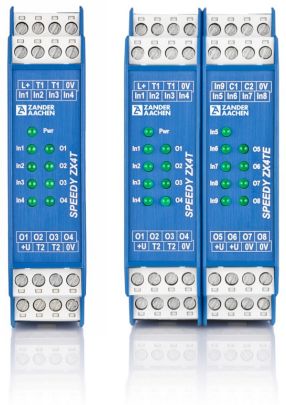
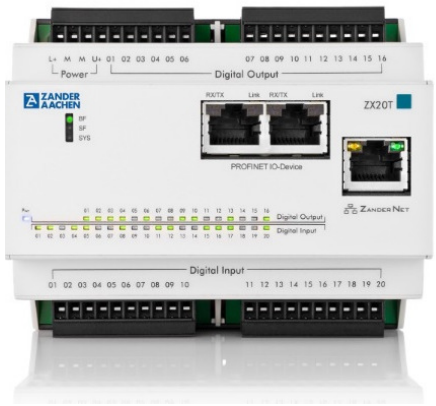
Zander Aachen - Automation

The World of Automation





AUTOMATION

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Contents

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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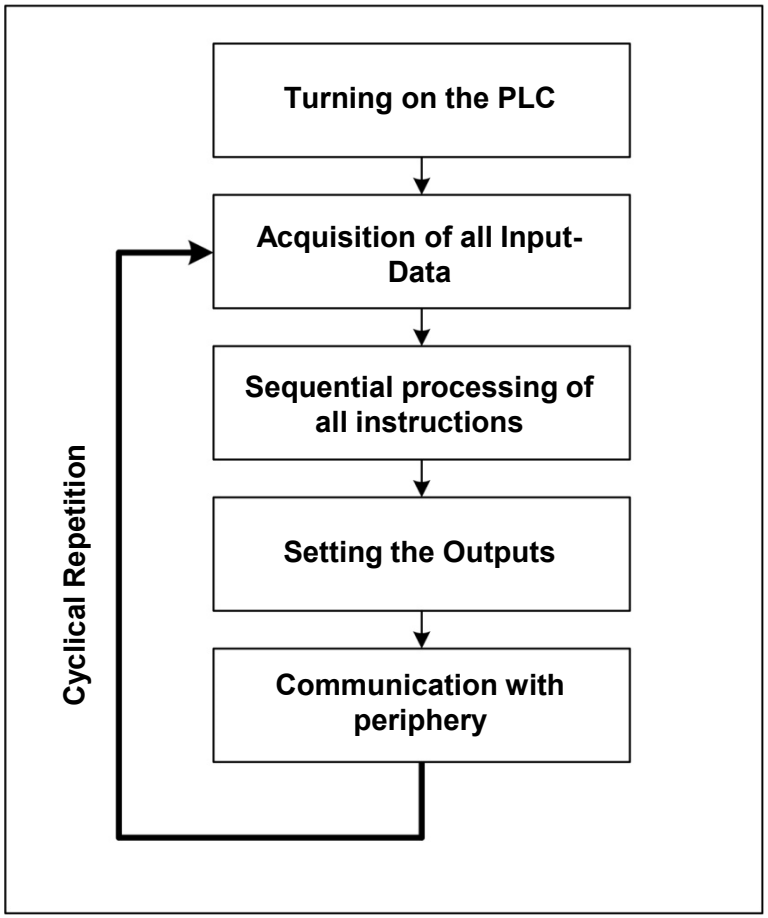
2. High-speed Automation

The common PLC

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



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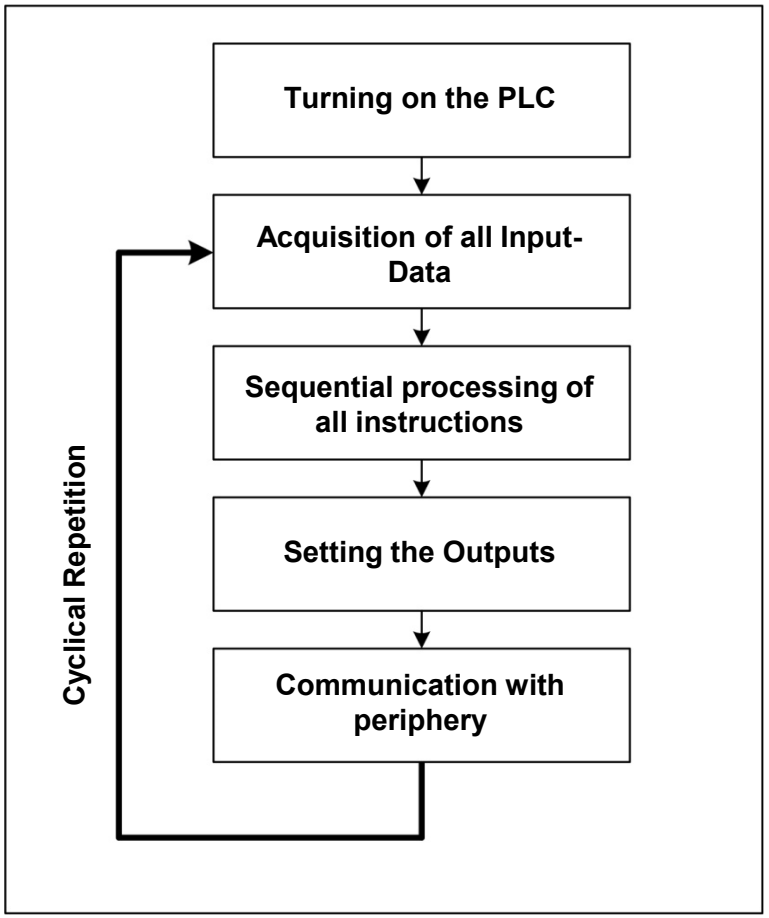
2. High-speed Automation

The common PLC

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



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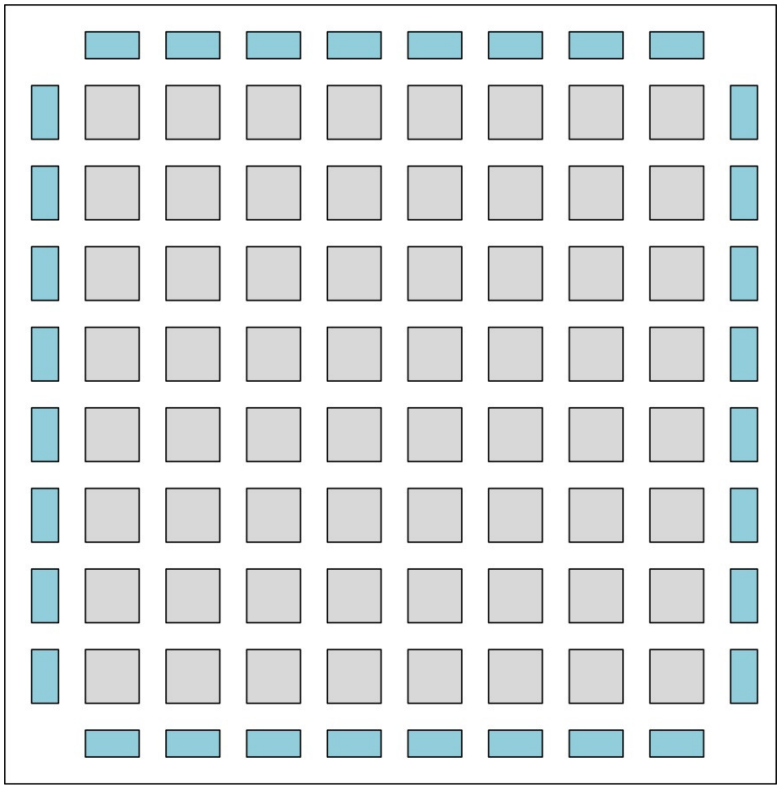
2. High-speed Automation

The heart of the ZX Product Group:
The FPGA

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



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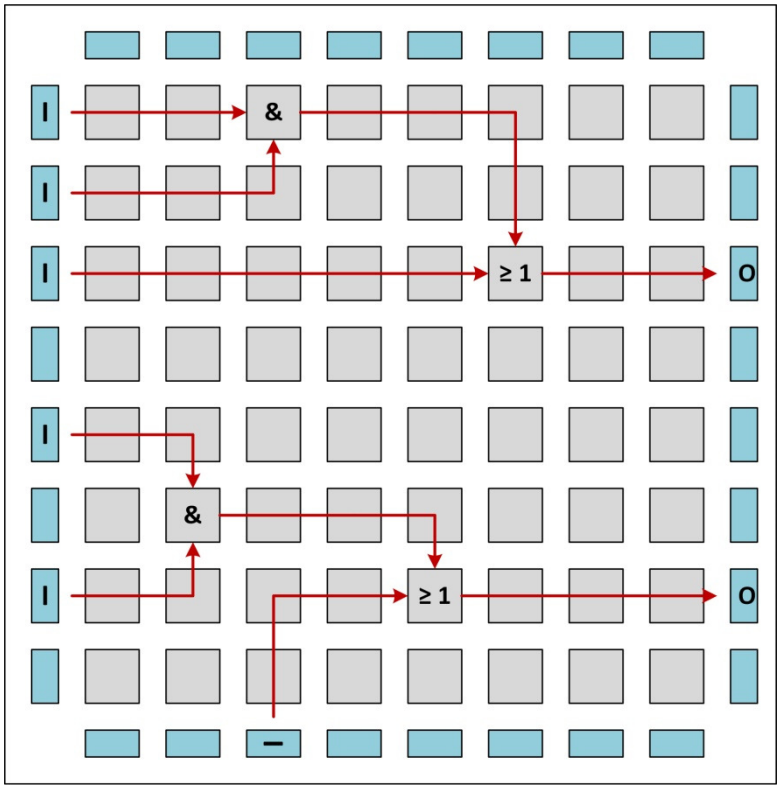

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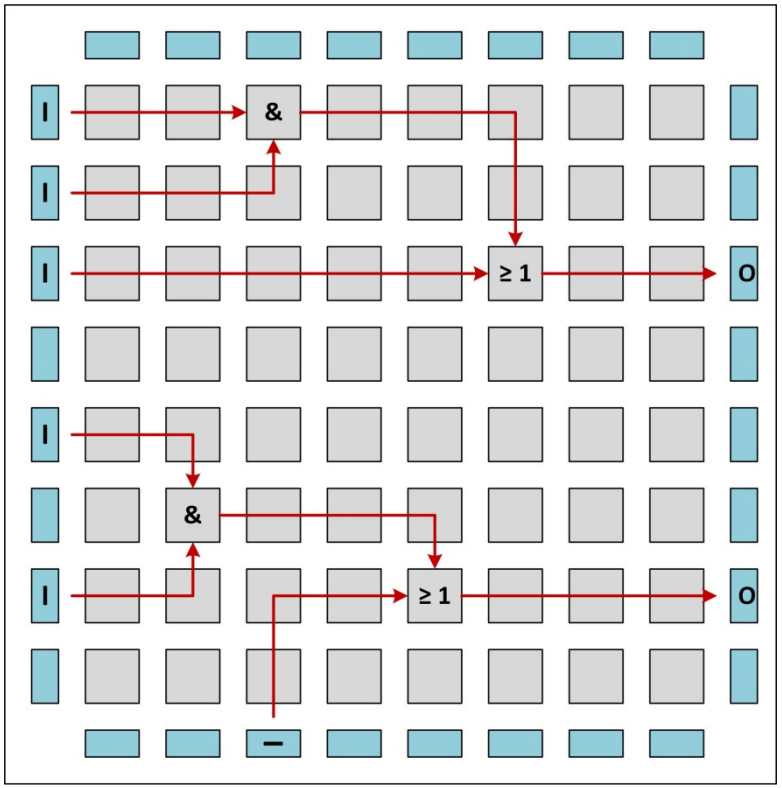
2. High-speed Automation

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



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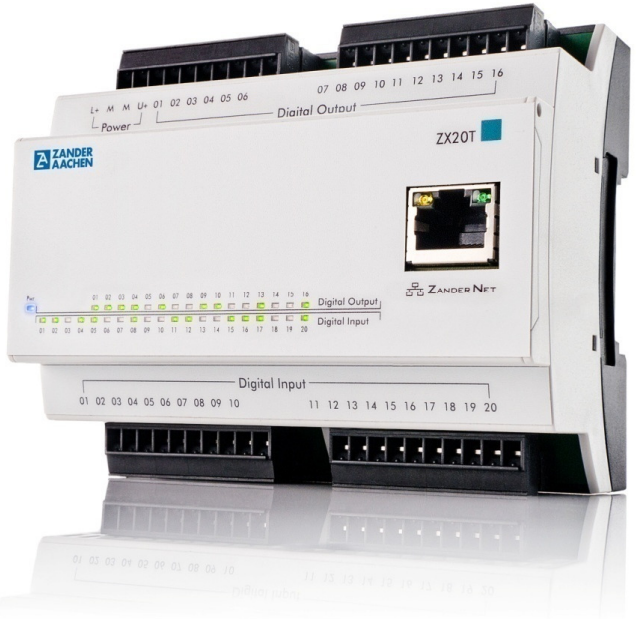
2. High-speed Automation

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

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



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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

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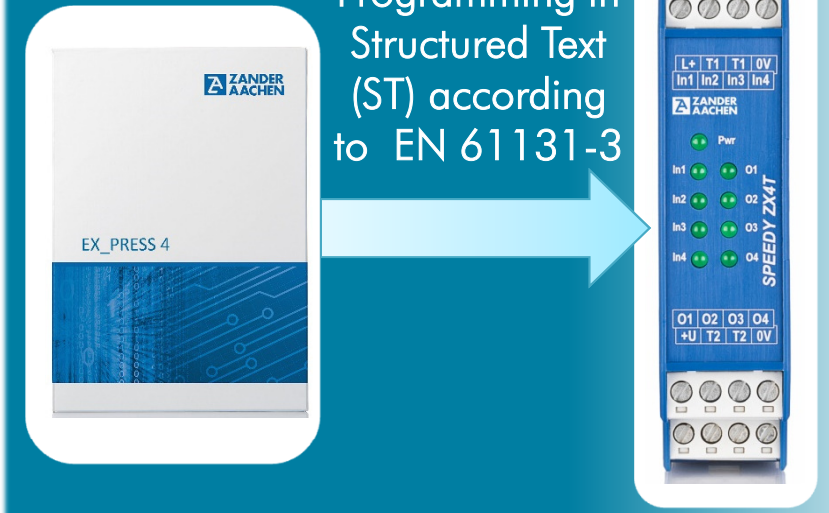
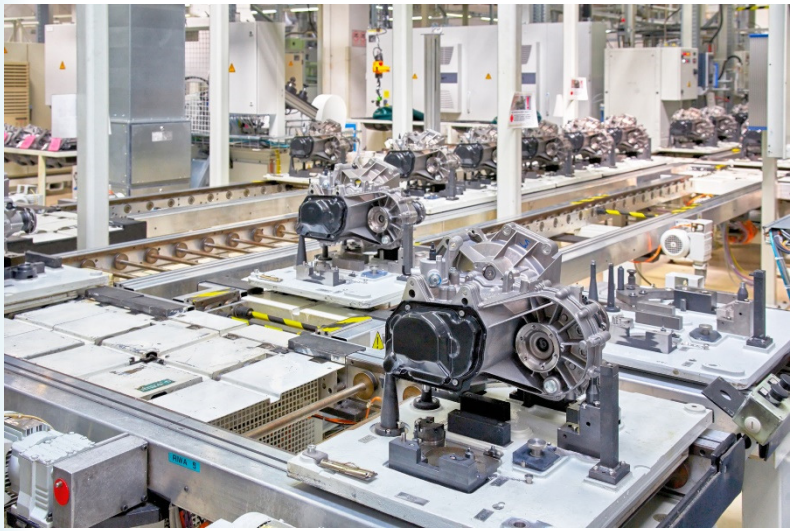
3. The SPEEDY Product Group





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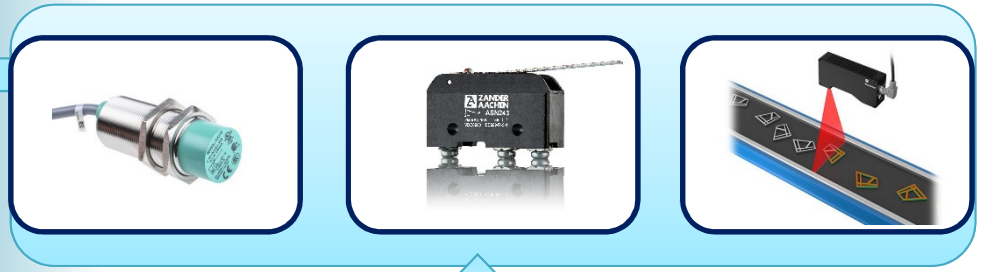
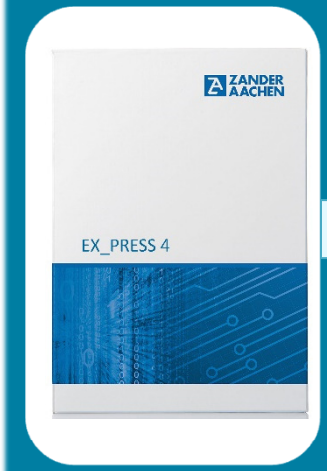
3. The SPEEDY Product Group

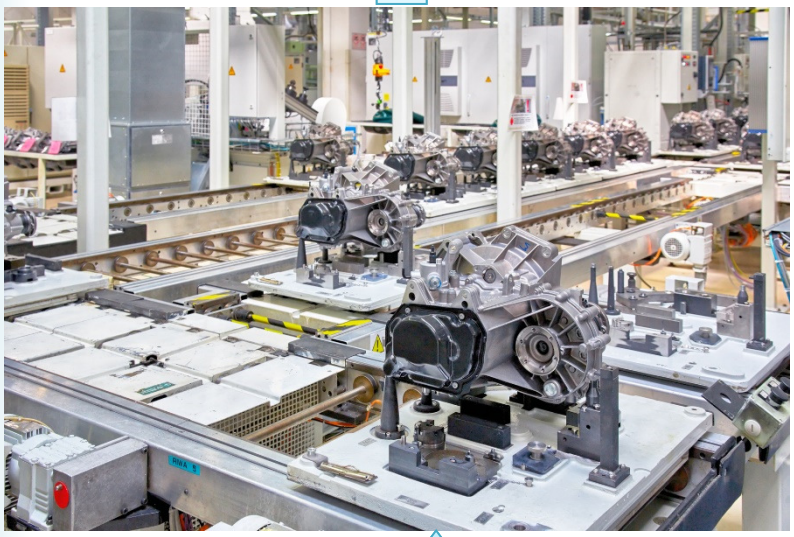
Standard and High-Speed Applications

Inputs



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





Outputs

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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

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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 µs / 20 µs
  - Very compact (22.5 mm; 45 mm)

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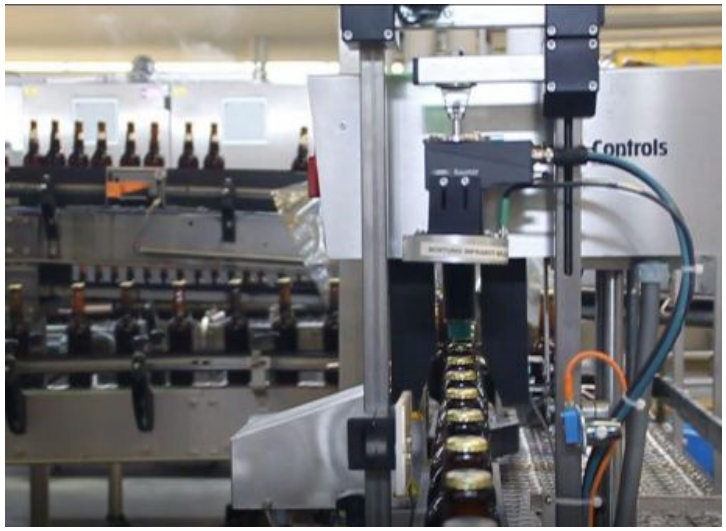
3. The SPEEDY Product Group

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



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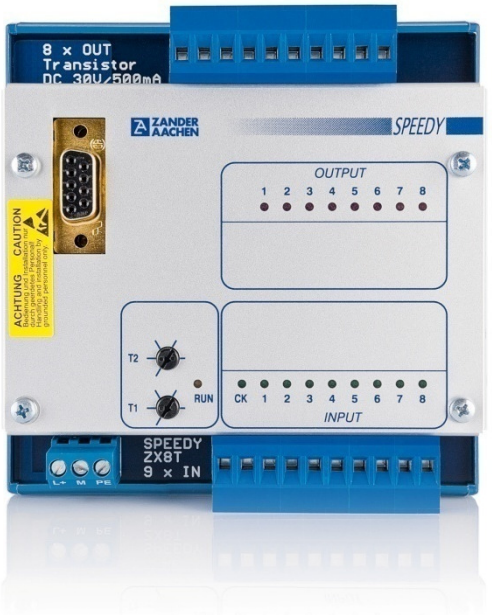
3. The SPEEDY Product Group

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

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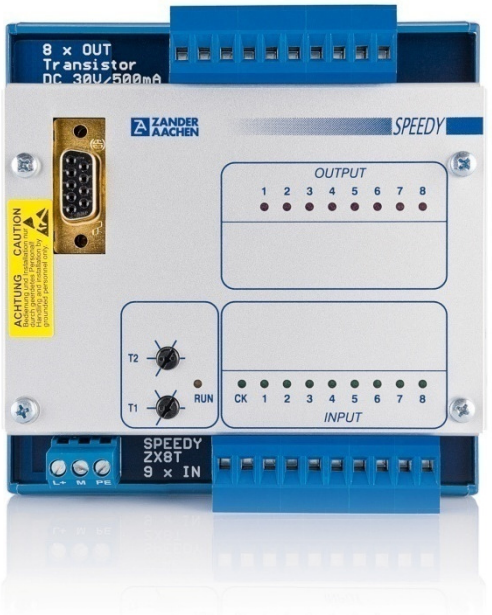
- Function
  - Micro PLC for small to medium-sized systems
  - Configurable timer through potentiometer
  - 8 digital In- and Outputs
  - Easily programmable with EX_PRESS 4
- Expansions
  - Expansions connectable through the internal bus
- The Advantages
  - Cost efficient high-speed solution with no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



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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

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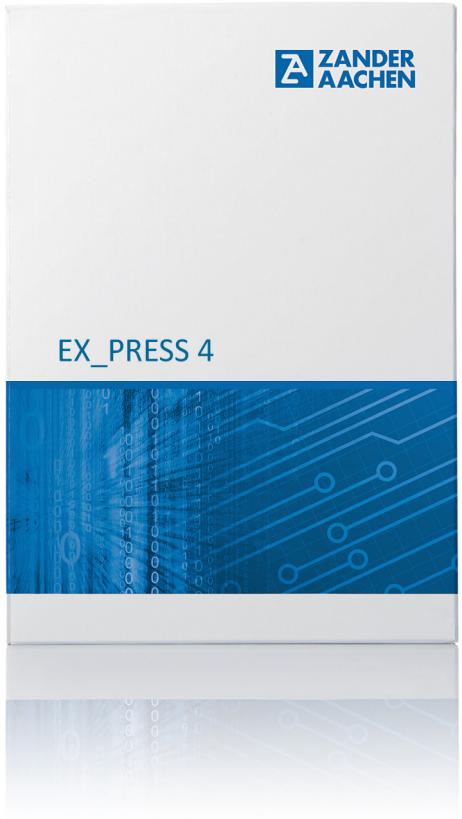
3. The SPEEDY Product Group

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



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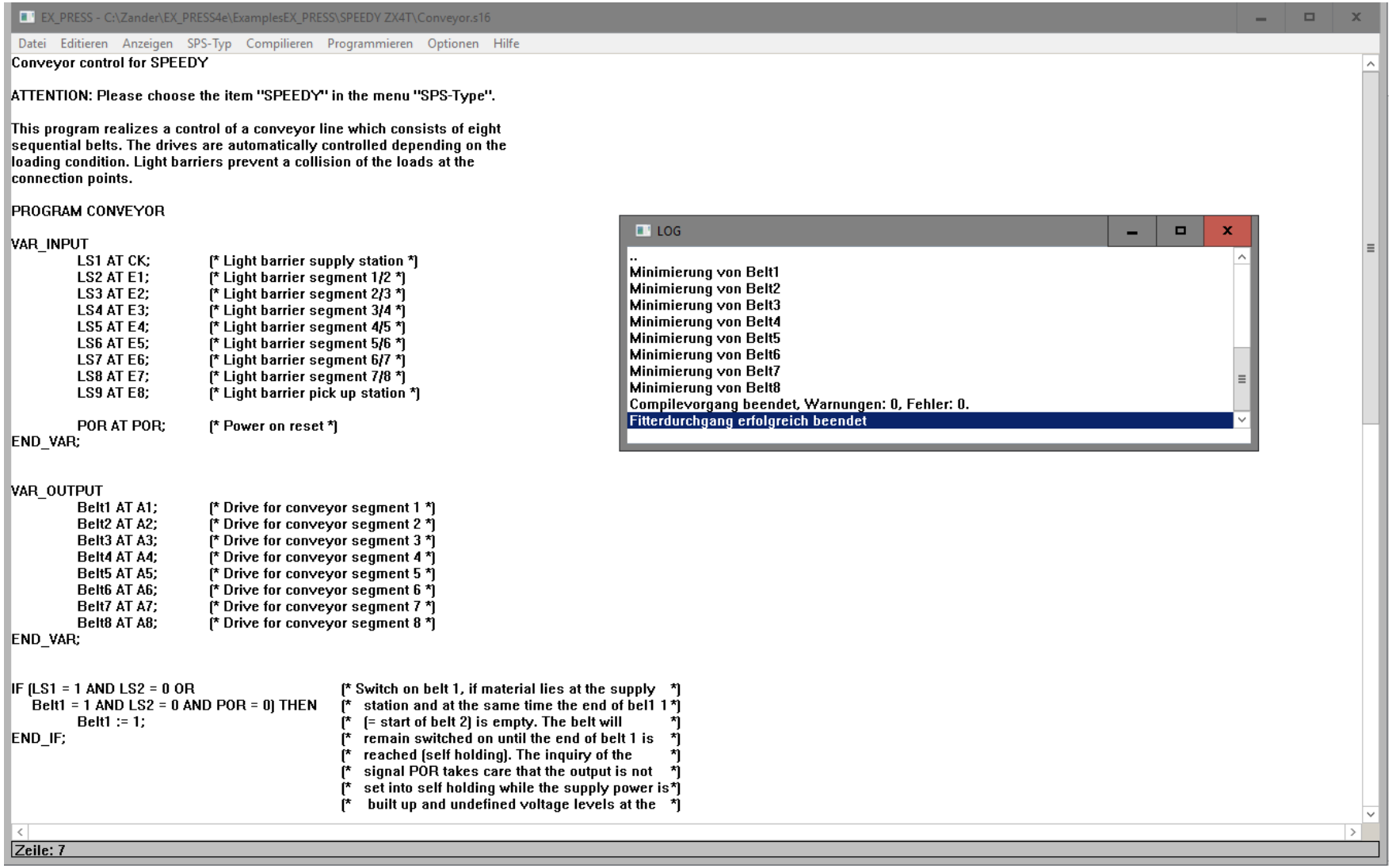
3. The SPEEDY Product Group



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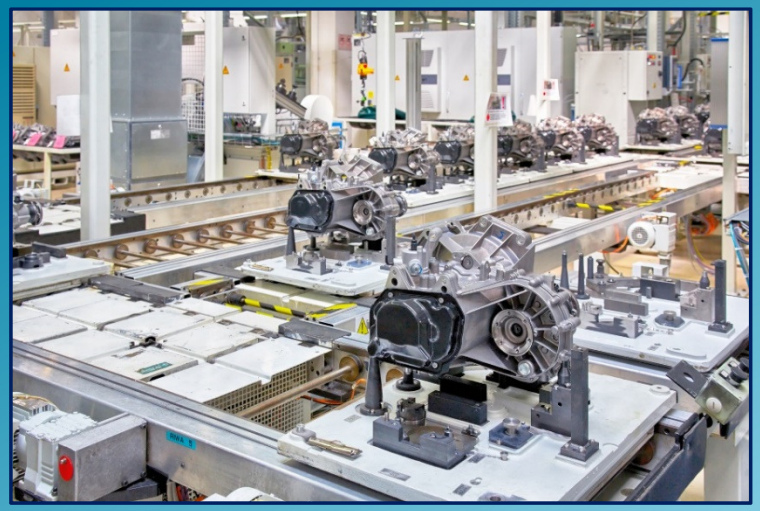
5. The ZX20- and ZX09 Product Group

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



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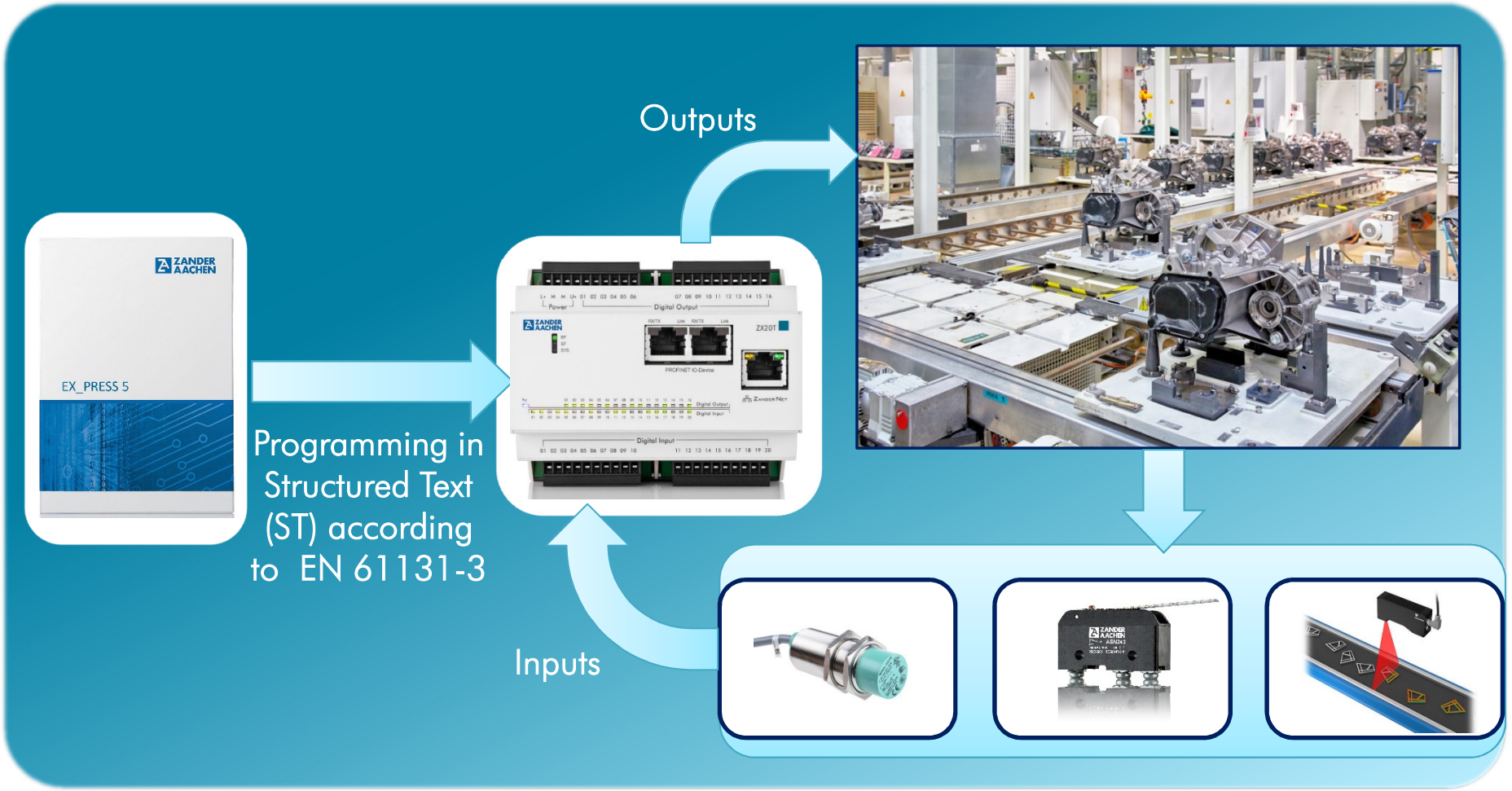
5. The ZX20- and ZX09 Product Group



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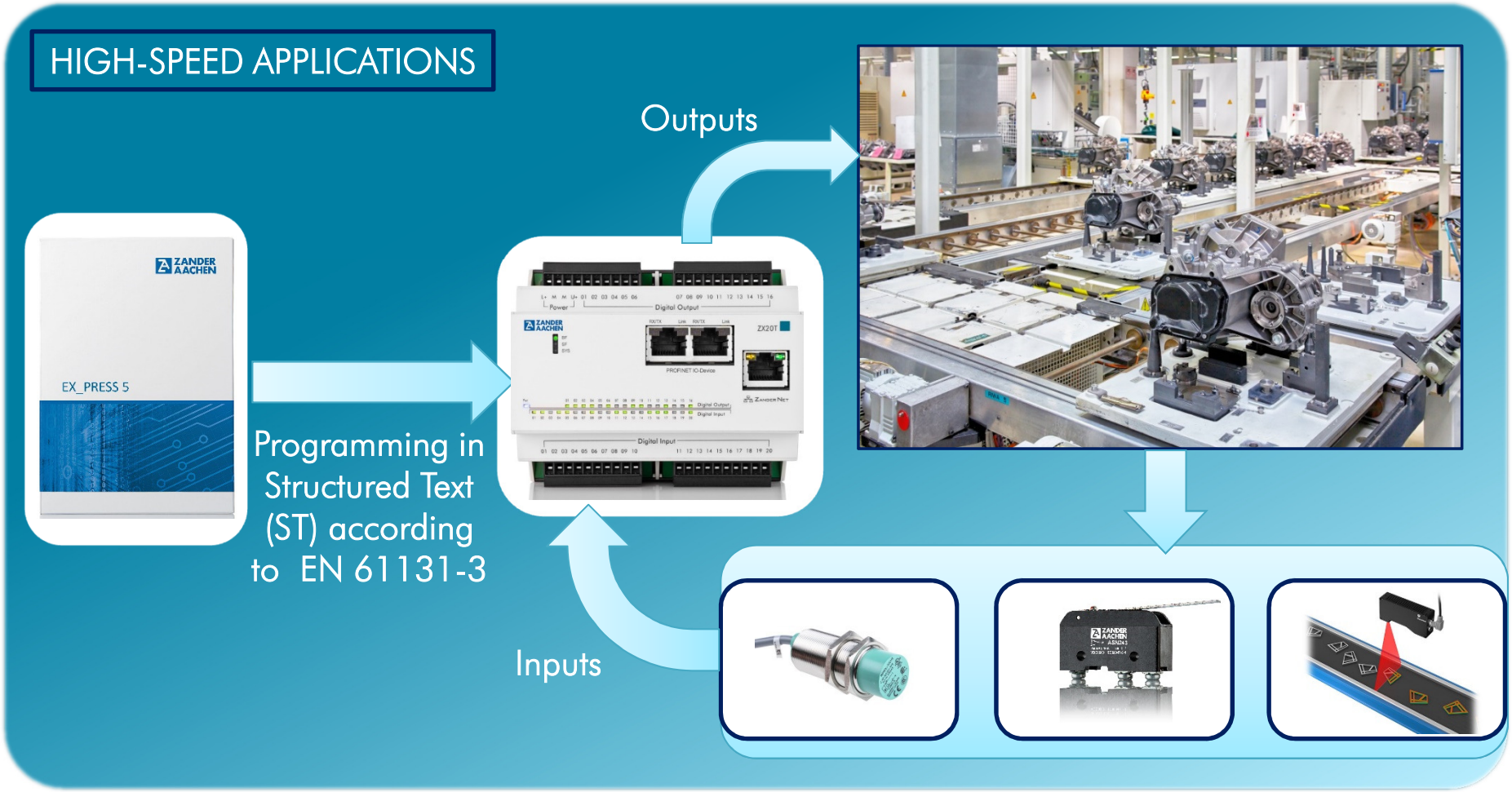
5. The ZX20- and ZX09 Product Group



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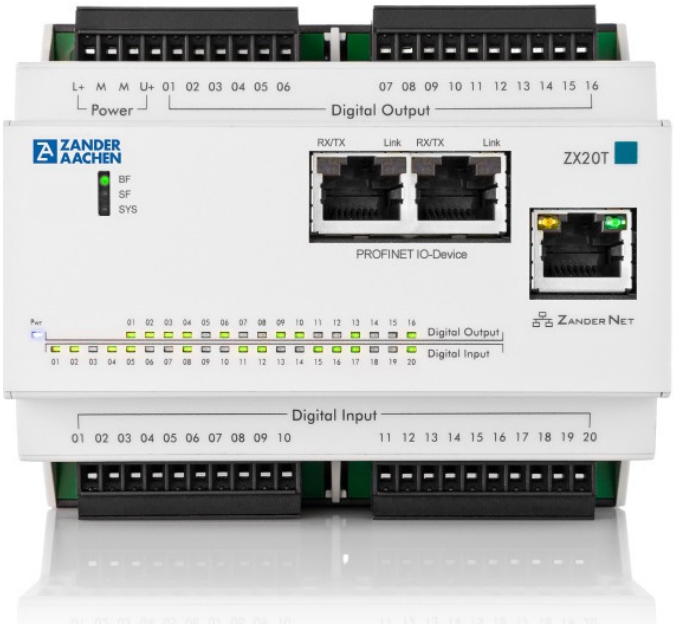
5. The ZX20- and ZX09 Product Group

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 μs
- Variations
  - ZX20T: 20 digital Inputs , 16 digital Outputs
  - ZX20TP: 2x Additional PROFINET port
  - ZX20TC: 1x Additional In/Out EtherCAT port



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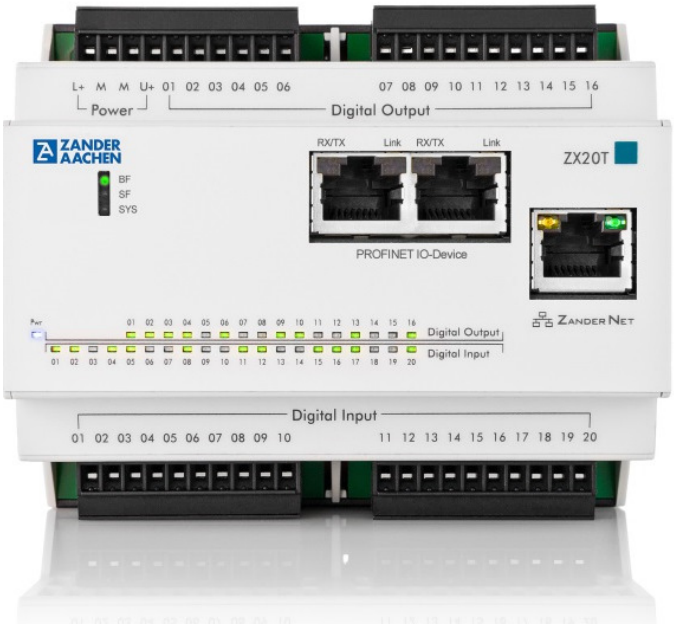
  - ZX20TC: 1x Additional In/Out EtherCAT port
- The Advantages
  - Cost efficient high-speed solution with no cycle time; Reaction time < 9 μs
  - Integrable in existing Networks, programmable within the Network



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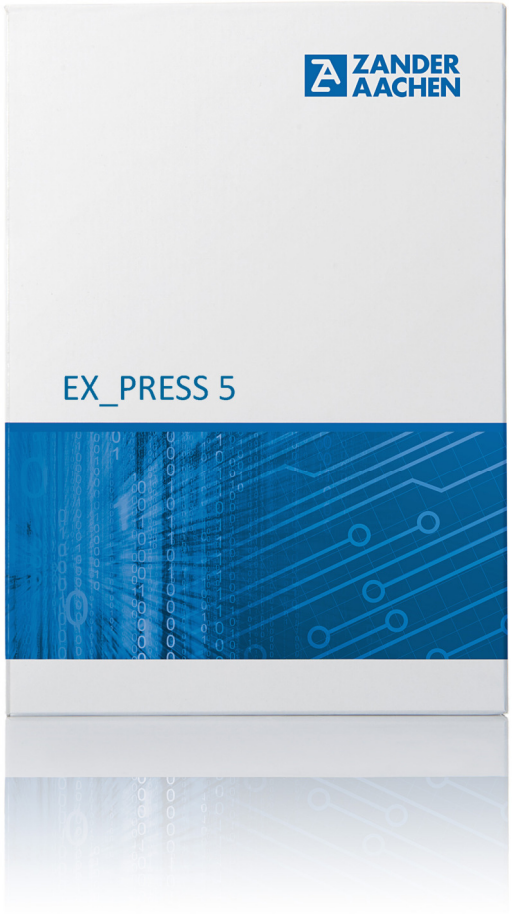
5. The ZX20- and ZX09 Product Group

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



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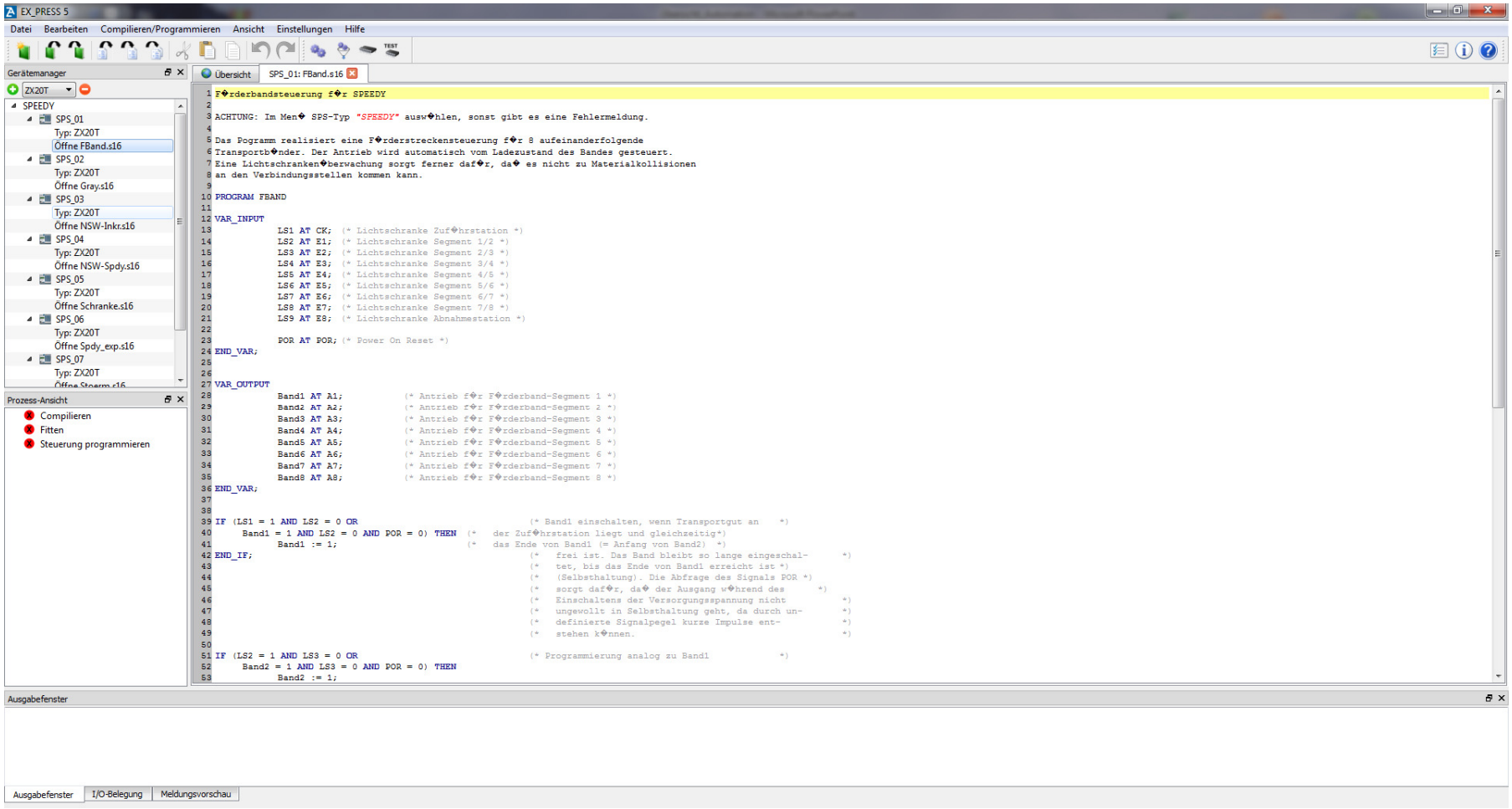
5. The ZX20- and ZX09 Product Group



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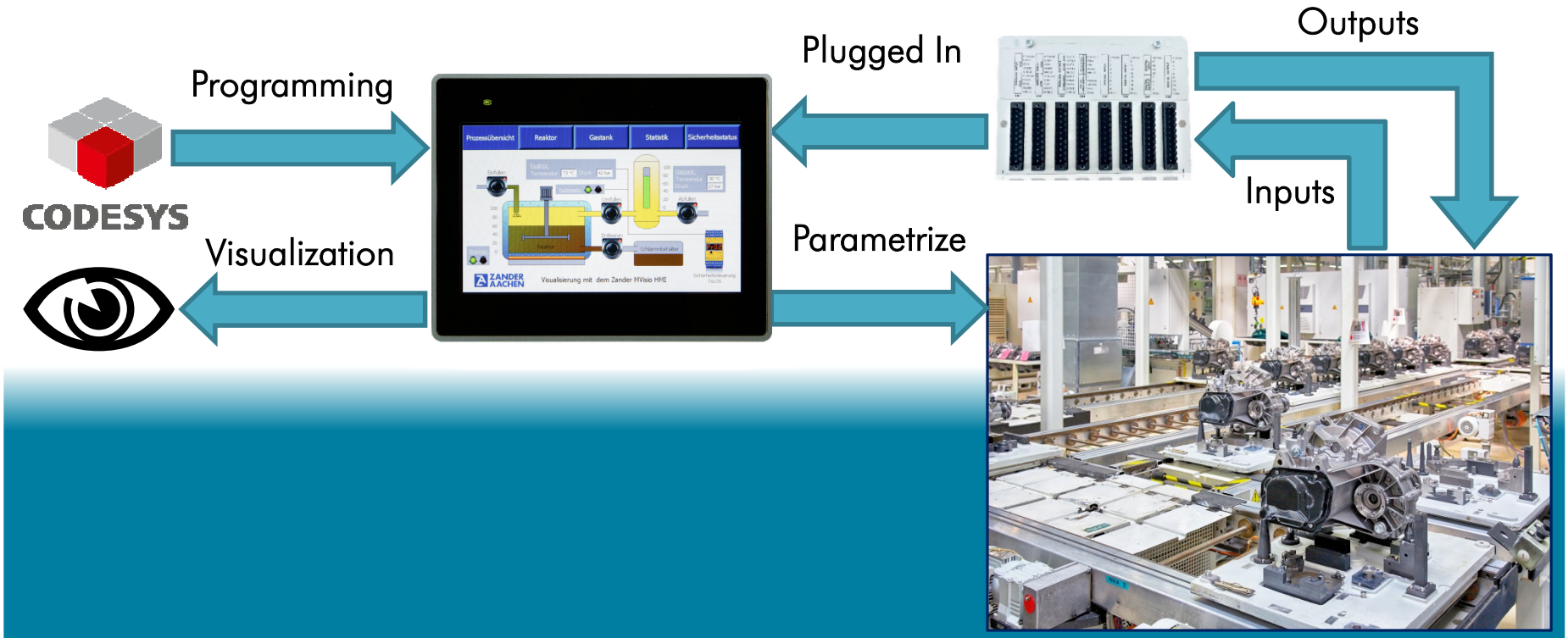
5. The ZX20- and ZX09 Product Group



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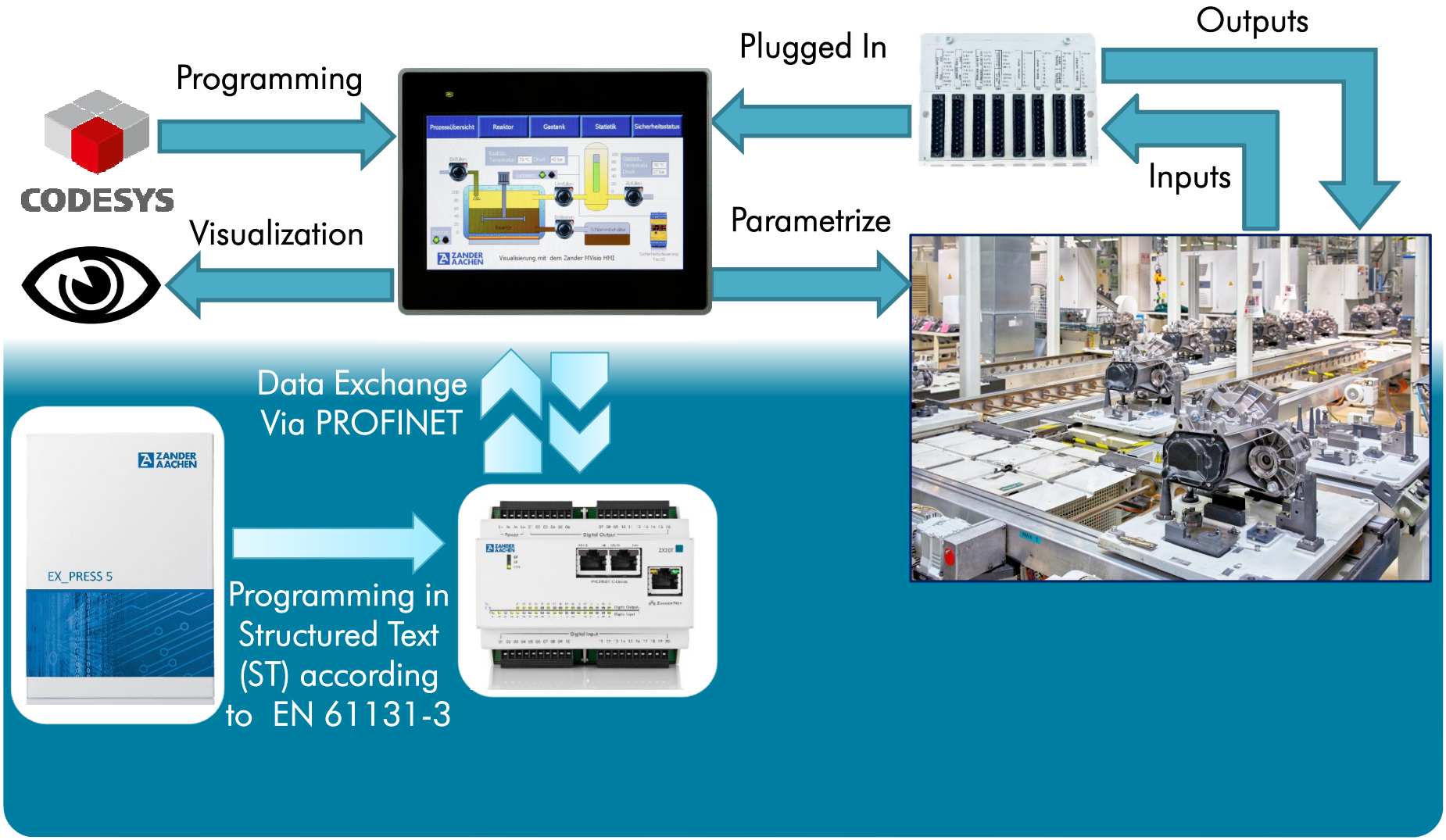
5. The ZX20- and ZX09 Product Group



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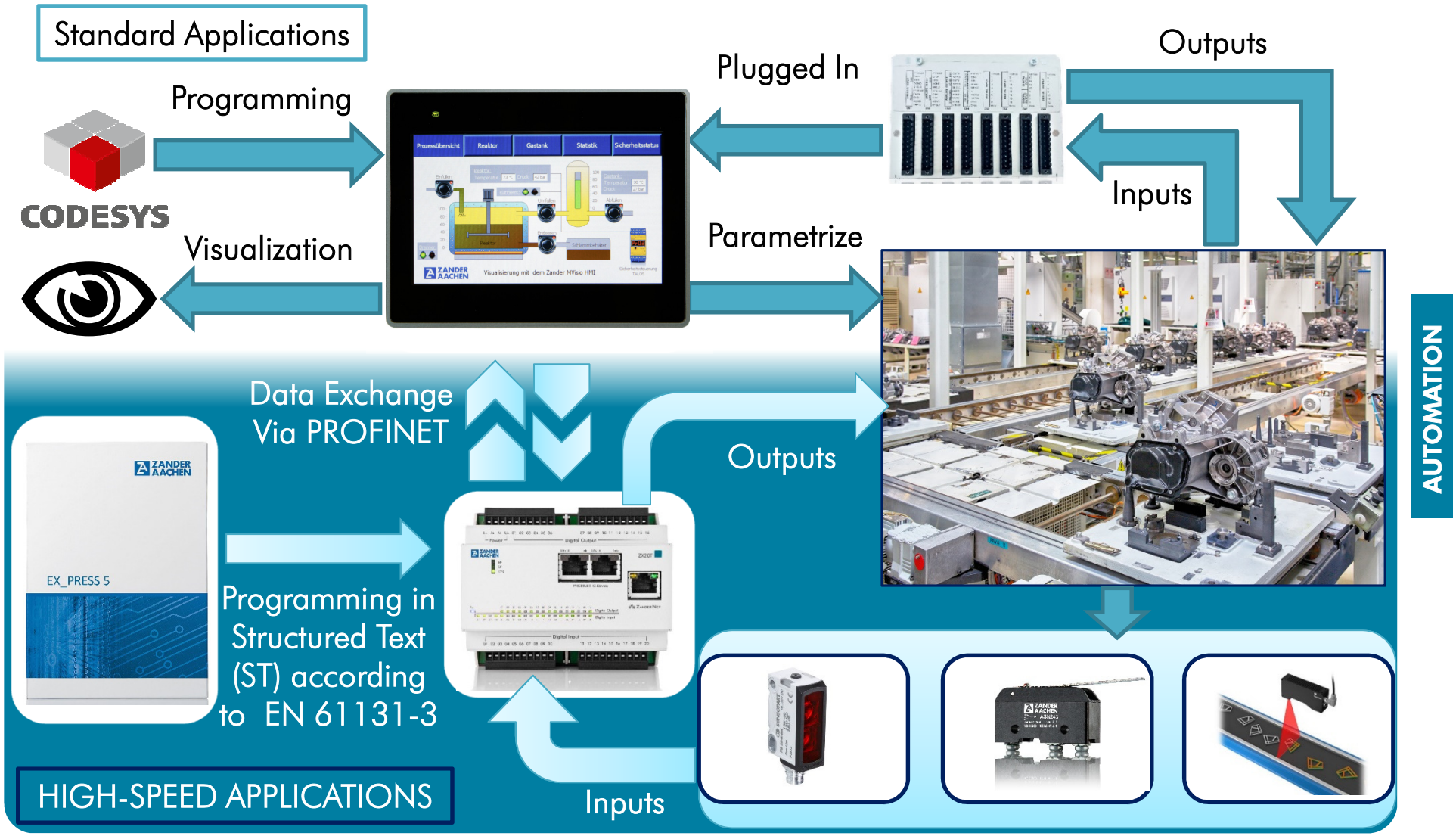
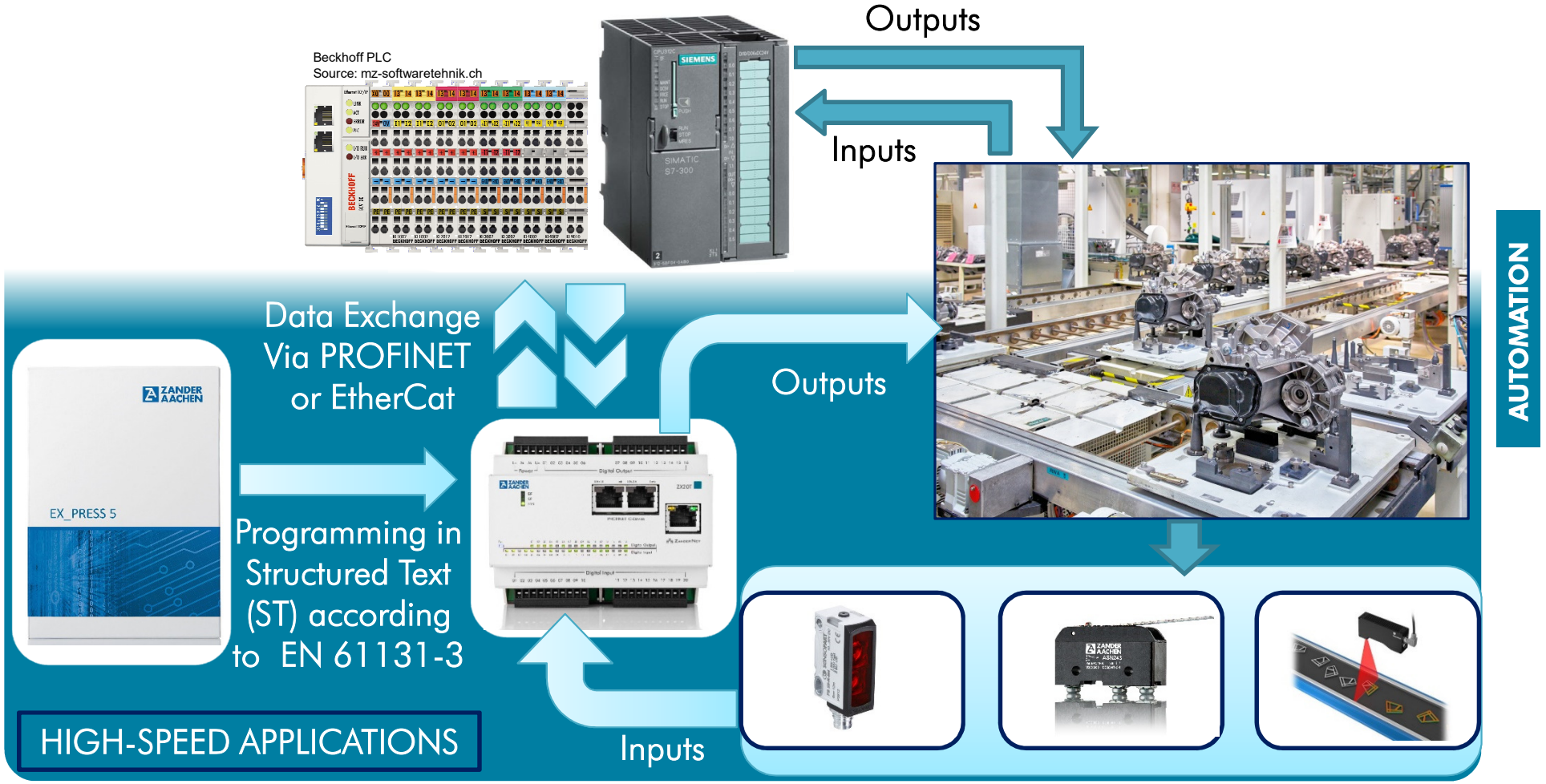
5. The ZX20- and ZX09 Product Group



5. The ZX20- and ZX09 Product Group

Standard Applications



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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

sn German Pouch-Pack Technology

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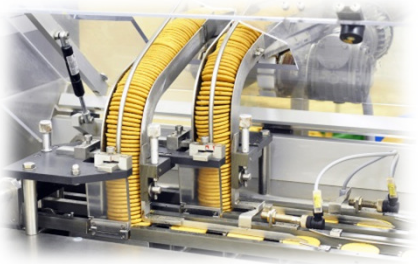
5. The ZX20- and ZX09 Product Group

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



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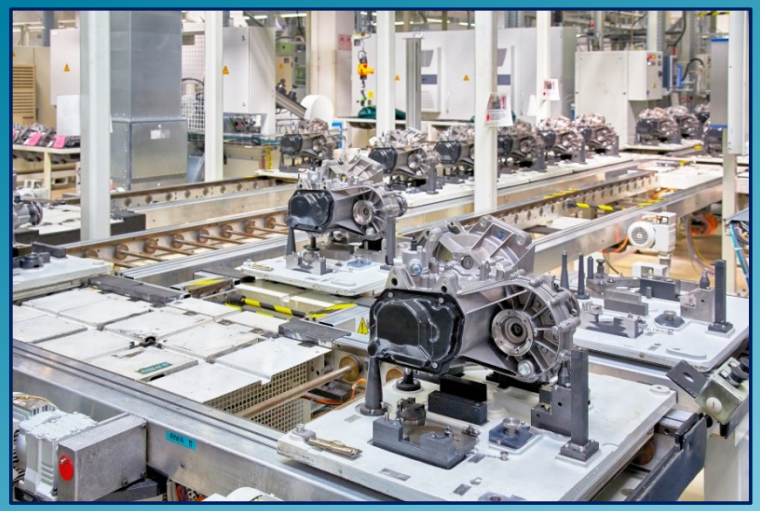
5. The ZX20- and ZX09 Product Group

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



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5. The ZX20- and ZX09 Product Group

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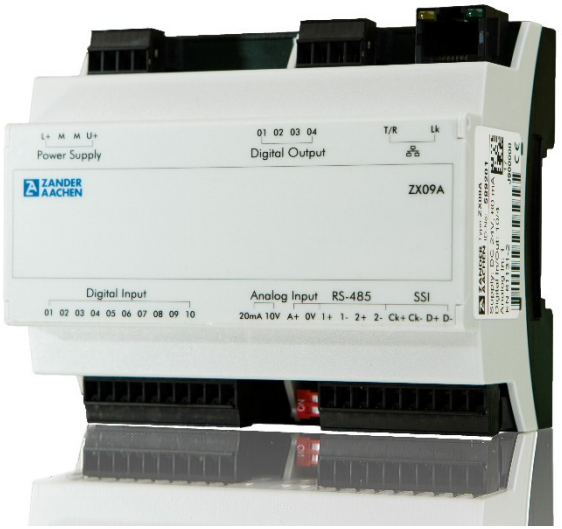
5. The ZX20- and ZX09 Product Group

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

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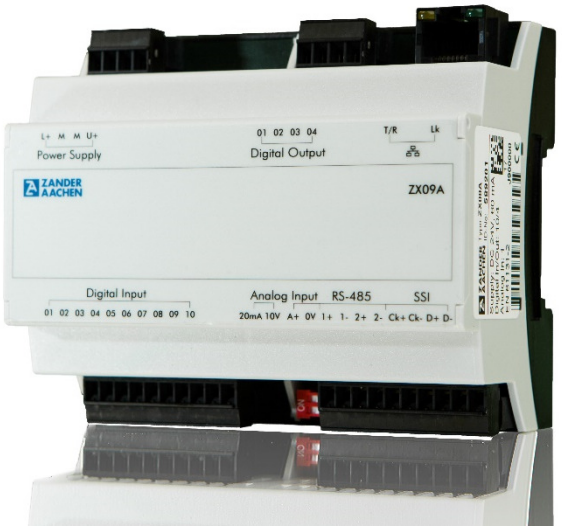
5. The ZX20- and ZX09 Product Group

Even more diverse - The ZX09 and ZX09A



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- Variations
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  - 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

AUTOMATION

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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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