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 Кемерово (3842)65-04-62
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 Псков (8112)59-10-37
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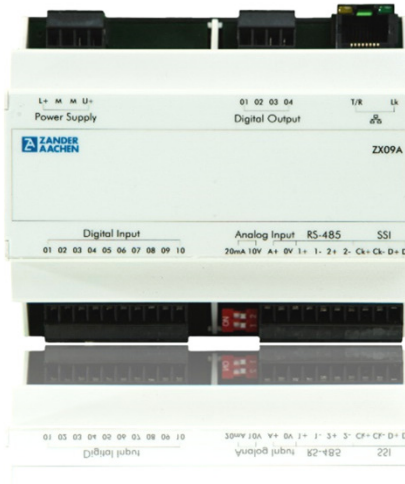
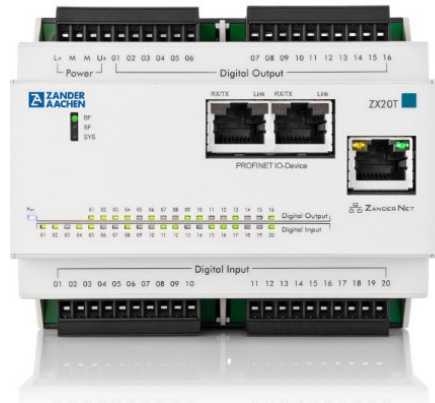
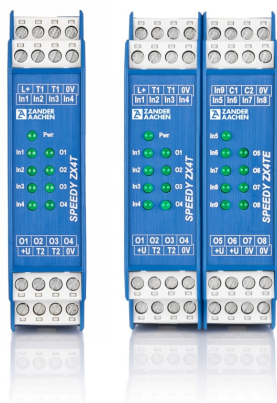
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<https://zander.nt-rt.ru> || zrm@nt-rt.ru

Zander Aachen - Automation

The World of Automation



AUTOMATION

Contents

1. The Challenges of Automation
2. High-speed Automation
3. The SPEEDY Product Group
4. The MVisio Product Group
5. The ZX20- and ZX09 Product Group

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1. The Challenges of Automation
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1. The Challenges of Automation

The Challenges

- Growing complexity and accelerating processes
 - Integrating the Industry 4.0
 - Networking machines, sensors and people
 - Digitalization and Automation of Processes
 - Technical Assistance
 - Decentralized decision making
- ➡ The need for fast, secure, reliable, reproducible, flexible and intelligent processes and process management

1. The Challenges of Automation

The Challenges

- Growing complexity and accelerating processes
 - Integrating the Industry 4.0
 - Networking machines, sensors and people
 - Digitalization and Automation of Processes
 - Technical Assistance
 - Decentralized decision making
- ➔ The need for fast, secure, reliable, reproducible, flexible and intelligent processes and process management

The Solution

- Zander Aachen provides a solution
 - PLCs for fast, secure, reliable, reproducible and flexible Automation and Technical Assistance for all processes

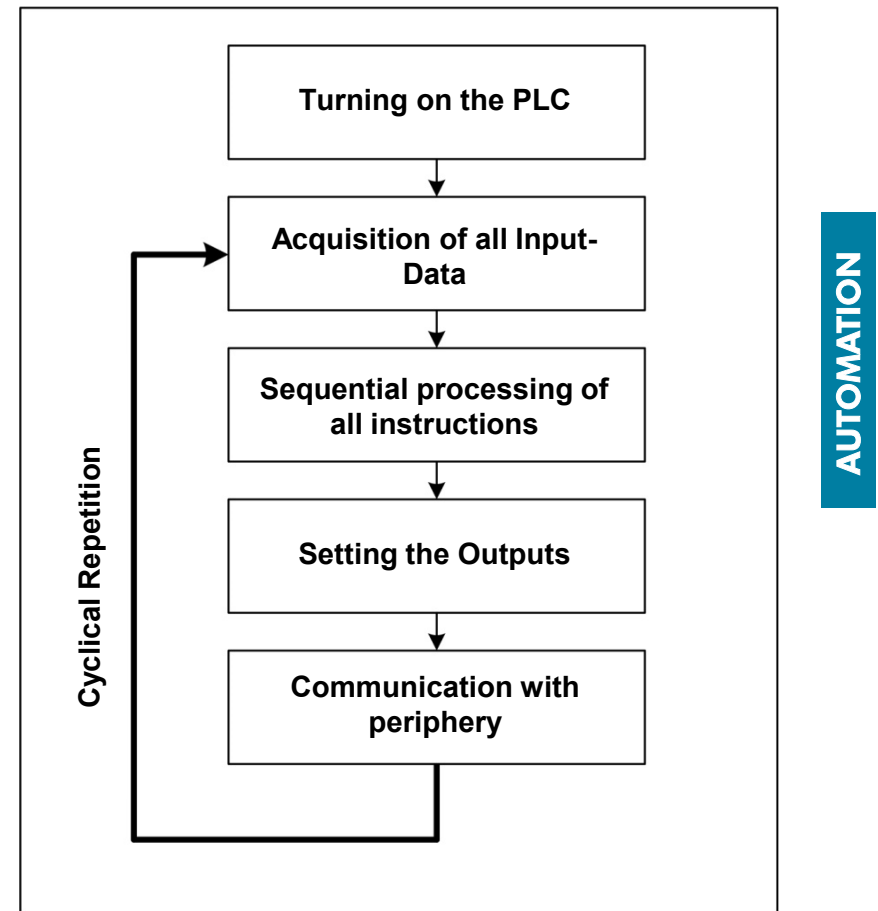
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2. High-speed Automation

The common PLC

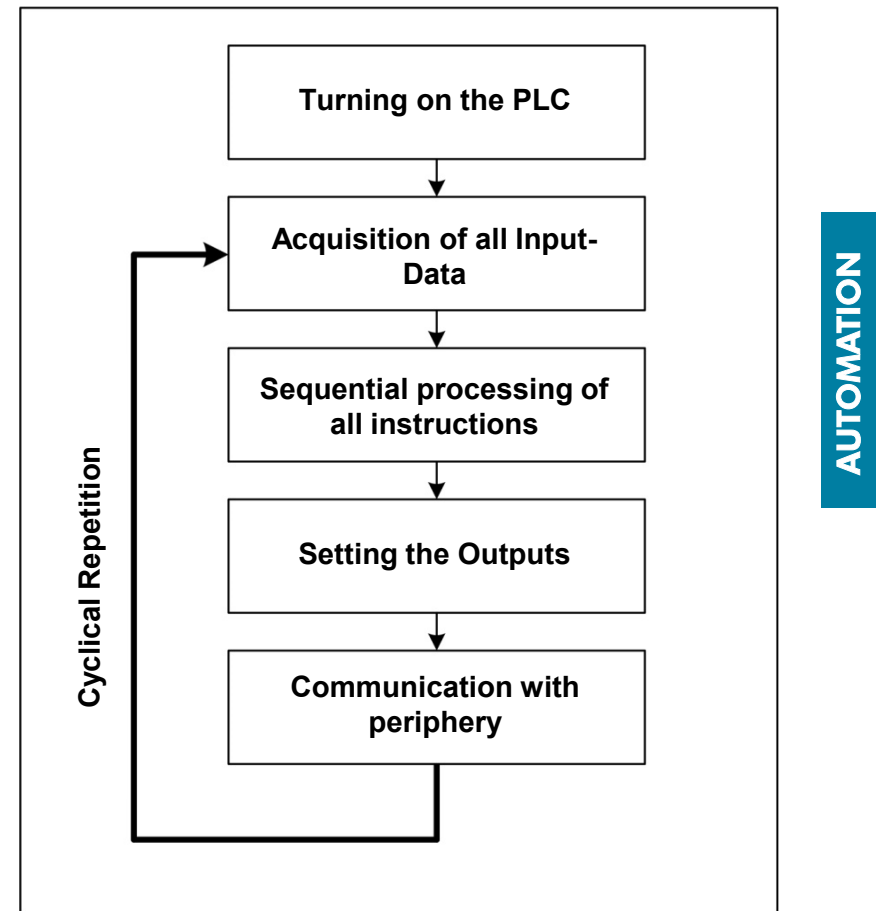
- Powered by a Microcontroller
- Programming in Software
- Sequential processing
 - Time dependent on amount and type of instructions



2. High-speed Automation

The common PLC

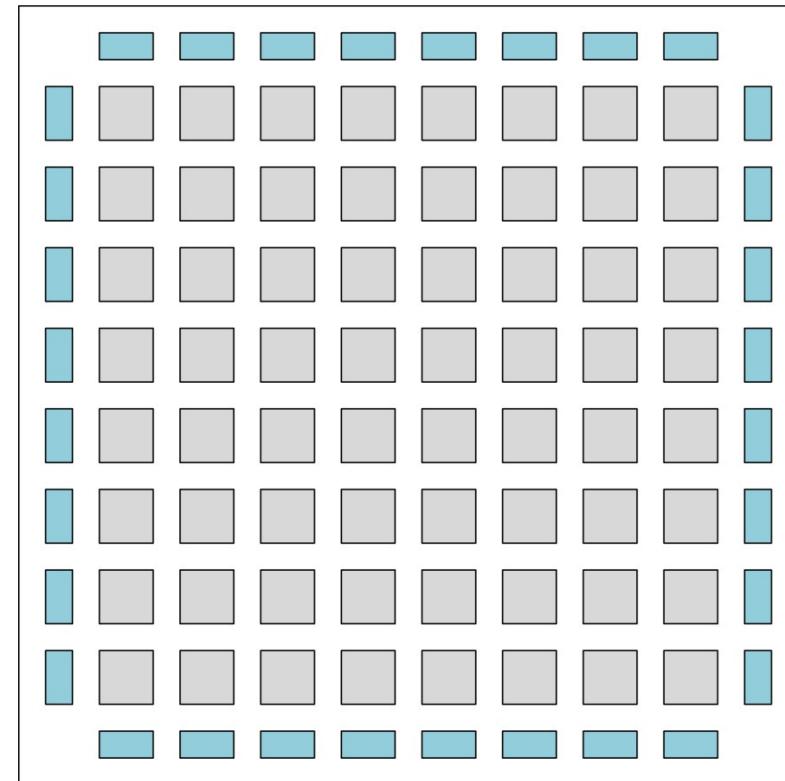
- Powered by a Microcontroller
- Programming in Software
- Sequential processing
 - Time dependent on amount and type of instructions
- Consequences
 - Jitter
 - Higher Reaction times
 - No reproducible switching points
 - No guarantee for the acquisition of fast signals



2. High-speed Automation

The heart of the ZX Product Group:
The FPGA

- Field Programmable Gate Array
 - Programming in Hardware
 - > 200.000 logic gates

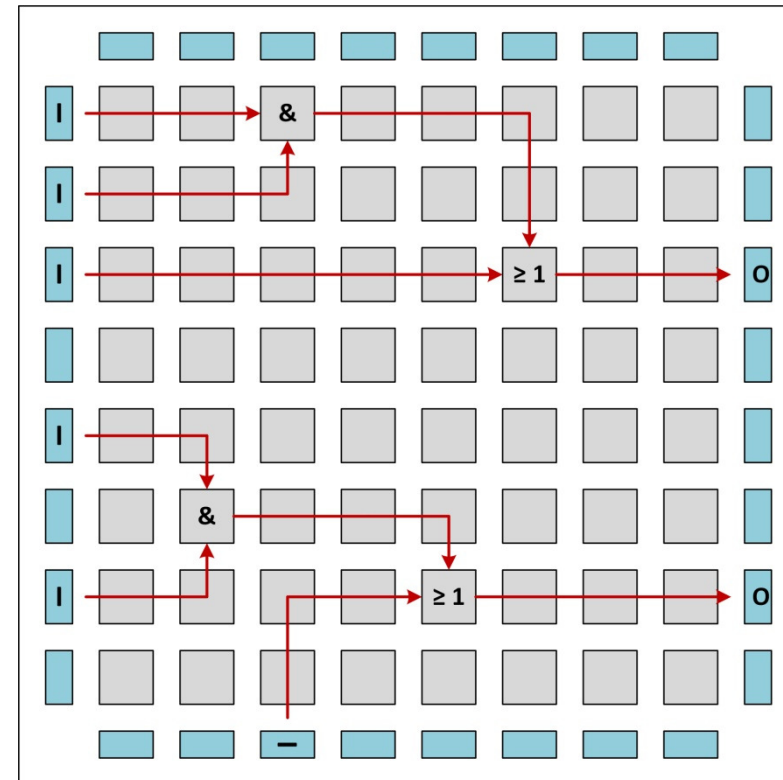


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2. High-speed Automation

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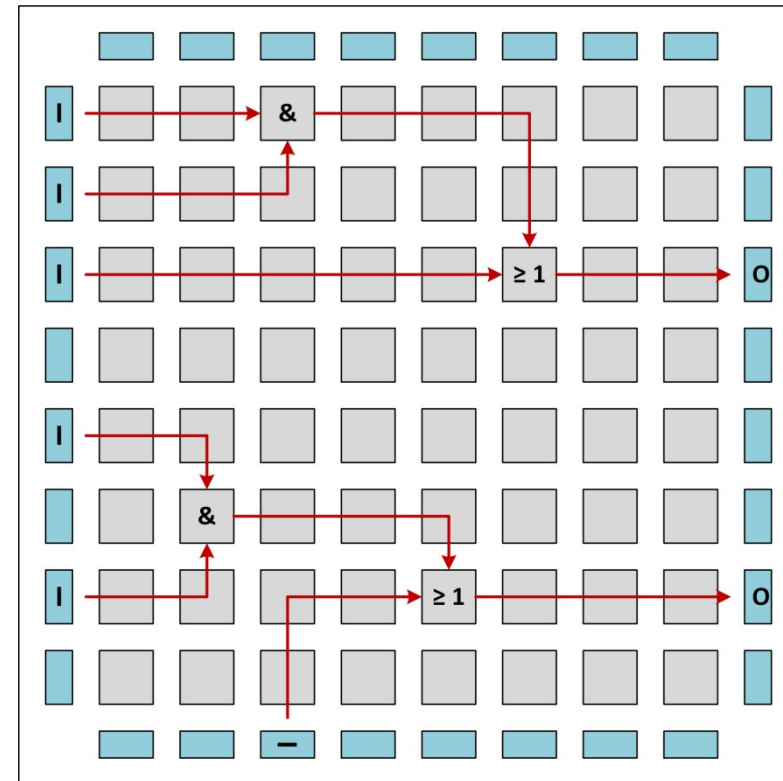


AUTOMATION

2. High-speed Automation

The heart of the ZX Product Group: The FPGA

- Field Programmable Gate Array
 - Programming in Hardware
 - > 200.000 logic gates
- Advantages
 - Cycle and jitter free
 - No sequential processing
 - 100% reproducible switching points for different machine speeds
 - Real parallel processing
- Completely reprogrammable
- For the ZX8T and ZX4T / ZX4TE a CPLD is used



2. High-speed Automation

The ZX Product Group: High-speed PLCs for every possible demand

- Solution for the accelerating production processes
 - Packaging machines
 - Filling systems
 - Labeling machines
 - ...



AUTOMATION

2. High-speed Automation

The ZX Product Group: High-speed PLCs for every possible demand

- Solution for the accelerating production processes
 - Packaging machines
 - Filling systems
 - Labeling machines
 - ...
- Realized with a new type of PLC
- Easy programmable in Structured Text (ST)
 - EX_PRESS 4 for ZX8T, ZX4T and ZX4TE
 - EX_PRESS 5 for ZX20T, ZX20TP, ZX20TC, ZX09 and ZX09A
 - No new language required
- Fast Subsystem for cooperation with slower PLCs

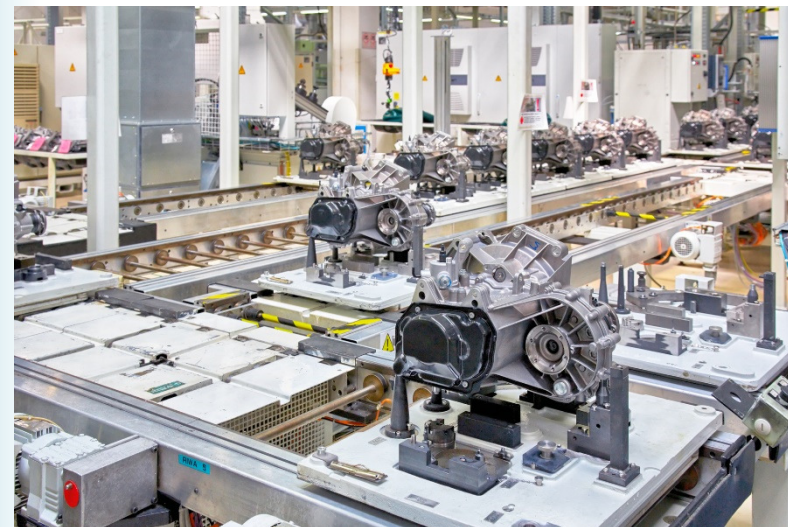
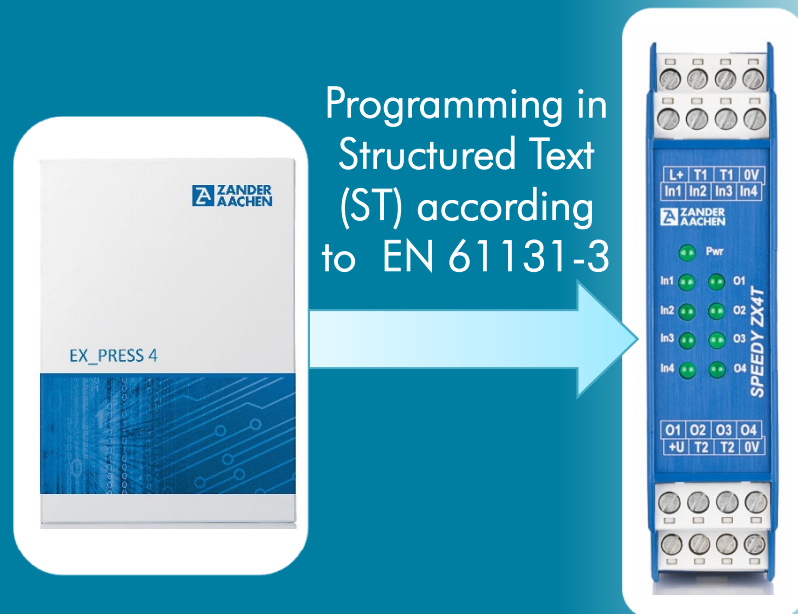


AUTOMATION

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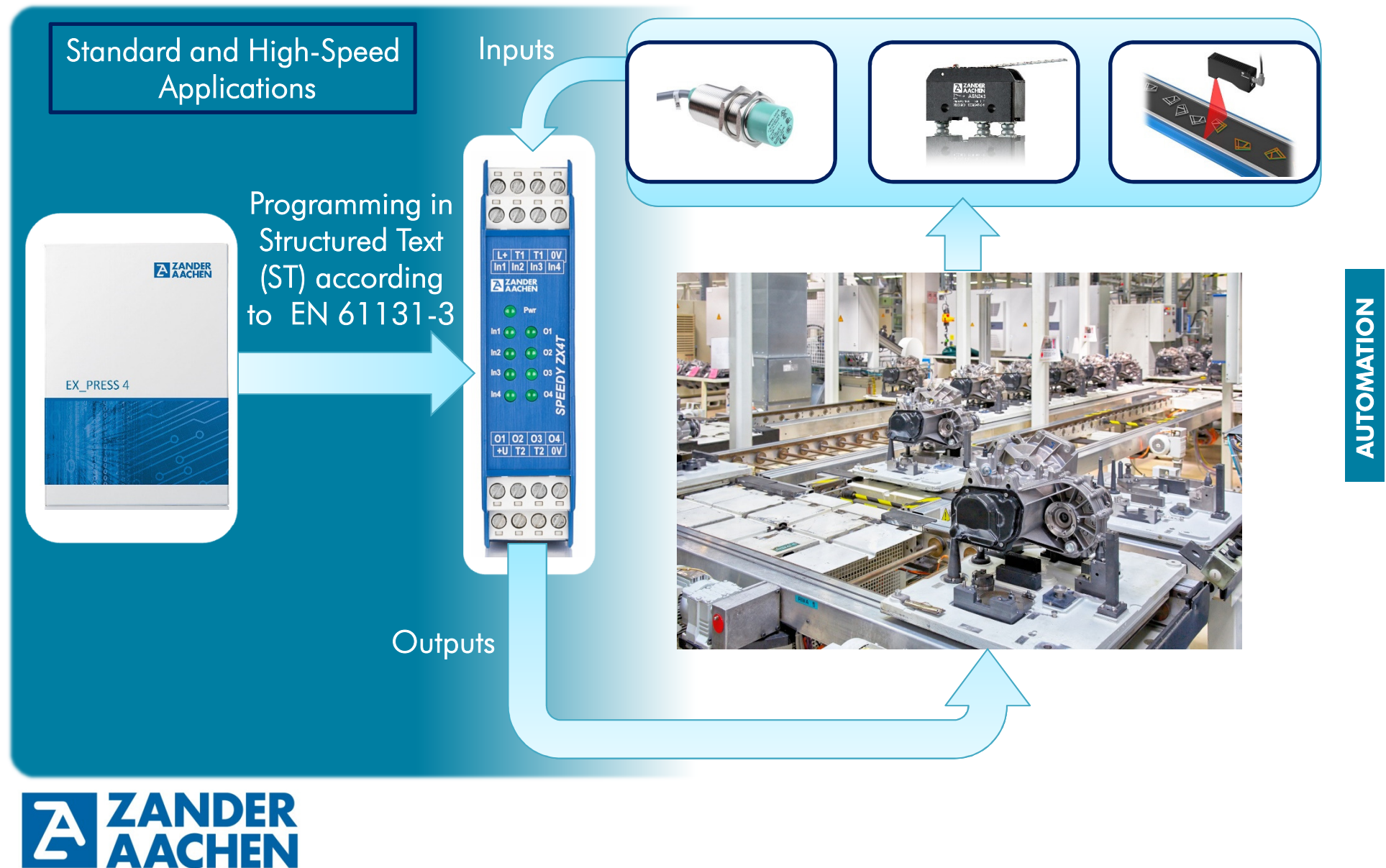
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3. The SPEEDY Product Group



AUTOMATION

3. The SPEEDY Product Group



3. The SPEEDY Product Group

Size doesn't matter - The compact and fast SPEEDY ZX4T and SPEEDY ZX4TE

- Function
 - Micro PLC for small systems
 - Fixed timers, configurable through remote potentiometer
 - Easily programmable with EX_PRESS 4
- Variations
 - ZX4T: 4 digital In- and Outputs
 - ZX4TE: 9 digital In- and 8 Outputs / 2 fast Counter



AUTOMATION

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- Variations
 - ZX4T: 4 digital In- and Outputs
 - ZX4TE: 9 digital In- and 8 Outputs / 2 fast Counter
- The Advantages
 - Cost efficient micro high-speed solution with no cycle time
 - Reaction time $< 100 \mu s$ / $20 \mu s$
 - Very compact (22.5 mm; 45 mm)

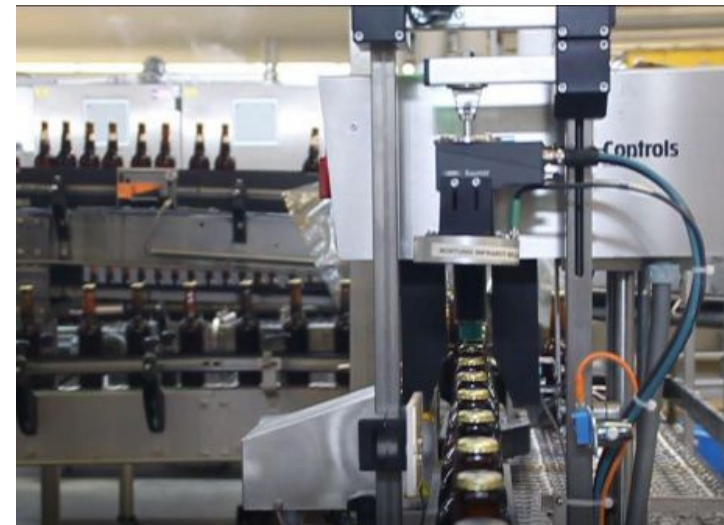


AUTOMATION

3. The SPEEDY Product Group

A ZX4T Application

- The Task
 - Fast sorting of good and bad parts in the food industry
 - Detection, tracking and sorting of incorrectly placed bottle caps
- The Realization
 - Good / Bad detection with a camera
 - Comparison with default image
 - Tracking and sorting of incorrectly placed bottle caps with ZX4T

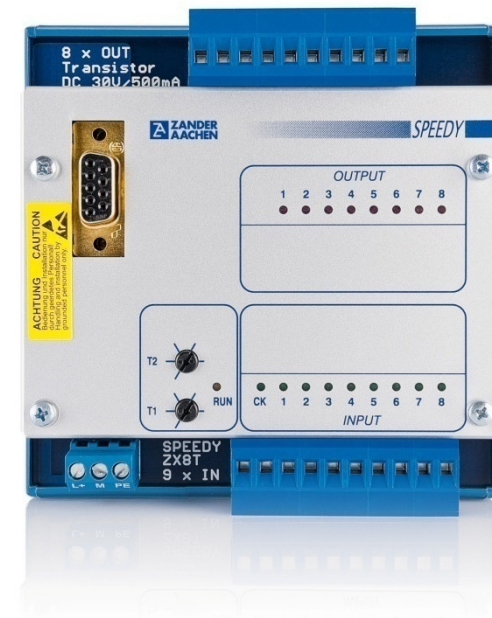


AUTOMATION

3. The SPEEDY Product Group

The all-rounder - The versatile, compact and fast SPEEDY ZX8T

- Function
 - Micro PLC for small to medium-sized systems
 - Configurable timer through potentiometer
 - 8 digital In- and Outputs
 - Easily programmable with EX_PRESS 4
- Expansions
 - Expansions connectable through the internal bus

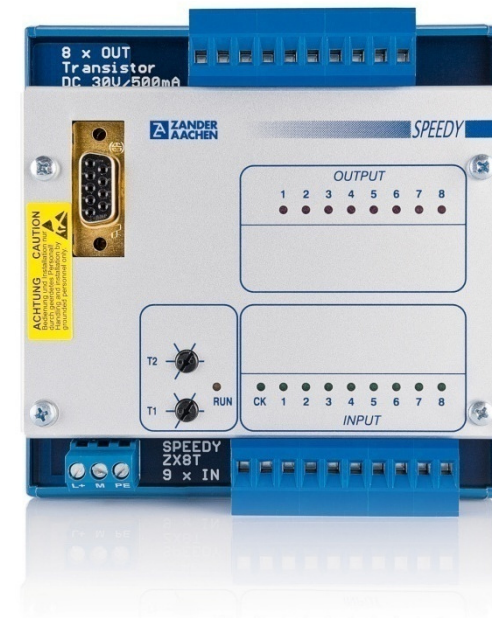


AUTOMATION

3. The SPEEDY Product Group

The all-rounder - The versatile, compact and fast SPEEDY ZX8T

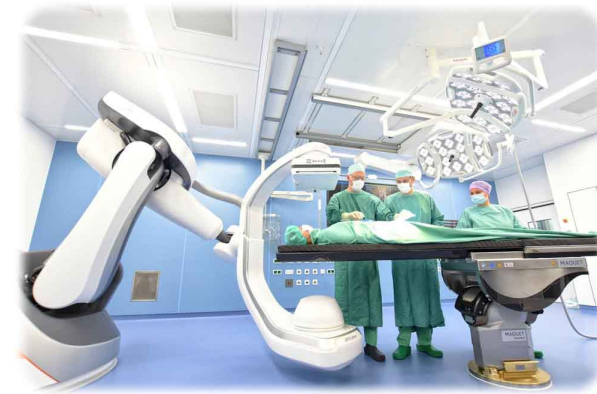
- Function
 - Micro PLC for small to medium-sized systems
 - Configurable timer through potentiometer
 - 8 digital In- and Outputs
 - Easily programmable with EX_PRESS 4
- Expansions
 - Expansions connectable through the internal bus
- The Advantages
 - Cost efficient high-speed solution with no cycle time
 - Reaction time $< 100 \mu s$
 - Extendable through internal bus



3. The SPEEDY Product Group

Further ZX4T and ZX8T Applications

- Air Lock Control
 - Reliable Air lock control for operating rooms in hospitals
 - Efficient and fail-safe method to control and keep air pressure in operating rooms
- Neon Sign Control
 - Reliable sequence control of neon signs for the optimal advertising effect
- Barrier Control in parking garages
 - Reliable and efficient barrier control in parking garages



Source: oiger.de

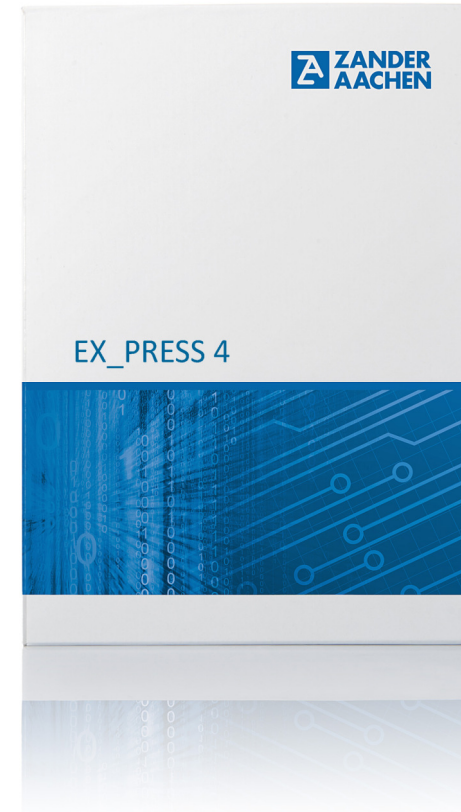


AUTOMATION

3. The SPEEDY Product Group

Programming made easy - EX_PRESS 4

- Function
 - Programming of SPEEDY PLCs
 - Programming in Structured Text (ST) according to EN 61131-3
- Advantages
 - Easy to use and comfortable development system
 - Simple code development and compilation



AUTOMATION

3. The SPEEDY Product Group

EX_PRESS - C:\Zander\EX_PRESS4\Examples\EX_PRESS\SPEEDY ZX4T\Conveyor.s16

Datei Editieren Anzeigen SPS-Typ Compilieren Programmieren Optionen Hilfe

Conveyor control for SPEEDY

ATTENTION: Please choose the item "SPEEDY" in the menu "SPS-Type".

This program realizes a control of a conveyor line which consists of eight sequential belts. The drives are automatically controlled depending on the loading condition. Light barriers prevent a collision of the loads at the connection points.

PROGRAM CONVEYOR

VAR_INPUT

LS1 AT CK; (* Light barrier supply station *)
LS2 AT E1; (* Light barrier segment 1/2 *)
LS3 AT E2; (* Light barrier segment 2/3 *)
LS4 AT E3; (* Light barrier segment 3/4 *)
LS5 AT E4; (* Light barrier segment 4/5 *)
LS6 AT E5; (* Light barrier segment 5/6 *)
LS7 AT E6; (* Light barrier segment 6/7 *)
LS8 AT E7; (* Light barrier segment 7/8 *)
LS9 AT E8; (* Light barrier pick up station *)

POR AT POR; (* Power on reset *)

END_VAR;

VAR_OUTPUT

Belt1 AT A1; (* Drive for conveyor segment 1 *)
Belt2 AT A2; (* Drive for conveyor segment 2 *)
Belt3 AT A3; (* Drive for conveyor segment 3 *)
Belt4 AT A4; (* Drive for conveyor segment 4 *)
Belt5 AT A5; (* Drive for conveyor segment 5 *)
Belt6 AT A6; (* Drive for conveyor segment 6 *)
Belt7 AT A7; (* Drive for conveyor segment 7 *)
Belt8 AT A8; (* Drive for conveyor segment 8 *)

END_VAR;

IF (LS1 = 1 AND LS2 = 0 OR
Belt1 = 1 AND LS2 = 0 AND POR = 0) THEN
Belt1 := 1;
END_IF;

(* Switch on belt 1, if material lies at the supply
station and at the same time the end of belt 1
[= start of belt 2] is empty. The belt will
remain switched on until the end of belt 1 is
reached (self holding). The inquiry of the
signal POR takes care that the output is not
set into self holding while the supply power is
built up and undefined voltage levels at the

LOG

..
Minimierung von Belt1
Minimierung von Belt2
Minimierung von Belt3
Minimierung von Belt4
Minimierung von Belt5
Minimierung von Belt6
Minimierung von Belt7
Minimierung von Belt8
Compilevorgang beendet. Warnungen: 0, Fehler: 0.
Fitterdurchgang erfolgreich beendet

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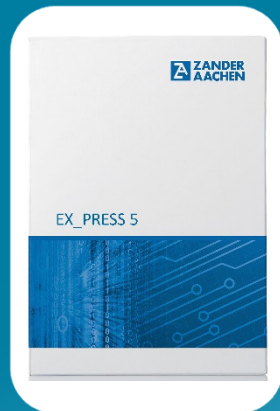
AUTOMATION

 **ZANDER
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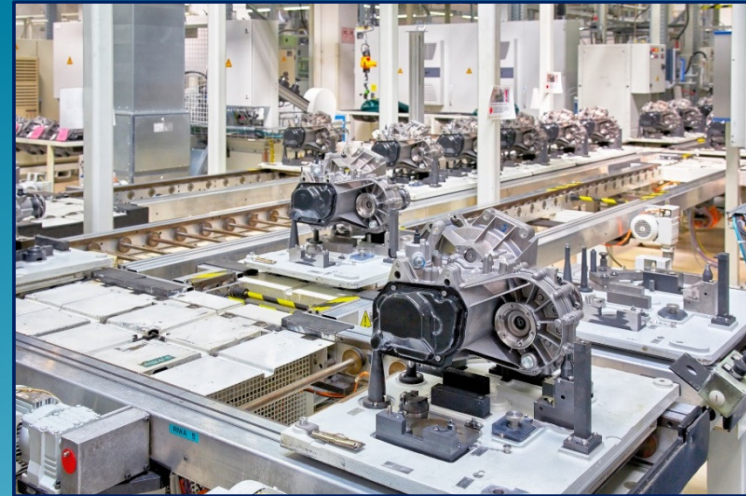
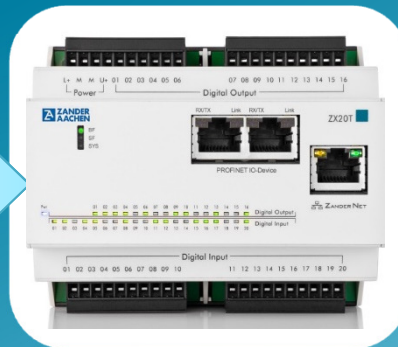
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5. The ZX20- and ZX09 Product Group

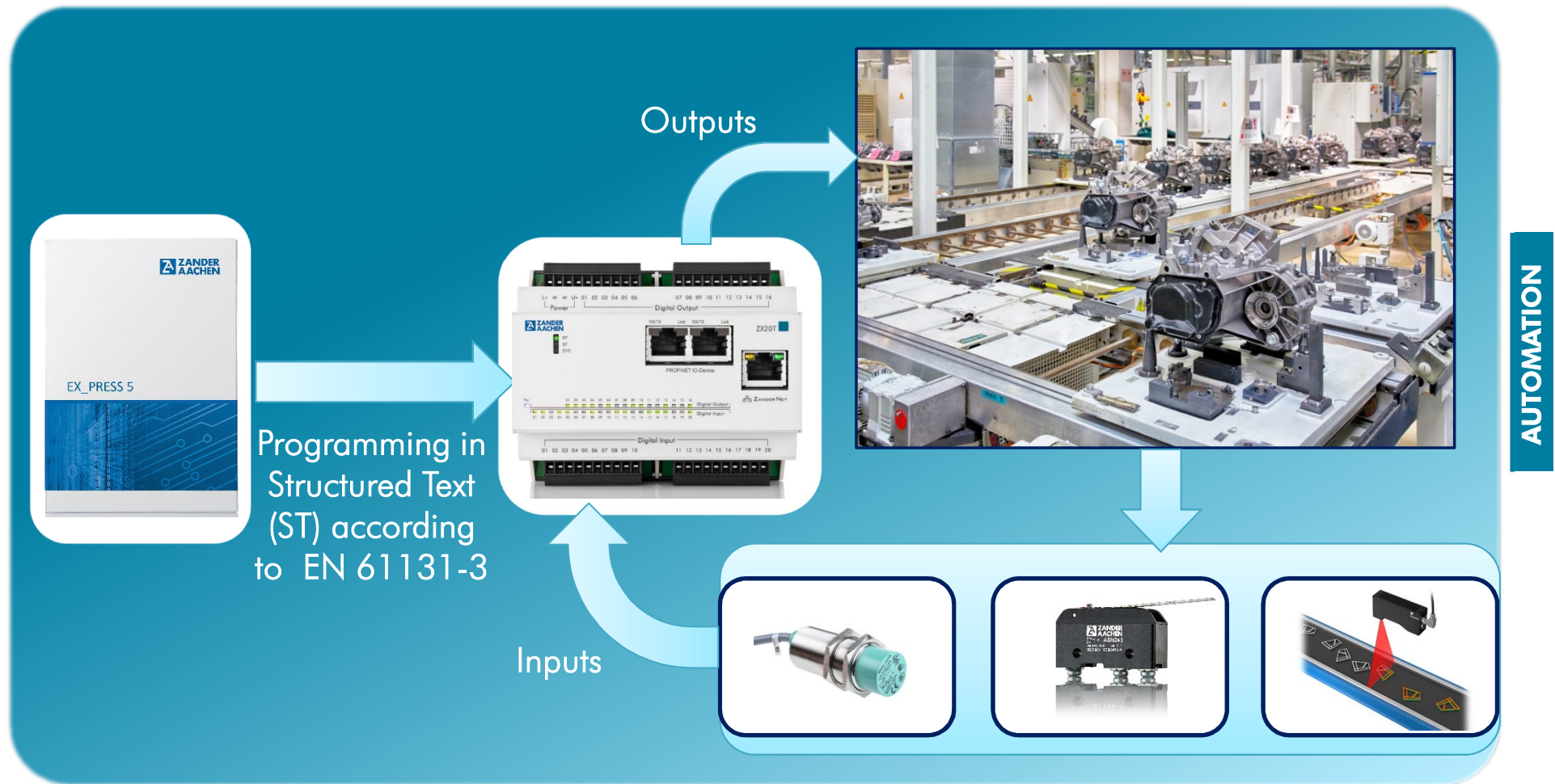


Programming in
Structured Text
(ST) according
to EN 61131-3

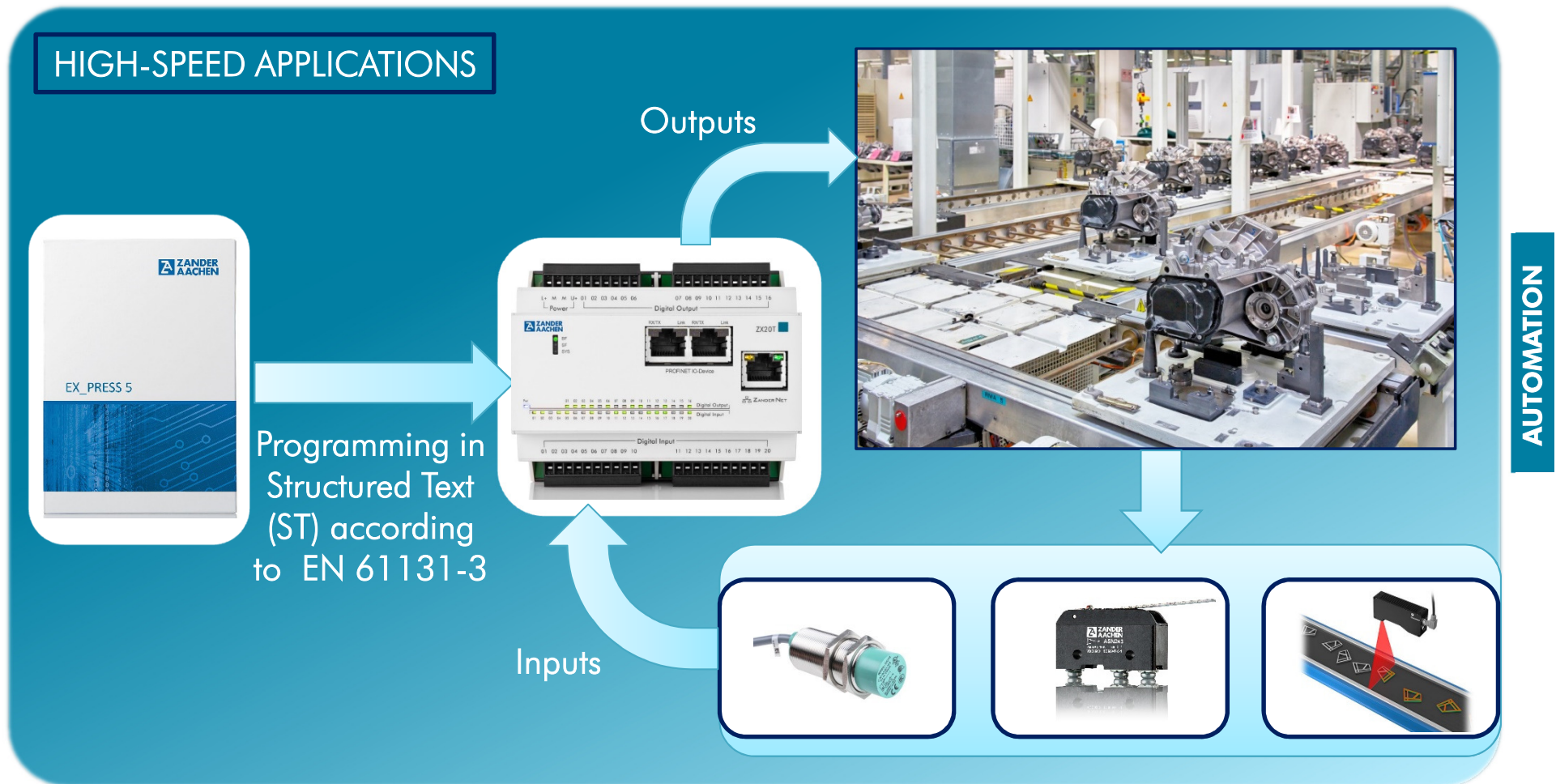


AUTOMATION

5. The ZX20- and ZX09 Product Group



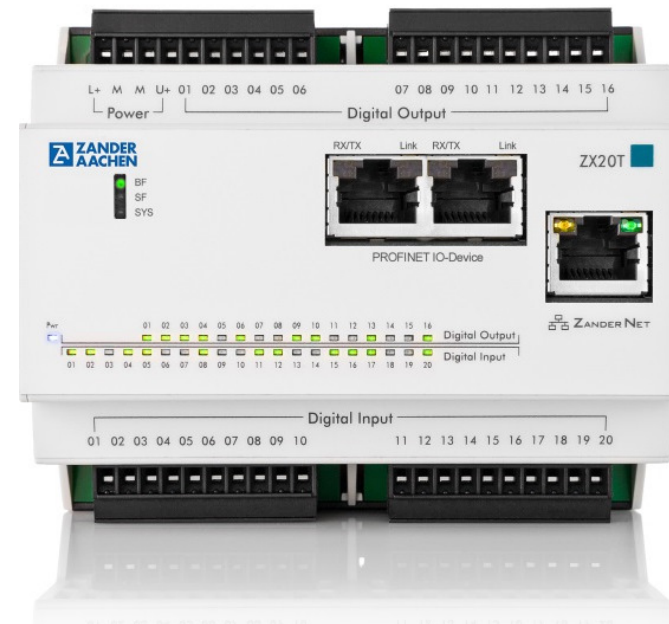
5. The ZX20- and ZX09 Product Group



5. The ZX20- and ZX09 Product Group

When time is of the essence - The high-speed ZX20T, ZX20TP and ZX20TC

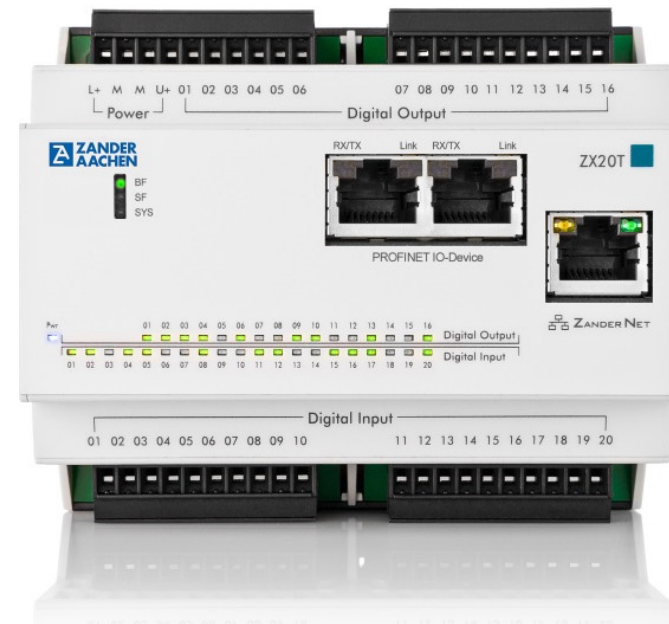
- Function
 - Micro PLC for small to medium-sized systems
 - Almost limitless configurable timers
 - Easily programmable with EX_PRESS 5
 - Almost no processing time: 1 μ s
- Variations
 - ZX20T: 20 digital Inputs , 16 digital Outputs
 - ZX20TP: 2x Additional PROFINET port
 - ZX20TC: 1x Additional In/Out EtherCAT port



5. The ZX20- and ZX09 Product Group

When time is of the essence - The high-speed ZX20T, ZX20TP and ZX20TC

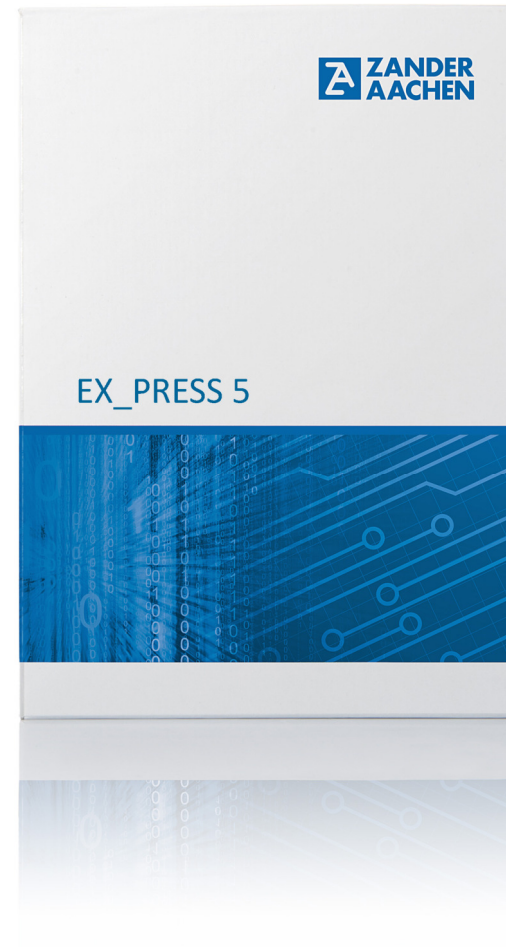
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 - ZX20TP: 2x Additional PROFINET port
 - ZX20TC: 1x Additional In/Out EtherCAT port
- The Advantages
 - Cost efficient high-speed solution with no cycle time; Reaction time $< 9 \mu s$
 - Integrable in existing Networks, programmable within the Network



5. The ZX20- and ZX09 Product Group

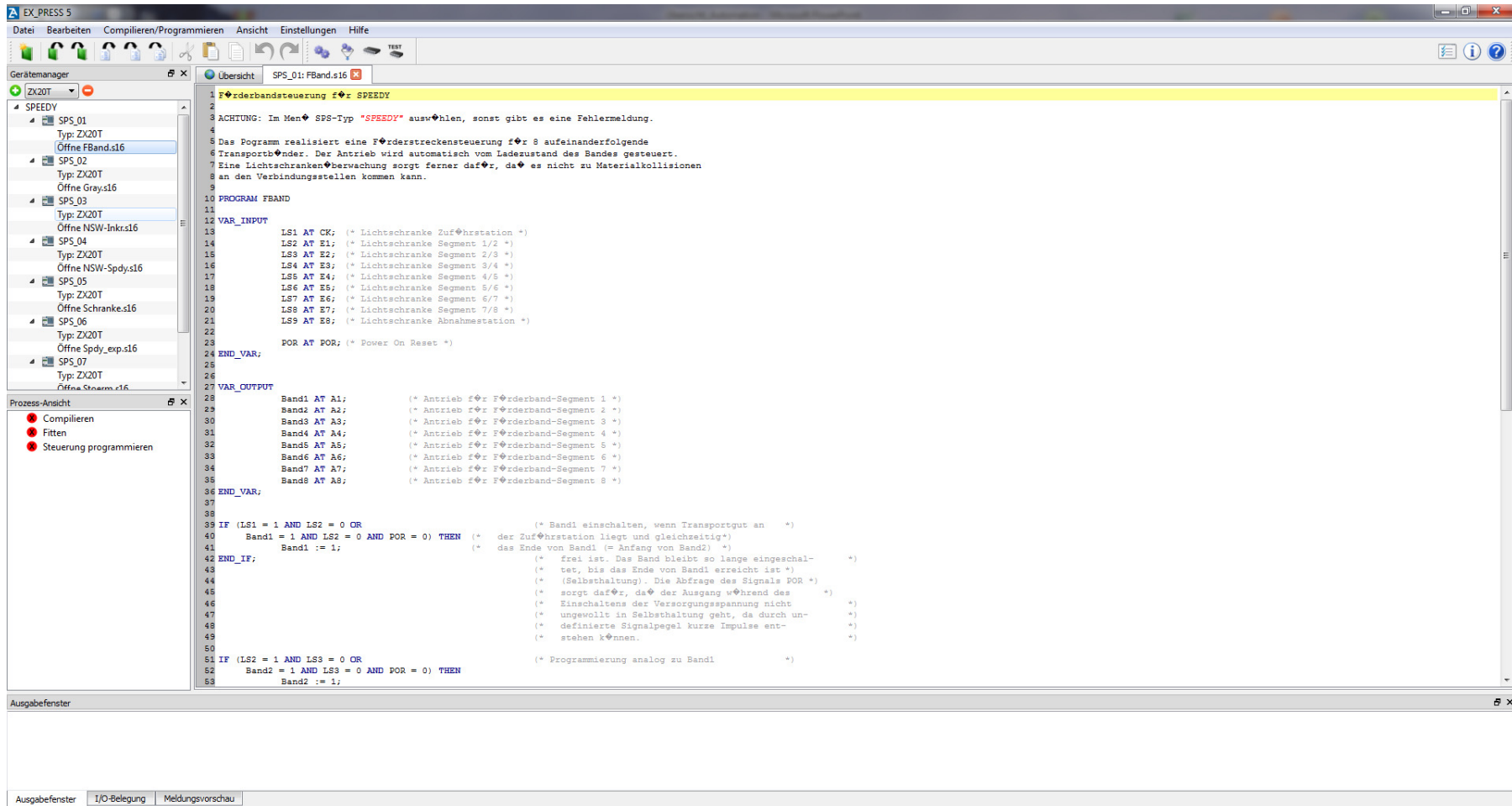
Programming made easy - EX_PRESS 5

- Function
 - Programming of ZX20 and ZX09 PLCs
 - Programming in Structured Text (ST) according to EN 61131-3
- Advantages
 - Easy to use and comfortable development system
 - Familiar Windows interface

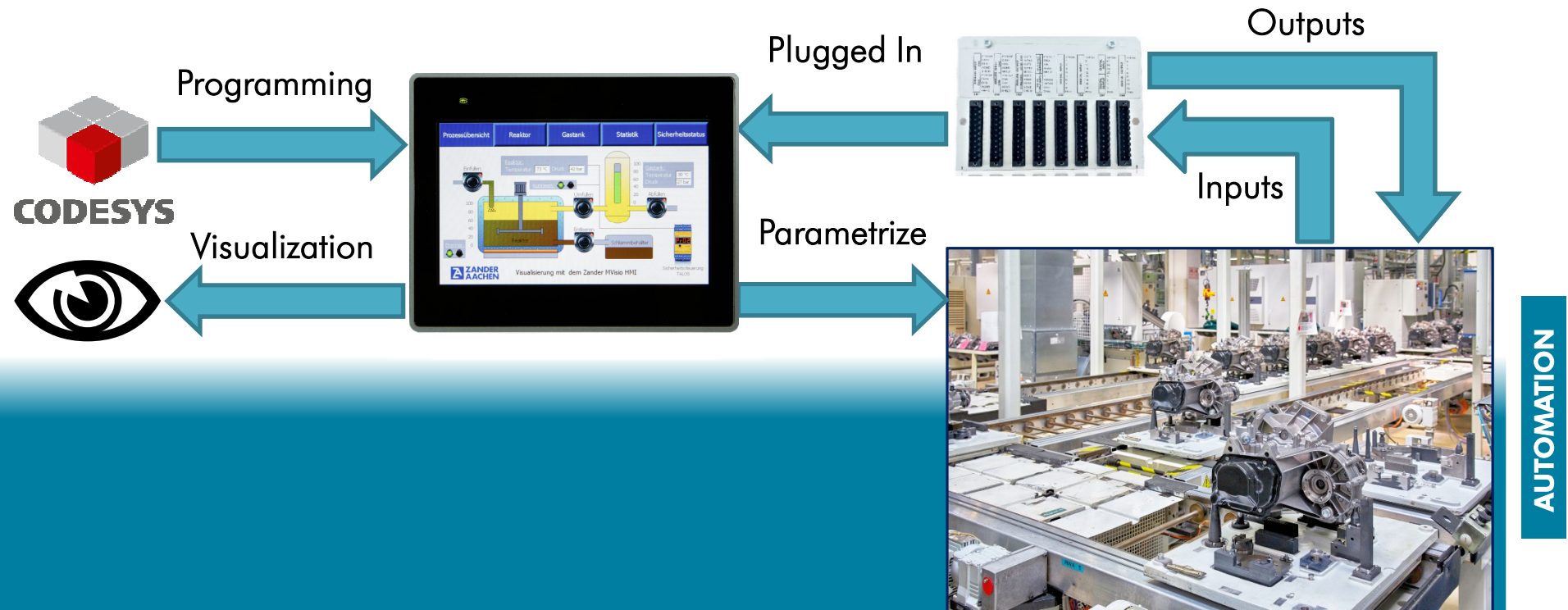


AUTOMATION

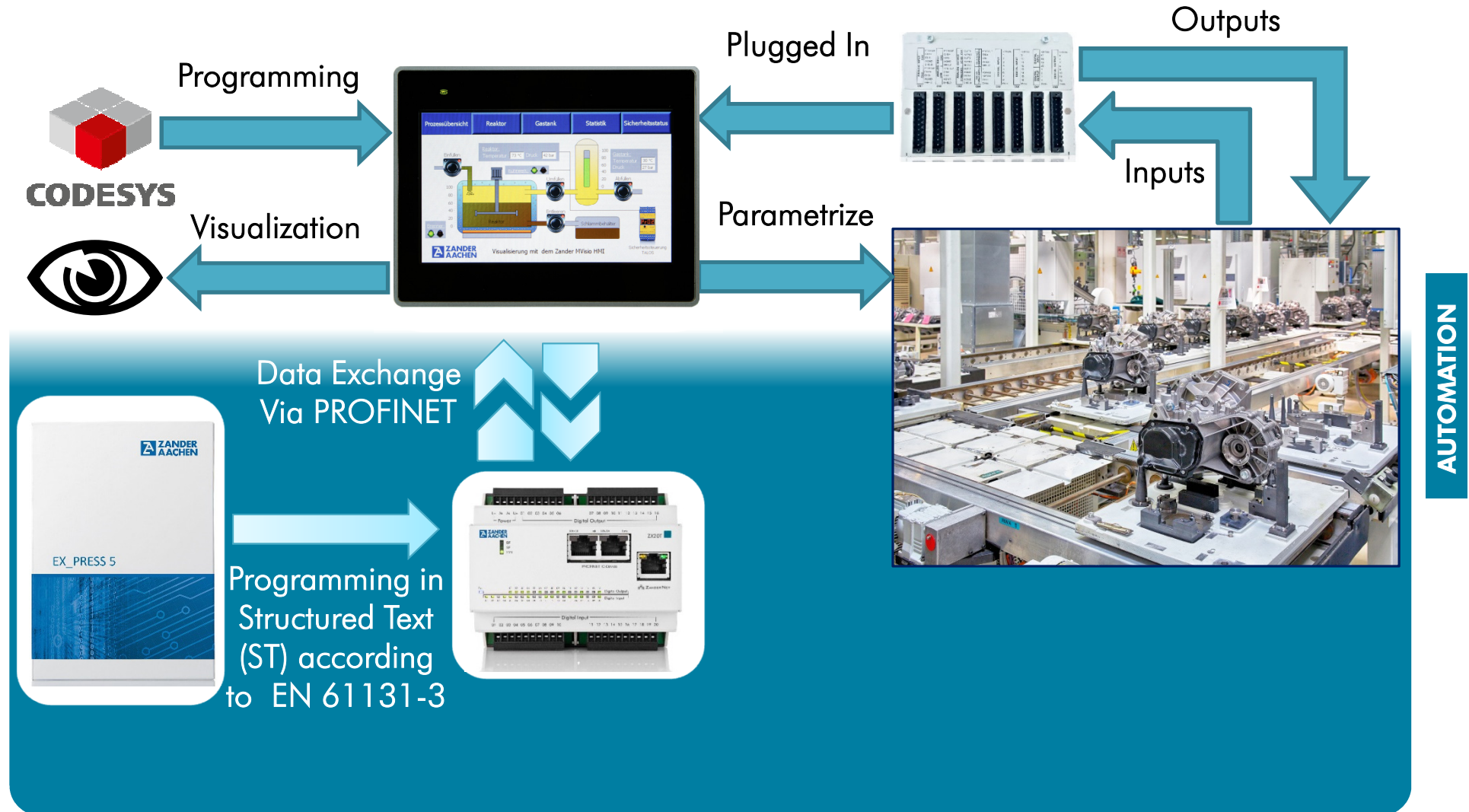
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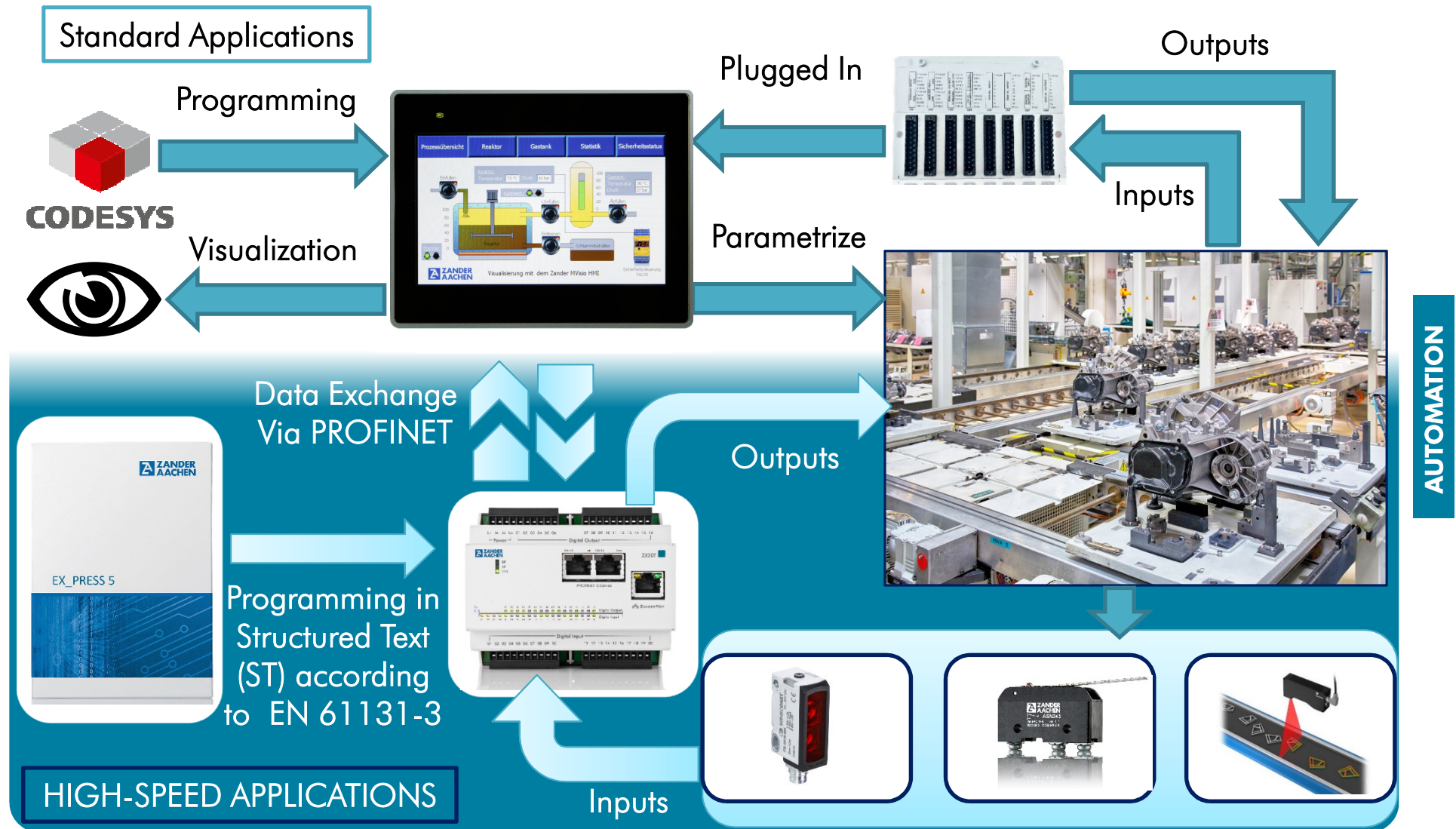
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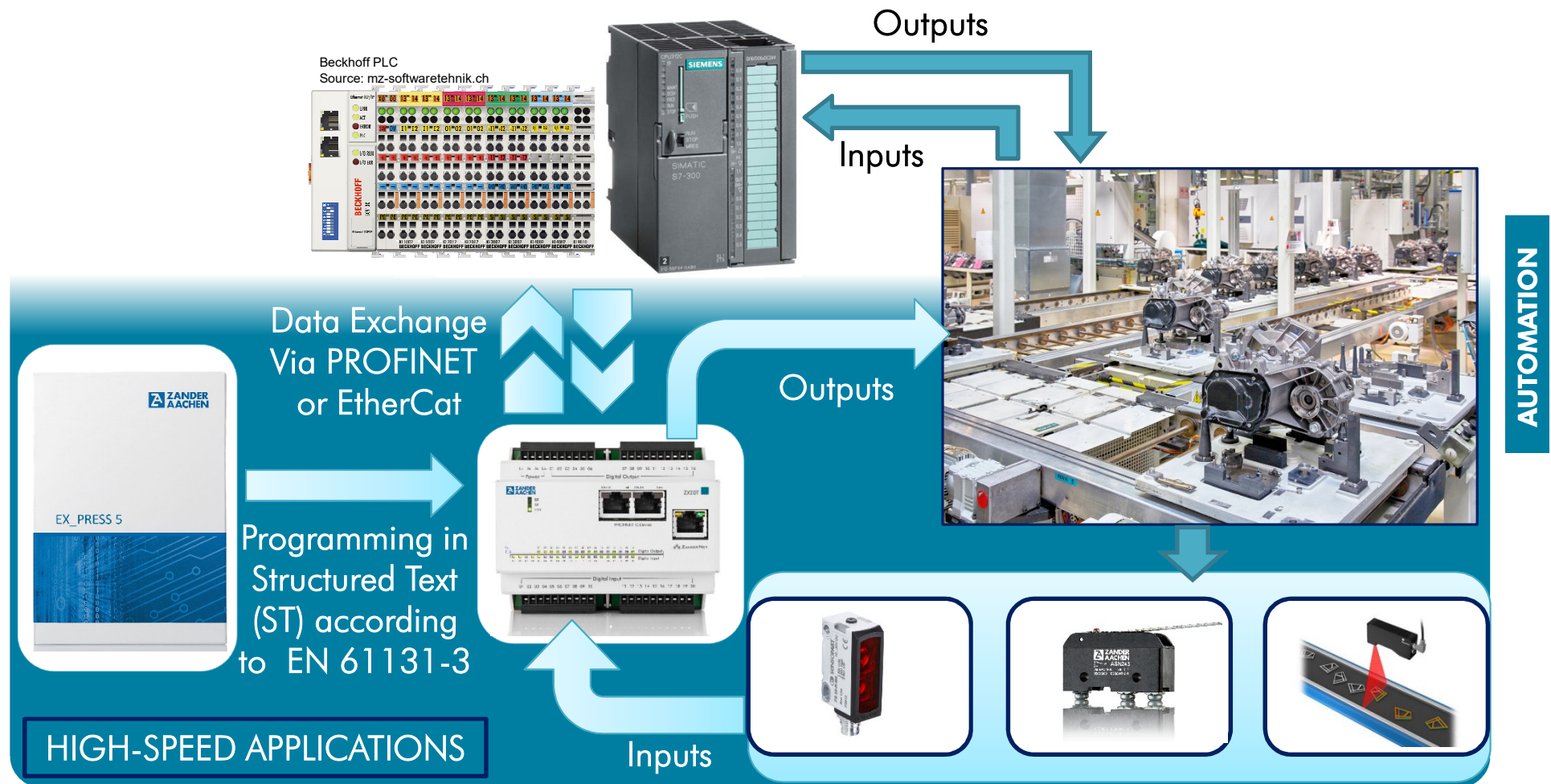


5. The ZX20- and ZX09 Product Group



5. The ZX20- and ZX09 Product Group

Standard Applications



5. The ZX20- and ZX09 Product Group

A ZX20 Application

- The Task
 - Fast detection of products in the food industry
 - Detection of missing pouches
- The Realization
 - Detection of passing pouches
 - Comparison with a default number of pouches
 - If a deviation occurs, a signal is send to the filling plant
 - If the overall time changes, the new default can be taught in

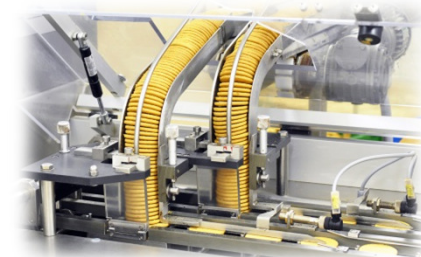


AUTOMATION

5. The ZX20- and ZX09 Product Group

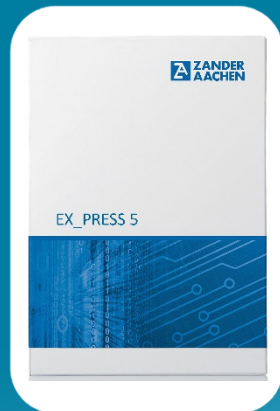
Additional ZX20 Applications

- Labeling and Print processes
 - Minimization of cycle time for reproducible printing points
 - Application in the tobacco, packaging or food industry
- Filling processes
 - Cycle free processing -> minimization of volume loss
- Count and sorting processes
 - Fast evaluation of the sensors and control of the actuators for high throughput and better selectivity
 - Application in the recycling industry or testing systems



AUTOMATION

5. The ZX20- and ZX09 Product Group

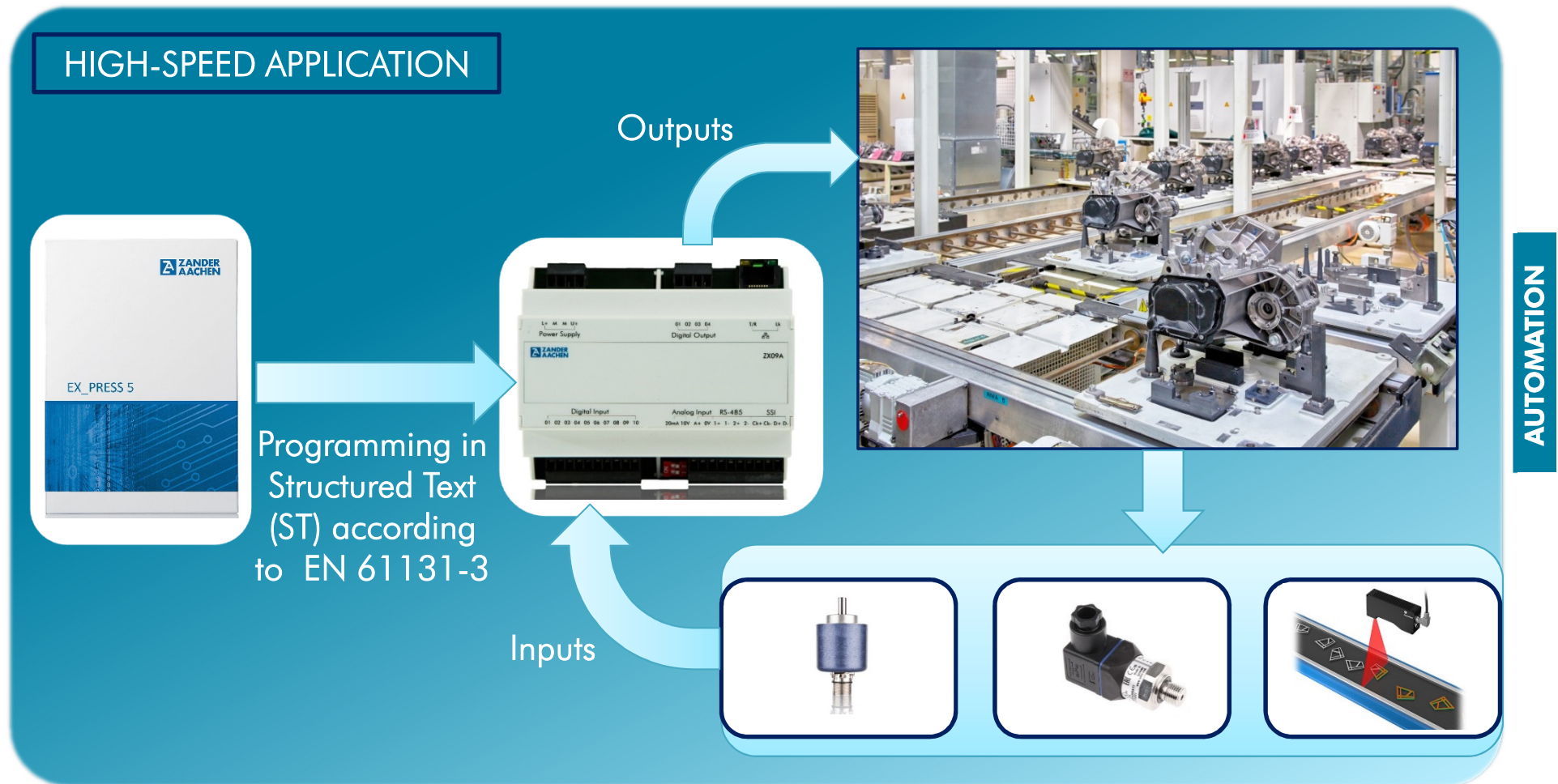


Programming in
Structured Text
(ST) according
to EN 61131-3



AUTOMATION

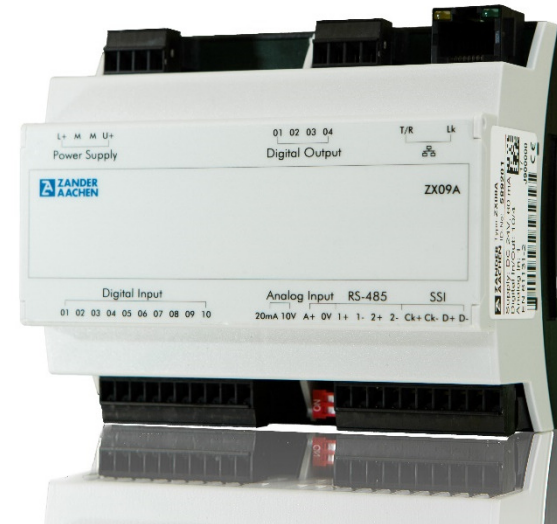
5. The ZX20- and ZX09 Product Group



5. The ZX20- and ZX09 Product Group

Even more diverse - The ZX09 and ZX09A

- Function
 - Micro PLC for small to medium-sized systems
 - Almost limitless configurable timers
 - Easily programmable with EX_PRESS 5
- Variations
 - ZX09: 10 digital Inputs, 4 digital Outputs, 1x RS232 / RS485 Interface, 1x SSI Interface
 - ZX09A: 10 digital Inputs, 4 digital Outputs, 1x RS232 / RS485 Interface, 1x SSI Interface, 1 analog Input



5. The ZX20- and ZX09 Product Group

Even more diverse - The ZX09 and ZX09A

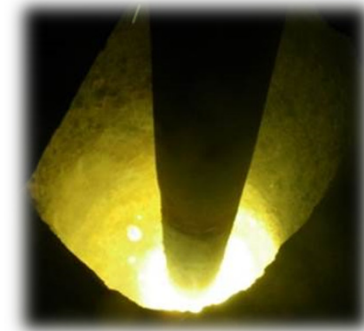
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 - ZX09: 10 digital Inputs, 4 digital Outputs, 1x RS232 / RS485 Interface, 1x SSI Interface
 - ZX09A: 10 digital Inputs, 4 digital Outputs, 1x RS232 / RS485 Interface, 1x SSI Interface, 1 analog Input
- The Advantages
 - Cost efficient high-speed solution with no cycle time
 - Reaction time $< 9 \mu s$
 - Integrable in existing Networks, programmable within the Network



5. The ZX20- and ZX09 Product Group

The benefits of analog data processing with the ZX09A

- Real-Time data acquisition (e.g. electric arc or plasma monitoring)
 - Increased process knowledge and safety
- Controlling of fast rolling, cutting and forging processes
 - Increased quality and throughput of the products
- Fast and safe shutdown at overvoltages and overcurrents
 - Secures the system (infrastructure) in case of failure
- Pressure and temperature control for the accelerating manufacturing processes
 - Increases the throughput and quality, e.g. for spray pressure or adhesive automats



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