

Savings potential with fieldbus – comparing technologies

Reducing connections by up to 65%, making huge time savings and increasing the reliability of the connection: these are the key advantages of fieldbus technology. See for yourself!

Example

Packing machine with 6 stations, each station equipped with 8 cylinders:

- 6 cylinders are controlled with a single solenoid valve
- 2 cylinders are controlled with a double solenoid valve
- On each cylinder, 2 position sensors are used

Result:

- 96 inputs
- 60 outputs are requested to control the complete machine

Connection points per station:

Electrical

In the control cabinet

- 29 to the PLC.
- 29 terminal, PLC side
- 29 terminal, cable side

In the terminal

- 29 terminal, cable side
- 78 coils and sensors to the terminal
- 30 coils

Pneumatic

- 32 fittings for the valve ports and for the cylinder ports
- 16 silencers, 2 per valve
- 8 valve inputs for the pressure supply
- 8 supply ports from the mains

- 288 connections per station

Total 1728 connections when using individual wiring/traditional valve installation

Conventional assembly and connection technology

- Time and cost-intensive assembly
- Greater material requirements
- High error quota during installation and individual inspection of all connections
- Larger space requirement for cable packages
- Connection technology on a P-manifold: individual silencer per valve
- Connection technology on a PRS-manifold: ducted exhaust air via a common bus silencer

Valve terminal with multi-pin plug connection

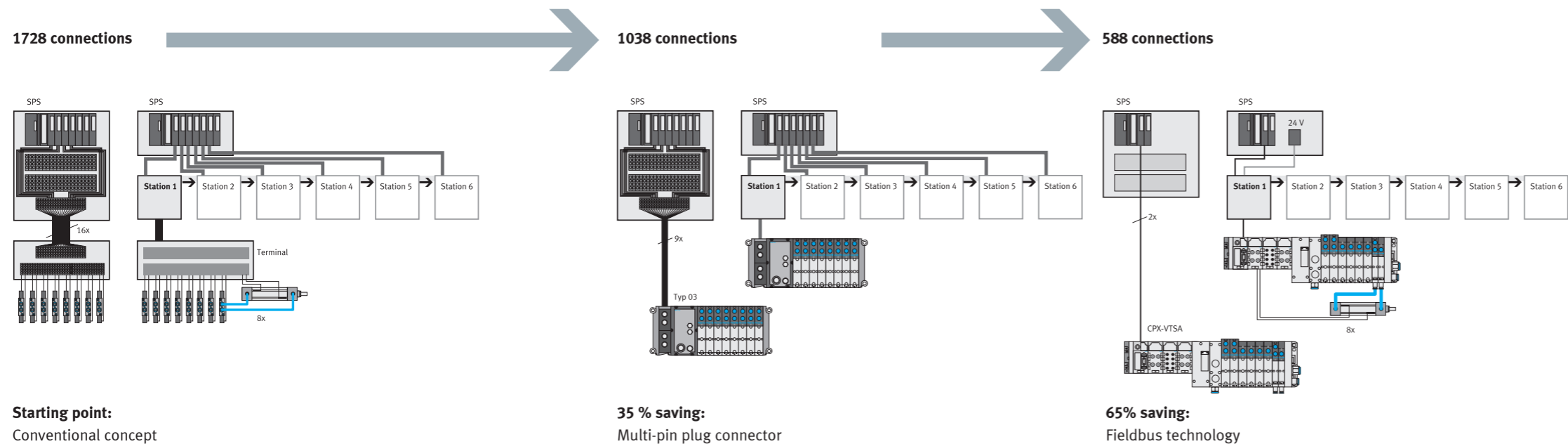
A multi-wire cable connects the valve terminal and a controller. It provides one wire for every valve coil, and additionally one wire for the ground connection of all valve coils.

- Quick electrical connection of the valves via pre-assembled multi-pin plug and cable
- Connection to every controller possible
- All electrical connections integrated
- Ideal for compact machines with short lines
- Saves: costs, space, installation and testing time

Valve terminal with fieldbus connection

Coded switching signals represent a further important reduction in the number of wires to the consuming devices. The coding of the signal composition and transmission is defined in so-called protocols.

- Internal wiring on the valve terminal
- Signal transmission takes place serially via the fieldbus connection: long distances can be bridged
- Inputs and outputs are moved from the control cabinet to the valve terminal
- Ideal for complex systems and machines with several stations
- Saves: costs, space and installation, commissioning and testing time
- Function integration (axis controller, positioning systems, safety technology, pressure regulation technology, temperature recording etc.)
- Device/periphery diagnostics possible



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