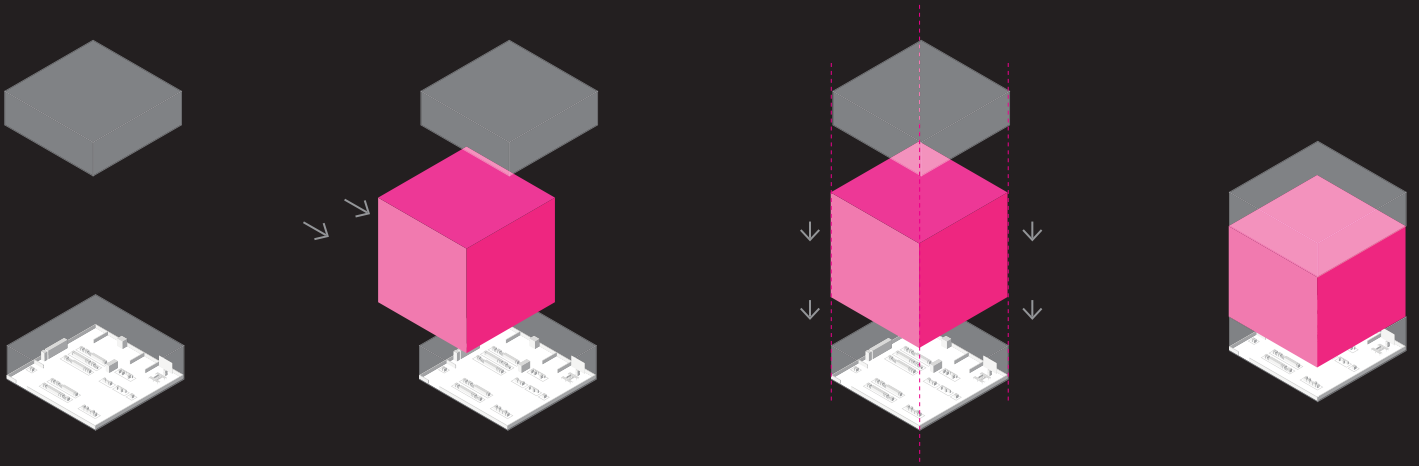
- Sync Factory Calendar
- Import Order Data
- Import Order Sequence
- Import Material Data
- Sync SAP – Material
- CFX – Connect Smart Alerts
- ASYS Socket Interface



● Machine Layer

● Line Layer

● Factory Layer



# The Control Center of the Smart Factory

# Closing the Gap between Shopfloor and MES / ERP

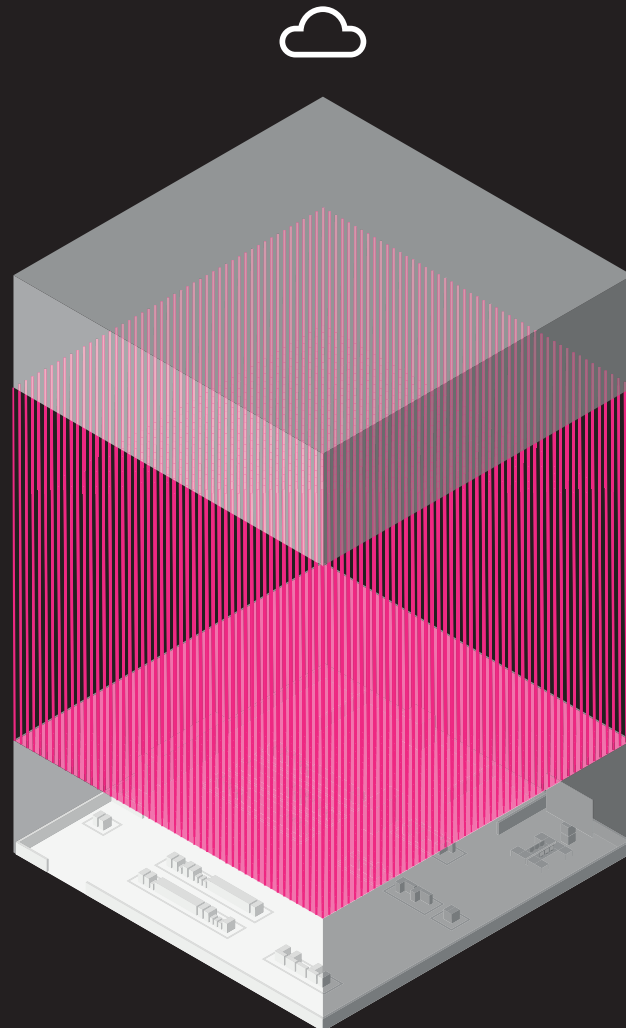
With PULSE PRO, the operator has the production in sight and can achieve an optimum of productivity. In this way, the faster growing complexity becomes manageable. PULSE PRO is the control center of the Smart Factory and offers solutions on all layers with the multiple functions. This closes the gap between

the shopfloor and the MES/ERP systems. PULSE PRO easily switches between existing systems and complements the functions that are still not or only in parts considered. The integration into a production line can be done in several steps if desired due to modularity and easy scalability.

MES / ERP Layer

PULSE PRO Layer

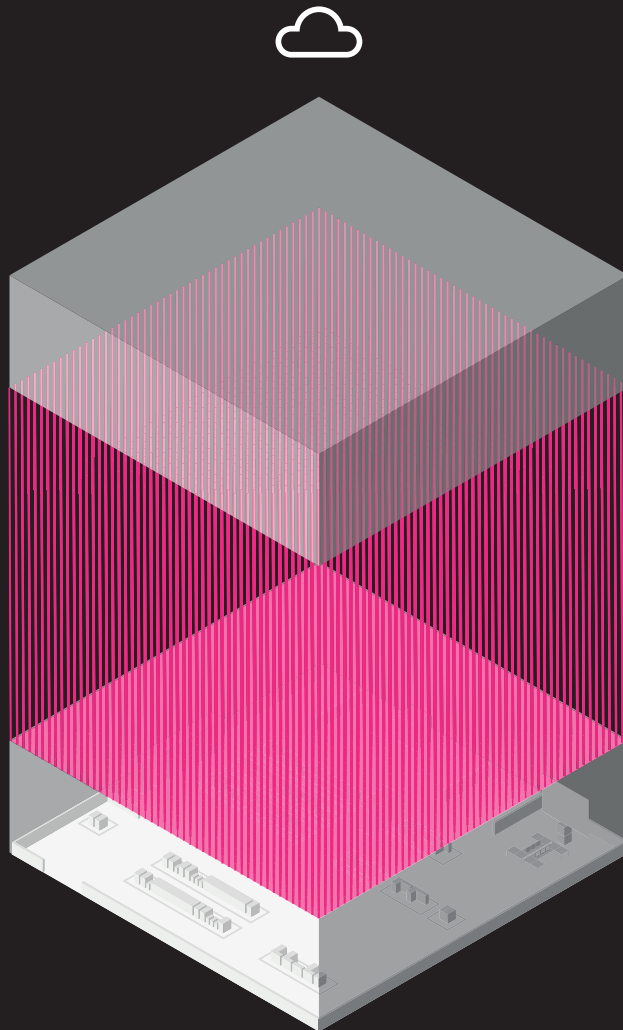
Shopfloor Layer



The base of a Smart Factory is an overall connection of the entire shopfloor. All systems have to be connected to achieve a real added value. ASYS is an expert in implementing connections and interfaces between different systems and offers the right software

solutions. The own powerful „ASYS Standard Interface“ is used for the connection of machines of different manufacturers. In addition, control systems can be networked with interfaces such as IPC/CFX or SEMI SMT-ELS. Additionally, the PULSE PRO software

solutions are able to connect to MES and ERP systems. ASYS has already implemented more than 5,000 connections to all common systems and orchestrates the shopfloor with smart functions from PULSE PRO.



● --- MES / ERP Layer ---

● --- PULSE PRO Layer ---

● --- Shopfloor Layer ---

# Open Interfaces & Connections to all Systems



## Customer specific interfaces

AEGIS | AIS, BJI/BCI | BTE | camLine | ComCell | Cogiscan |  
DM-Systems | FIS | IFM-Data Base | Infor | iTAC |  
Mentor Graphics | OpCon | Predictor | SAP | SIMATIC-IT |  
SPEA | SYSTEMA | TCPIP | Valor | ZVEI



Easy-Link

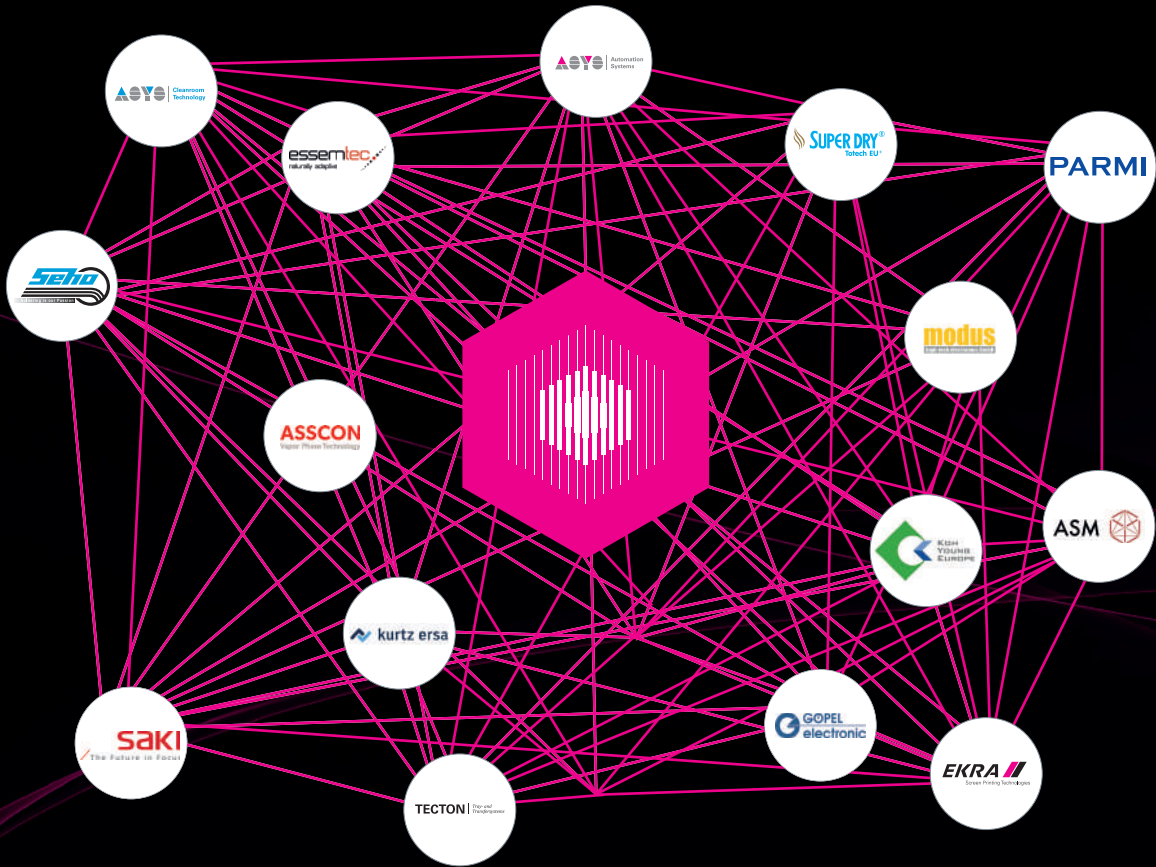
OIB

iLNB



PULSE PRO

# Community





»We are delighted to be represented on the PULSE PRO line by our 3D solder paste inspection. This is how we do intelligent process optimization for Industrie 4.0.«

**Detlef Beer**  
Product Development  
AOI-Component Inspection,  
Viscom



The PULSE-Community is a strong network of manufacturers in the electronics industry. All those manufacturers have already integrated the „ASYS Standard Interface“ for the connection of their machines to ASYS Software Solutions. Thanks to this standardized connection the entire production line can be connected today. We offer the „ASYS Standard Interface“ free for any other manufacturers, in order to provide a maximum flexibility and functionality to your entire production line.



»You should always know what's happening...system monitoring is increasingly important for our processes, such as soldering.«

**Michael Hanke**  
Head of Sales, Rehm



»Timing is everything. The tasklist helps our customers to keep a clear overview during assembly.«

**Klaus Kölbl**  
Sales Manager, Fuji



»The SMT-line-monitoring recognizes defects even before they can occur and is even more effective with PULSE PRO. A reasonable Industrie 4.0 approach.«

**Matthias Pfeifer**  
Head of Sales & Marketing,  
SMT



»Our cleaning systems are moving right next to the line.«

**Bert Schopmans**  
Director Sales/Application  
Technology Deutschland, Kolb



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