

by PETRONIK

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PETRONIK references

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Reference projects

Petro chemie

Extrusion and Material Handling

Below is a selection of our reference projects in the petrochemical industry. Our expertise focuses on automation solutions for extrusion plants as well as conveying, dosing and loading systems.



**BEYOND
AUTOMATION**

XLPE Production Plant

United Arab Emirates – 2025

For the expansion of a modern XLPE production plant, PETRONIK engineered and delivered two variable frequency drive (VFD) control cabinet systems as part of the plant's electrical infrastructure. The facility manufactures cross-linked polyethylene XLPE.

Scope of Supply

- Hardware engineering and electrical documentation
- Design and manufacturing of VFD control cabinet systems
- Development of functional descriptions
- Development of cause & effect matrices
- Development of logic diagrams
- DCS integration

Technical Data

- 2 VFD control cabinet systems
- 6 variable frequency drives
- 6 control cabinet sections
- Total cabinet lineup: 4.8 m (15.7 ft)

Communication Systems

- Industrial Ethernet
- Modbus TCP
- DCS integration
- Hardwired interfaces to field devices and the control system

XLPE Production Plant China – 2023

For the construction of a large-scale XLPE production plant, PETRONIK delivered the complete automation of key process areas. The facility comprises multiple production lines as well as central process sections for material handling and extrusion. Due to the plant's complexity and continuous production process, a highly reliable control architecture and seamless communication between all process areas were essential.

Scope of Supply

- Hardware engineering and electrical documentation
- Design and manufacturing of control, remote I/O and power distribution cabinets
- PLC software development and HMI visualization
- Development of functional descriptions, logic diagrams and cause & effect matrices
- Integration of safety I/O and process instrumentation
- DCS integration and commissioning

Technical Data

- Redundant Siemens SIMATIC S7-400H control system
- Two Siemens CPU 416-5H controllers
- Additional Siemens SIMATIC S7-1500 controller
- 1,690 digital I/O signals
- 308 analog I/O signals
- 27 control cabinet sections
- Total cabinet lineup: 21.6 m (70.9 ft)
- 2 central control cabinet sections
- 15 remote I/O cabinet sections
- 10 power distribution cabinet sections for electric heating systems
- 123 junction boxes and terminal boxes, partially installed in Ex e design
- Standard, Safety and HART I/O

Communication Systems

- Redundant PROFIBUS DP
- PROFINET
- Industrial Ethernet
- Modbus TCP
- PN/PN Coupler
- HART
- Hardwired interfaces to MCC and DCS

Polyethylene Production Plant

Texas, USA – 2025

For the construction of a large-scale polyethylene production plant, PETRONIK delivered the electrical control and automation systems for two parallel extrusion lines. The plant covers the complete extrusion process, from material preparation and extrusion to melt processing, pelletizing, dewatering, drying, screening and cooling of the finished polymer pellets. In addition, all auxiliary systems, including lubrication oil, hydraulic oil, cooling water, pellet water and other utility systems, were fully integrated into the automation system.

Scope of Supply

- Hardware engineering and electrical documentation
- Design of redundant PLC and safety control systems
- Design of control and power panel assemblies
- Standard, Safety and HART I/O
- Network and interface engineering
- Junction box and terminal box documentation
- Loop diagrams and instrumentation wiring
- Grounding and equipotential bonding design
- Design in accordance with UL 508A

Technical Data

- 2 redundant Allen-Bradley ControlLogix control systems
- 4 Allen-Bradley ControlLogix 5580 controllers, 2 Allen-Bradley GuardLogix safety controllers
- Standard, Safety and HART I/O
- 1,056 digital input and output signals
- 312 analog input and output signals
- 36 control cabinet sections
- 28.8 m (94.5 ft) total cabinet lineup
- 2 central control systems
- 4 power panel assemblies
- 184 junction boxes and terminal boxes
- 20 local operator and connection stations
- Designed in accordance with UL 508A

Communication Systems

- Redundant EtherNet/IP
- Industrial Ethernet
- Modbus TCP
- Fiber optic communication
- DCS integration
- Machinery monitoring system
- Hardwired interfaces to MCC and third-party systems

Compounding Plant Saudi Arabia

Control system for two complete extrusion lines.

Each line is equipped with eight loss-in-weight feeders to ensure the correct blending ratio according to the selected recipe.

Scope of Supply:

- Hardware engineering and documentation
- Software development using Siemens S7
- Visualization with Siemens WinCC
- Manufacturing of power distribution and control panels
- Control system based on 3 Siemens S7 PLCs

Technical Data:

- 1,392 digital I/O signals
- 144 analog I/O signals
- Siemens WinCC operation via one touch panel PC per production line2
- monitoring PCs in the control room
- OPC server for data management

Communication System:

- PROFIBUS for field I/O and VFD communication
- Ethernet communication with the HMI panel PCs

Compounding Plant North Carolina, USA

Control system for one complete extrusion line.

Eleven loss-in-weight feeders ensure the correct blending ratio according to the selected recipe.

Scope of Supply:

- Hardware engineering and documentation
- Software development using Allen-Bradley RSLogix
- Visualization with Allen-Bradley RSView
- Manufacturing of power distribution and control panels
- Control system based on one Allen-Bradley ControlLogix PLC

Technical Data:

- 576 digital I/O signals
- 96 analog I/O signals
- Operator interface via Wonderware InTouch Panel PC
- OPC server for data management

Communication System:

- Ethernet for field I/O and VFD communication
- Ethernet communication with the HMI panel PC and operator network for data acquisition

Compounding Plant Thailand

Control system for one complete extrusion line.

Nine loss-in-weight feeders ensure the correct blending ratio according to the selected recipe.

Scope of Supply:

- Hardware engineering and documentation
- Software development using Siemens S7
- Visualization with Siemens WinCC
- Manufacturing of power distribution and control panels
- Control system based on one Siemens S7 PLC

Technical Data:

- 464 digital I/O signals
- 64 analog I/O signals
- Operator interface via touch panel PC

Communication System:

- PROFIBUS for field I/O and VFD communication
- Ethernet communication with the HMI panel PC and operator network for data acquisition

Plastic Material Handling and Storage Saudi Arabia

Three conveying lines (PP / PC / HDPE).

Pneumatic conveying of various plastic materials in powder and pellet form.

Scope of Supply:

- Hardware engineering and documentation
- Software development using Siemens S7
- Visualization with Siemens WinCC
- Manufacturing of power distribution and control panels
- Control system based on five redundant Siemens S7-400H PLCs

Technical Data:

- 5,476 digital I/O signals
- 614 analog I/O signals

Communication System:

- Redundant Modbus TCP (Ethernet) communication with the Yokogawa DCS
- Three OPC Alarm & Event servers
- Communication with turbo compressors via nine Modbus master connections
- Ethernet (TCP), Ethernet (ISO) and PROFIBUS DP networks

Plastic Material Handling and Storage Saudi Arabia

Three conveying lines (PP1 / PP2 / PP3).
Pneumatic conveying of plastic material
in powder and pellet form.
Migration of all signals from the existing
PP1 line from the DCS to the Siemens
control system.
Integration of the existing PP1 line with
the new PP2 and PP3 extensions.

Scope of Supply:

- Hardware engineering and documentation
- Software development using Siemens S7
- Visualization with Siemens WinCC
- Manufacturing of power distribution and control panels
- Control system based on two redundant Siemens S7-400H PLCs
- Operator interface via Siemens WinCC and Honeywell DCS

Technical Data:

- 3,816 digital I/O signals
- 464 analog I/O signals

Communication System:

- Redundant Modbus TCP (Ethernet) communication with the Yokogawa DCS
- Three OPC Alarm & Event servers
- Communication with turbo compressors via nine Modbus master connections
- Ethernet (TCP), Ethernet (ISO) and PROFIBUS DP networks

Minerals

Material Handling and Storage

Below is a selection of our reference projects in the minerals industry.

Our expertise focuses on automation solutions for conveying, dosing and processing plants used in mineral handling applications.



**BEYOND
AUTOMATION**

Bauxite Material Handling and Storage Saudi Arabia

Receiving and conveying of bauxite for further processing into aluminum. Engineering and development of the complete raw material conveying system.

Scope of Supply:

- Hardware engineering and documentation
- Software development using Allen-Bradley RSLogix
- Visualization with Allen-Bradley RSVIEW Enterprise
- Manufacturing of control panels
- Control system based on two Allen-Bradley ControlLogix PLCs

Technical Data:

- 1,826 digital I/O signals
- 464 analog I/O signals
- RSVIEW Enterprise with redundant servers, two client PCs and one workstation

Communication System:

- Redundant ControlNet network for I/O communication
- DeviceNet communication with dosing and measurement systems
- PROFIBUS communication with the MCC (ABB VFDs and Siemens SIMOCODE)
- Ethernet communication between PLC and HMI

Bauxite Material Handling and Storage Saudi Arabia

Receiving and conveying of bauxite for further processing into aluminum. Engineering and development of the complete raw material conveying system.

Scope of Supply:

- Hardware engineering and documentation
- Software development using Allen-Bradley RSLogix
- Visualization with Allen-Bradley RSView Enterprise
- Manufacturing of control panels
- Control system based on eight Allen-Bradley ControlLogix PLCs

Technical Data:

- 3,280 digital I/O signals
- 400 analog I/O signals
- FactoryTalk View SE with redundant servers, two client PCs and nine local panel PCs

Communication System:

- EtherNet/IP for field I/O communication
- Ethernet communication with the MCC
- Ethernet communication between PLC and HMI

thank you

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CURIOUS
VISIONARY

