

**Partner for Technical Skills Development
in the Mining and Metals Industry**

FESTO





A Skilled Workforce Can Meet the Challenges of a Dynamic Industry.

The production of raw materials and minerals has historically played a **pivotal role in the prosperity of nations** and empires. Today, mineral exploration and mining continue to be vital for energy production, manufacturing, and industrial processing. Moreover, the growing use of advanced, digital technologies is also increasing our need for technological minerals. Mining and metals companies significantly contribute to the social and economic development of local communities.

Several **trends are shaping the current and future landscape** of the mining and metals industry, including sustainable and responsible mining; energy transition and clean technologies; electrification; digitalization and automation; supply chain resilience; circular economy and recycling; environmental, social, and governance (ESG) integration; as well as geopolitics and changing market dynamics, among others.

Many **challenges exert significant pressure** on mining and metals companies. For example, they need to identify and access new mineral resources; maximize operational efficiency; ensure health and safety; promote environmental sustainability; engage stakeholders; manage complex supply chains; embrace technological advancements; comply with regulations; and invest in talent management.

Against this backdrop, **human resources management** in the mining industry poses significant challenges. The industry grapples with various HR-related obstacles, including talent acquisition; skills shortages; geographic remoteness; health and safety concerns; workforce diversity; an aging workforce in many countries; employee engagement and retention; and changing workforce expectations.





Training needs vary depending on factors such as specific job roles, technological advancements, and regulatory requirements, among others. Common training needs encompass health and safety, environment and sustainability, mining equipment and operations/processes, first aid and emergency response, cultural awareness and diversity, and more.

To ensure continuous and safe operation, reliable maintenance, and efficient production, **technical skills development and technology training** are essential for production workers.

This is where Festo can help.

economy
safety automation
sustainability compliance
electrification **people** water
digitalization processing
geopolitics **governance**
responsibility energy
supply chain **efficiency**
recycling investments
productivity





Festo: Your Holistic Partner in the Mining and Metals Industry

Through a **remarkable interplay of Automation and Education**, we help industrial companies increase productivity and employability worldwide.

Mineral extraction and refinement systems and processes need continuous enhancement to ensure accuracy and availability. With a focus on the protection of people and the environment, Festo delivers **robust industrial automation solutions** that optimize productivity, ensure high system availability, and integrate digital features to meet the industry's demanding requirements.

Qualification and skill development are key to innovation and productivity. Festo Didactic supplies **state-of-the-art technical education and training solutions** across a wide range of technologies and topics.

We proudly serve over 60,000 public and privately-owned customers, including vocational and technical schools, universities, research institutes, education ministries, governmental organizations, NGOs, and a substantial and growing number of industrial companies in various industry segments.

With a focus on lifelong learning and the optimization of learning success, we leverage the power of digital learning to design industrial-grade learning solutions accompanied by outstanding learning content, and to implement simple to full-fledged, customized training laboratories and workshops. Our aim is to efficiently prepare individuals for the challenges of dynamic and complex industrial settings.

Your main benefits:

+ Complete service

Our range of services ensures high convenience for you throughout the entire project lifecycle. From project design to room planning, on-site commissioning, and trainer training sessions, we provide technical reliability and centralized procurement for maximal return on your investments.

+ Optimized learning

As advocates of the German dual system for vocational training, we offer straightforward, practical learning content aligned with professional requirements, with a strong focus on troubleshooting. Learners develop their competencies through self-paced study and experimentation on industrial-grade equipment.



300,000 customers

In more than **35** industries

20,000 employees

61 Festo companies

250 branch offices

176 countries

Family-owned company

Founded in **1925** in Esslingen, **Germany**



Comprehensive Technology Training for Direct Application on the Job

Our mining and metals customers usually prioritize **skills development in fundamental technologies** used in mining equipment for an immediate impact on productivity, safety, and profitability.

We work closely with our industrial customers to help them establish and equip in-house training centers. This enables them to efficiently train new employees and support the professional development of their existing staff. Additionally, we frequently collaborate with local schools to enhance their training programs and ensure a pool of qualified graduates for the industry.



Trades/entry-level occupations

Examples: Machine and equipment operators, laborers, assistants...

Important technologies: Mechanics, rigging, hydraulics and pneumatics fundamentals, pumps, pipefitting, wiring, and basic electricity

Technical/skilled jobs

Examples: Mechanics, machinists, electricians, welders, and mining, mechanical, process and environmental technicians...

Important technologies: Mechanics, instrumentation and controls, pumping and piping circuits, hydraulics and pneumatics, wiring, CNC, electricity

Engineering occupations

Examples: Mining, mechanical, chemical, and electrical engineers

Important technologies: Process control and instrumentation, mechanics, electromechanics, and energy generation and distribution



A Selection of Training Projects in the Mining and Metals Industry

Standard or Custom

Throughout the years, our team has been committed to providing tailored training solutions that seamlessly align with our customers' requirements.

Each project involves meticulous selection from our comprehensive portfolio of learning solutions, and, when needed, the development of customized learning systems to ensure optimal suitability and effectiveness.

Popular Solutions

What are the most popular learning solutions among industrial or educational customers in the mining and metals industry? Most of the rooms we equip typically include the following:

- Mechanical drives learning system (page 12)
- Industrial pumps learning system (page 12)
- Hydraulics and pneumatics training packages (page 14-17)
- Electromechanical learning system (page 25)
- Motor control technology training package (page 24)
- Industrial process control learning system (page 20)

Discover these solutions – and much more – in the following pages.



Most recent: IIoT Devices Custom Integration Project

Customer: Mining company (gold) with more than 50K employees and several locations in Africa

Need: Train employees on new Industrial Internet of Things (IIoT) production technologies from a preferred supplier, Endress+Hauser

Solution: Festo Didactic upgraded the mining industry configuration of its Industrial Process Learning System (see page 20) by integrating specific devices that incorporate advanced instrumentation technologies such as WLAN, IO-Link, Bluetooth, and Heart-beat. Festo Didactic also provided on-site commissioning and initial training for the instructors.



Training Center 1

Customer: Regional US mining company (coal) with more than 3,000 employees

Need: Offer in-house training, especially in instrumentation and process control.

Training Center 2

Customer: Mining company (phosphate) located in Maghreb with more than 20,000 employees

Need: Implement several training locations to train new hires and enhance the skills of current workers.

Training Center 3

Customer: Mining company (aluminium) located in the Middle East, with 1,000 employees

Need: Enhance current training facilities to improve training in fluid power and instrumentation.

Training Center 4

Customer: Mongolian branch of a multinational mining company (gold, copper), with more than 4,000 employees

Need: Equip a new training center with industrial mechanics, electromechanics, and instrumentation and process control learning systems.



Learning Solutions for Technical Skills Development





Festo LX	10
Machine Mechanics, Pumps, Electrical Wiring, and More	12
Hydraulic Systems	14
Pneumatic Systems	16
Electromechanical Systems and Motor Controls	18
Process Automation and Water Technology	20
Industrial Instrumentation and Process Control	22
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This brochure presents a curated selection of our most relevant learning solutions for skills development in the mining and metals industry. We offer a wide range of additional learning solutions and complementary resources, including furniture systems and learning software. For a **complete overview** of our offerings, please visit our website:
→ www.festo.com/didactic

Please be aware that certain solutions featured in this brochure may not be available for sale or delivery in countries that require CE compliance. These specific solutions are marked with an asterisk (*) for easy identification.

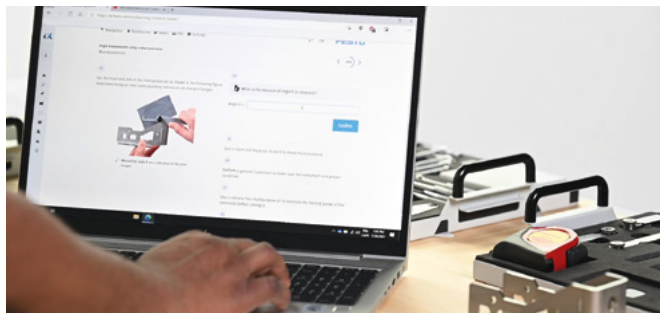
Festo Learning Experience

The Digital Portal for Individual Learning Experiences



A Rich Collection of Content

- eLearning courses introduce topics and do not require any hardware.
- Boost theoretical knowledge with eTheory courses. No hardware required.
- eLab courses are designed to perform practical tasks with our learning systems.
- Videos explain complex topics in a short and interactive way.
- Evaluations help to review learners' progress or assess their prior knowledge on a specific topic.

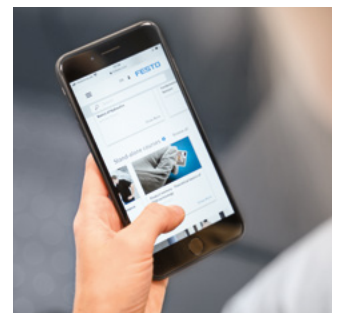


Holistic Approach

Festo LX offers professionally prepared training content for many technical areas. We combine industry expertise with didactic know-how to create unique learning experiences based on a smart combination of eLearning courses and practical exercises.

A Wide Range of Topics

Training content covers several technical areas: factory and process automation, fluid power, electrotechnology, renewable energy, industrial trades, and much more like organization and people. Specific industry-focused content will also be added over time.



Simple Access

Festo LX is a cloud-based learning portal, which means you don't need to install anything locally. You'll always have access to the latest updates to functionalities and content. You can use license packages based on the number of users and the duration of use.



Digital Learning for the Mining and Metals Industry

Flexible professional development tools and methods enable workers to customize their learning journey according to their specific needs. Digital tools enhance the learning process by providing engaging and accessible resources. Festo LX hosts our comprehensive and continuously expanding collection of learning materials in a digitally optimized format*.

Create your free test account: → lx.festo.com

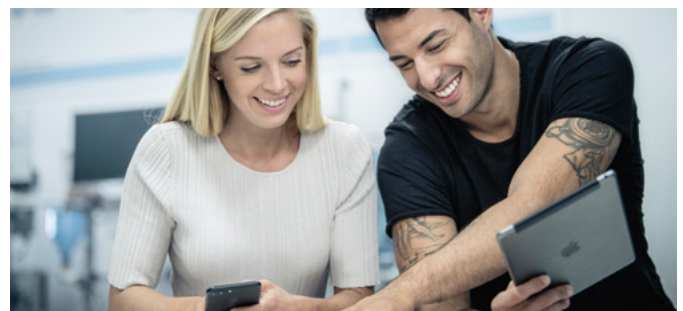


Individual Learning Paths

Festo LX is based on multimedia learning nuggets that form flexible learning paths. Exercises are performed on physical learning systems or using simulation tools. A structured sequence of information, question and task nuggets forms a learning unit. Learning paths are developed from multiple courses.

Experience Customization

On Festo LX you can easily customize courses or create your own training content based on learning nuggets. You can track the learning progress of all users on a dashboard, allowing you to address each individual even in groups with different levels of proficiency.



Experience Productivity

Festo LX plays a crucial role in addressing skills gaps thanks to the support of multimedia. Digital learning helps learners achieve accelerated learning success and increased productivity.

Experience Reliability

Our industrial automation know-how ensures relevant skills development that matches industry requirements. High-quality didactic resources facilitate the effective transfer of knowledge. We guarantee reliable data security in line with the latest IT security standards.

* Many learning materials are also available in printable PDF format for offline usage.

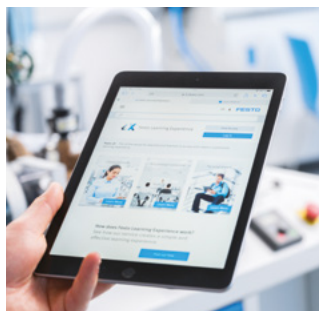
Machine Mechanics, Pumps, Electrical Wiring, and More



Universal, Manual Skills

Each learning solution addresses specific skills, guaranteeing focused and comprehensive coverage. The pedagogical approach facilitates the seamless transfer of acquired abilities, techniques, and knowledge across various industry segments.

Related courses offer just the right amount of theory, focusing on practice-oriented, carefully planned exercises covering troubleshooting and safety.



Digital Learning Content

Explore our extensive collection of learning content on Festo LX. Discover a dedicated course category specifically tailored to Industrial Trades and the “How Tool” videos, which provide step-by-step guidance on utilizing common hand tools. To get started, visit → lx.festo.com.



Mechanical Drives

The Mechanical Drives Learning System builds universal skills in industrial mechanics in a safe environment. It covers the installation, and troubleshooting of common machine elements, such as belts, bearings, and gear drives, seals, couplings, gearboxes, and more.



Industrial Pumping Circuits

The Industrial Pumps Learning System enables learners to acquire essential skills in the proper installation, commissioning, operation, maintenance, and troubleshooting skills of single- and multiple-pump circuits, while also addressing pump performance.



Industrial Trades in the Mining and Metals Industry

The installation and maintenance of pumps, piping, electrical, and mechanical systems, metalworking, rigging and hoisting, and heavy machinery operation and maintenance, to name a few, require skilled tradespeople with expertise in specific trades. These individuals ensure the smooth operation, maintenance, and construction of infrastructure, equipment, and systems within the mining and metal industry.



Industrial Electrical Wiring

The Industrial Wiring Learning System provides a comprehensive project that develops proficiency with electrical installations. Learners build, commission, modify, and troubleshoot a typical three-phase industrial electrical installation using industry-standard schematics.



Dimensional Metrology

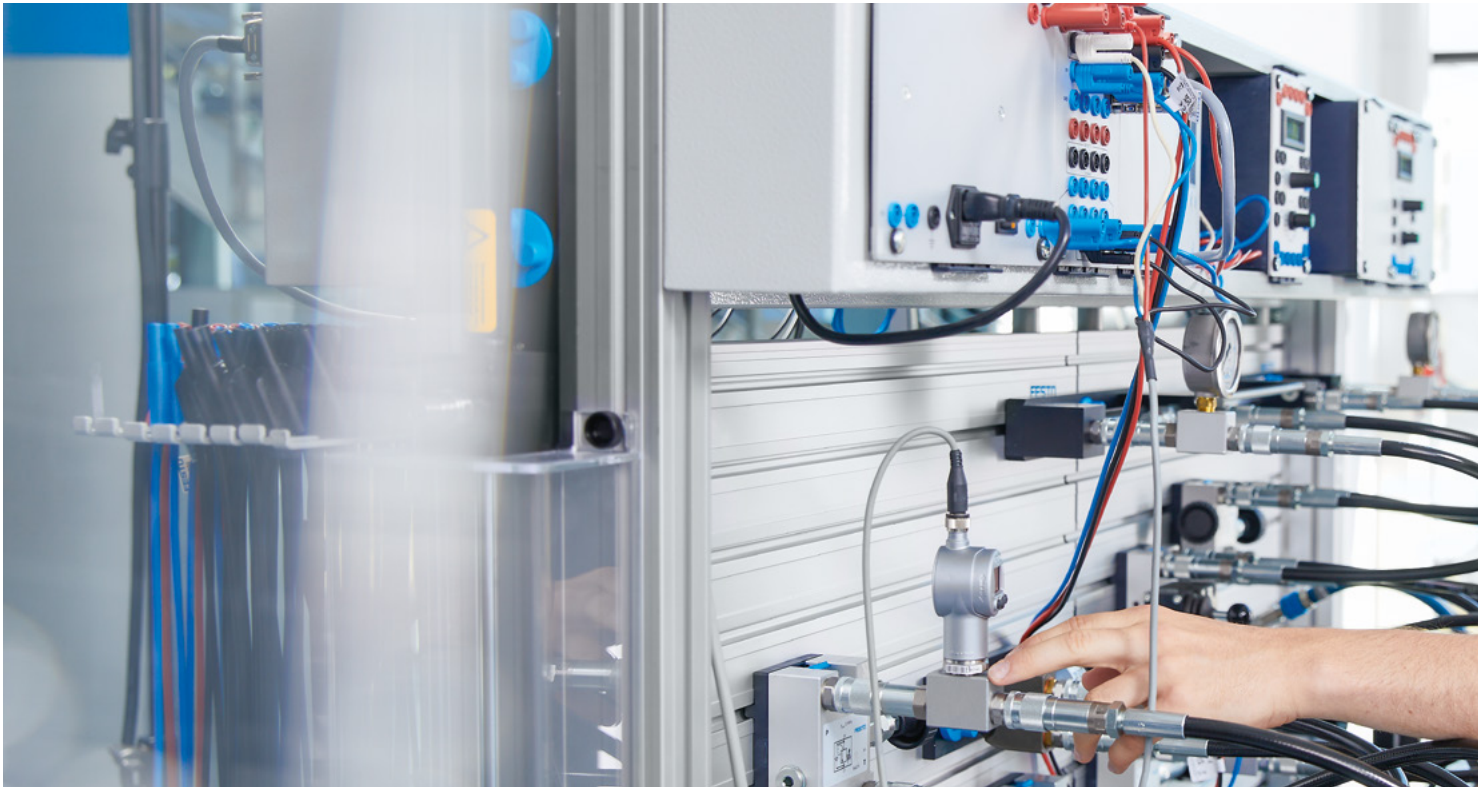
The Basic Dimensional Metrology training package TP 47220 provides a structured introduction to the use of common measuring tools. It also covers the interpretation of technical drawings, encompassing various types of reading scales and systems of units.



Also Related:

- CNC mills and lathes
- Piping training systems *
- Rigging training systems *
- Welding

Hydraulic Systems



Modular for Flexible Expansion

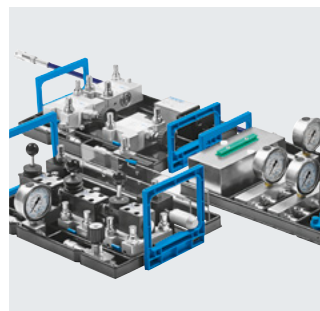
Our fluid power learning systems are designed with high modularity, allowing for versatile customization to cater to diverse training needs.

Tailor your workstations and storage options. Choose from a wide selection of training packages covering basic to advanced topics and enhance your training experience by adding a FluidSIM license and additional components.



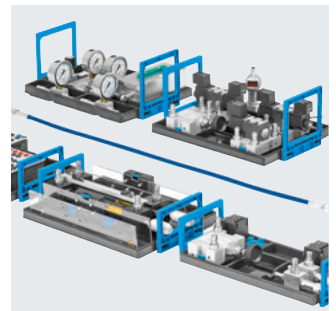
Digital Learning Content

Discover our extensive range of learning resources on Festo LX, where you can easily find relevant courses by browsing the “Fluid Power” category or searching with the keyword “hydraulics”. To get started, visit [→ lx.festo.com](https://lx.festo.com).



Hydraulics

TP 501 and TP 502 cover hydraulics. The basic level focuses the fundamentals of hydraulic control technology, such as basic principles and the function and use of hydraulic components. TP 502 covers the structure, function, and use of other hydraulic components.



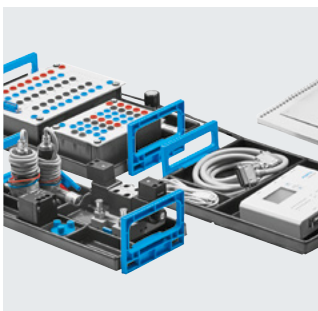
Electrohydraulics

TP 601 and TP 602 cover electrohydraulics. The basic level offers basic training in electrohydraulic control technology. The advanced level covers physical principles, as well as the structure and function of additional components are explained and their use in electrohydraulic control systems.



Hydraulics in the Mining and Metals Industry

Hydraulics generates significant power and force. Common applications include hydraulic excavators, loaders, cranes, hydraulic presses, material handling equipment, and hydraulic control systems for crushers and mills. Key skills in this field involve understanding hydraulic principles, selecting and sizing components, designing hydraulic circuits, and maintaining and troubleshooting hydraulic systems.



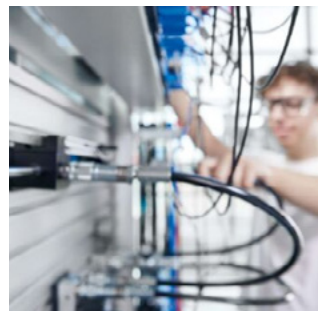
Measurement and Control

TP 610 covers measurement and control in hydraulics. The learning contents range from measuring individual hydraulic components to the basics of condition monitoring and control technology.



Mobile Hydraulics

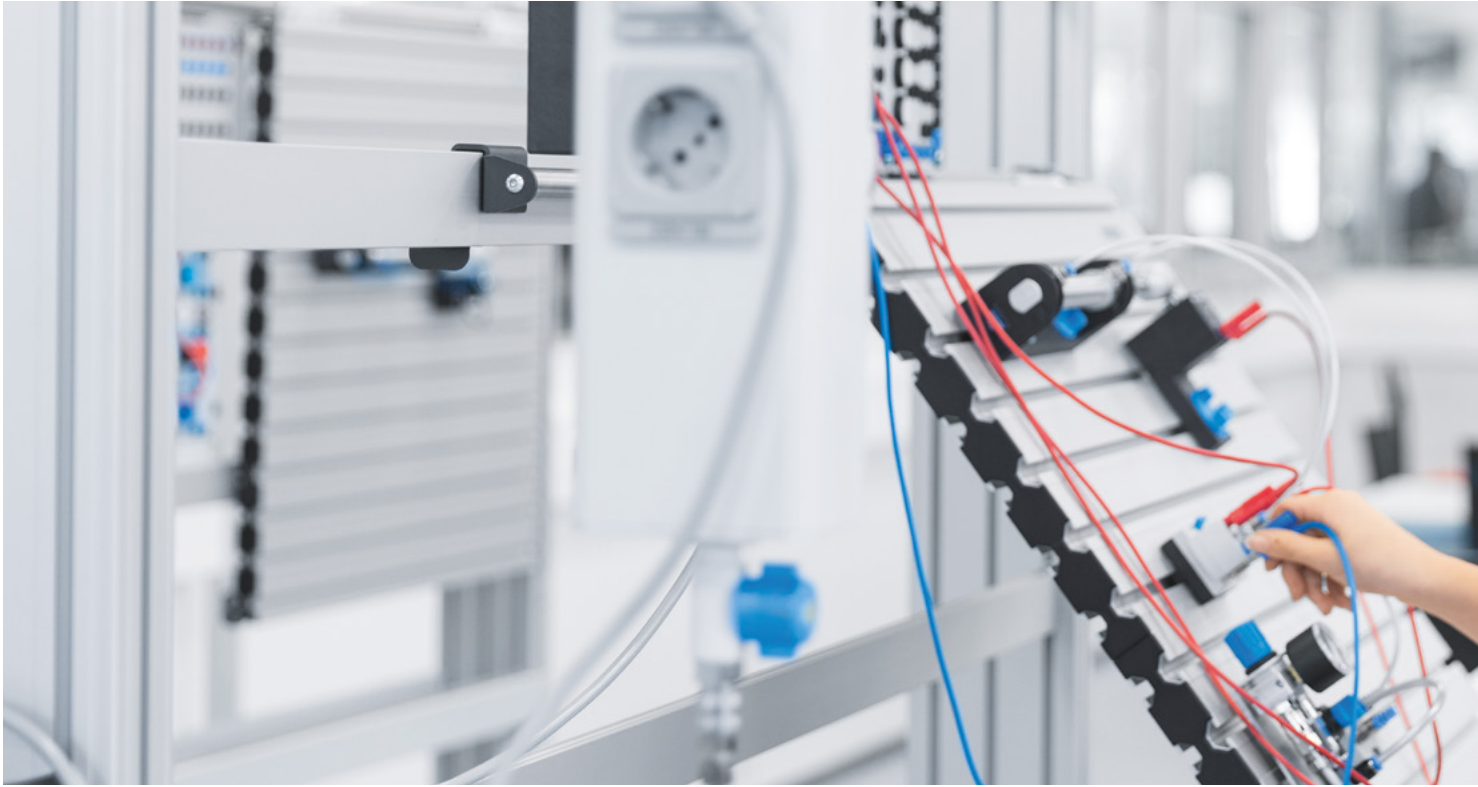
TP 801 covers the basics of working hydraulics. Hydrostatic steering systems on suitable hydraulic controls are set up and tested using TP 802. In-depth knowledge of working hydraulics and hydraulic controls with load-sensing controlled variable displacement pump are built up and examined with TP 803.



Digitalization in Hydraulics

TP 660 complements TP 501 and 601 by providing valuable training on implementing digitalization in hydraulics to enhance production efficiency, troubleshooting, and smart maintenance. It simulates a production environment that offers learners a role-playing experience as industrial mechanics.

Pneumatic Systems



Complete Learning Strategy

A sound pedagogical approach drives effective learning. Fluid power training packages follow each step of the “complete and professional course of action” model.

This ensures that the competences and skills acquired can be successfully transferred into real-world professional contexts. As a result, the training packages produce well-trained and educated employees who exhibit a high level of competence and responsibility.



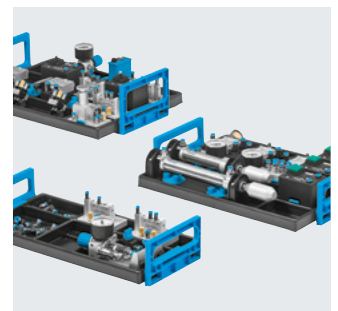
Digital Learning Content

Discover our extensive range of learning resources on Festo LX, where you can easily find relevant courses by browsing the “Fluid Power” category or searching with the keyword “pneumatics”. To get started, visit [→ lx.festo.com](https://lx.festo.com).



Fluid Power Simulation

For over 20 years, FluidSIM has been the world's leading circuit diagram design and simulation program for fluid power and electrical engineering. Being able to freely design control systems is motivating and promotes creativity and focus.



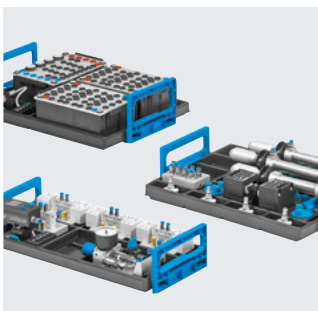
Pneumatics

TP 101 and TP 102 cover pneumatics. The basic level focuses on the physical principles of pneumatics as well as the function and use of pneumatic components. The advanced level covers combinational circuits with links between the input and output signals as well as controls with stepper modules.



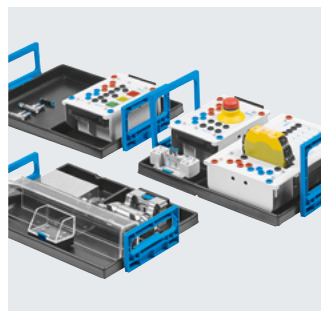
Pneumatics in the Mining and Metals Industry

Pneumatic systems minimize the risk of electric shock, prevent spark generation, and reduce dust creation. Common industrial applications include pneumatic drills, rock breakers, material handling systems, pneumatic conveyors, valve actuators, and air-powered tools. The use of pneumatics offers a reliable, efficient, and safe solution for various tasks in mining and metal operations. Understanding and proficiency in installing, operating, troubleshooting, and maintaining pneumatic systems are crucial.



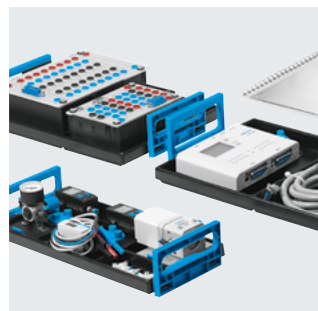
Electropneumatics

TP 201 and TP 202 cover electropneumatics. The basic level focuses on solenoid valves, electronic proximity switches, and relay controls. The advanced level covers valve terminals, emergency stop function, and electronic preset counters in complex electropneumatic controllers.



Safety in Pneumatic Systems

TP 250 addresses the systematic optimization of safety in systems with pneumatic drives. The aim is to recognize hazards in pneumatic processes, assess the risks of a simple machine and learn about suitable measures for risk reduction and implement them professionally.



Measurement and Control

TP 210 covers the fundamentals of measurement, condition monitoring, and control technology in pneumatics. Advanced topics like compressed air energy monitoring and compressor control, along with energy savings, can be studied using the AirCS training package.



PLC in Pneumatics

TP 301 covers the basics of programming programmable logic controllers, such as system components, advantages over electric, electro-pneumatic and electro-hydraulic solutions, programming in IEC 61131-3 programming languages, and more. For more PLC training options, see page 26.

Fundamentals of Process Automation and Water Technology



Flexible Learning Solutions

Process automation is a broad field that encompasses three main sub-topics: instrumentation, process control, and process technology.

Festo Didactic offers a range of modular and expandable learning solutions at two levels. The entry-level solutions are designed to develop basic skills and provide fundamental knowledge. The industry-level solutions address more advanced topics to enhance professional expertise.



Digital Learning Content

Discover our extensive range of learning resources on Festo LX, where you can easily find relevant courses by browsing the “Process Automation” category. Of particular interest are the free eLearning courses for water and wastewater. To get started, visit [→ lx.festo.com](https://lx.festo.com).



Water and Wastewater Treatment

The EDS Water Management is a modular training system which represents the core processes of a water and wastewater treatment plant. It explains the principles behind the collection, extraction, transport, and treatment of water and wastewater. It offers a compact introduction to

measurement, open-loop control and closed-loop control technology. The system is composed of several stations: water purification, water supply, wastewater treatment, sand filtration, membrane filtration, adsorption, and mechanical treatment.



Water Technology in the Mining and Metals Industry

Water serves various purposes throughout the production processes, including extraction and processing, dust suppression, cooling, transportation and slurry handling, washing and cleaning, mineral separation and concentration, and more. Water technology relies on automation and control systems to precisely manage and optimize water and wastewater treatment processes. This ensures efficient operation, regulatory compliance, and the delivery of high-quality treated water.



Closed-Loop Control

The MPS PA Compact Workstation provides a user-friendly introduction to closed-loop control and measurement of pressure, flow, level, and temperature. Available in three configurations, it offers individual or cascade operation of control loops, and PID and discontinuous controllers.



Typical Process Applications

The four stations of the MPS PA 204 system teach the fundamentals of filtration, mixing, reactor, and bottling processes, reflecting real-world industry practices. Each station represents a specific closed-loop application and can be used in standalone operation.



Process Control

The Process Control Learning System* provides a solid foundation in instrumentation and process control fundamentals for pressure, flow, level, temperature, and pH processes. It can also demonstrate advanced control techniques such as feed-forward and cascade control.

Industrial Instrumentation and Process Control



Industrial Realism

Shutting down an industrial system or constructing a fully functional system solely for educational purposes is cost-prohibitive. Therefore, the significance of training platforms that provide a high level of industry realism cannot be overstated.

Festo Didactic addresses this need by offering extensive courseware coupled with flexible equipment that meets industry standards. The modular nature of these solutions allows instructors to meet specific training requirements.



Digital Learning Content

Discover our extensive range of learning resources on Festo LX, where you can easily find relevant courses by browsing the “Process Automation” category. To get started, visit lx.festo.com.



Pressure, Flow, Level, Temperature, pH, Conductivity, and More

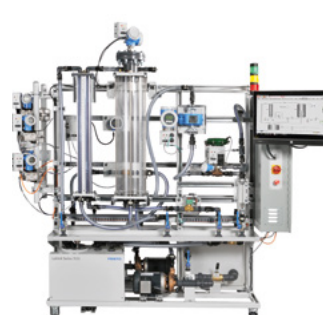
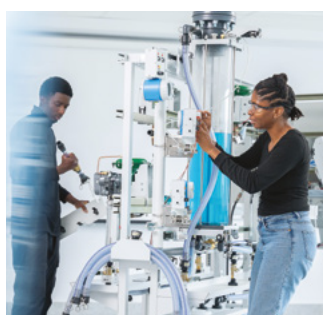
The Industrial Process Learning Systems* allow the replication of realistic process loops in a safe and practical environment. Operators, process technicians and engineers, or maintenance technicians develop expertise in measurement, operation, control, and troubleshooting of typical industrial processes.

The process loops are created on the process workstation; the instrumentation workstation houses the electrical and the pneumatic units as well as other electrical equipment. Several standard system configurations cover general training needs.



Process Automation in the Mining and Metals Industry

Managing the efficiency of the wide and diverse range of mining processes can be challenging, especially due to the variety of equipment that often operates using different interfaces and formats. Instrumentation enables real-time equipment monitoring for numerous mining operation processes simultaneously, increasing efficiency through automation, improving quality control, reducing waste and contamination, and creating a safe work environment.



Specific Mining Configuration

Magnetic flow and Coriolis transmitters ensure precise flow measurement. Froth flotation requires accurate level instrumentation. Ultrasonic sensors measure levels and facilitate damage prevention and efficient operation in crushers. Guided-radar sensors measure fine-grained material in bulk tanks.

Customization and Expansion

Instructors can customize the system using a broad selection of traditional and smart components (transmitters, valves, level switches, heat exchangers, controllers, calibration kits...) from leading manufacturers or integrating third-party devices.

New! Smart, IIoT devices

Extensive Training

Several courses enable learners to acquire theoretical and practical knowledge. Detailed and illustrated experiments support independent, self-paced learning. Faults can be inserted on many components to develop troubleshooting skills.

Distributed Control Systems

The PlantPAx DCS Training System * provides training on the configuration and use of instruments that control or monitor industrial processes (temperature, pressure, flow, and level). It teaches different types of PID process control loops and types of control strategies.

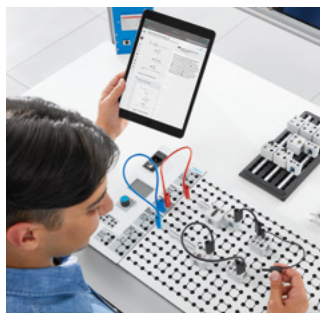
* Solutions marked with an asterisk (*) is not available for sale or delivery in countries that require CE compliance.

Electricity and Electronics



Electrical Skills

Discover a comprehensive range of learning solutions that develop universal electrotechnology skills, with a strong emphasis on electrical safety. Our learning systems encompass modular, customized, and complete setups to cater to diverse training requirements and budgets in both industry and education. These solutions are always accompanied by outstanding learning content, ensuring maximum skills development.



Digital Learning Content

Discover our extensive range of learning resources on Festo LX, where you can easily find relevant courses by browsing the “Electricity and Electronics” and “Electric Power Technology” categories. To get started, visit [→ lx.festo.com](https://lx.festo.com).



Basics of Electrotechnology

TP 1011 introduces the fundamentals of electrical engineering, such as direct and alternating current, semiconductors, and basic electronic circuits. Optional relay or control technology are available. TP 1010 is a variant designed for metalworking occupations.



AC/DC Circuits *

Another solution for studying direct and alternating current is enclosed in a rugged, portable suitcase. A complete course rapidly builds student knowledge in electricity and electrical circuits. Fault switches can be activated to develop troubleshooting skills.



Electrotechnology in the Mining and Metals Industry

Electricity is vital for modern mining operations, offering improved efficiency, safety, sustainability, and the potential for automation. It has become an indispensable resource that drives productivity, innovation, and progress in the mining industry. Therefore, the integration of electrical and electronic equipment systems requires fundamental skills in operating, maintaining, and troubleshooting complex electrical equipment and systems.



Power Circuits and Transformers

TP 8012-8 combines a hands-on approach with computer-based data acquisition and control to learn the basics of DC and single- and three-phase AC power circuits and transformers. These topics are also covered in the Electric Power Technology Training Program (see page 25).



Electrical Safety

TP 1111 introduces the topic of power supply systems and electrical protective measures. Using numerous examples and concrete measurement activities, it explains where and why dangers arise, and how they can be avoided. TP 1110 is a variant designed for metalworking occupations.



Expertise in Electronics

Electronics skills are critical for implementing automation, monitoring, communication, safety, and sustainability. The FACET * system offers a collection of hands-on courses that covers the fundamentals, as well as digital, communication, and industrial electronics on a single platform.



Automation Fundamentals

The SkillsConveyor is a compact conveyor-based learning system that builds essential automation technology skills. It offers hands-on training opportunities in commissioning, hardwired control, PLC programming, and AC technology.

Electromechanical Systems and Motor Controls



Motor Controls

Effective control of electromechanical systems in the mining and metal industry allows for precise regulation of speed, position, and torque, optimizing material handling and resource utilization. Several learning solutions allow learners to study the important topic of electric motor controllers.



Digital Learning Content

Explore our extensive collection of learning content on Festo LX. Browse the “Electric Power Technology” category or use specific keywords to find relevant courses. To get started, visit lx.festo.com.



Electric Motor Controllers

TP 1221 addresses the fundamentals of industrial electric motors controllers to enable learners to install, maintain, and troubleshoot control circuits and their main controllers such as manual, automatic, reversing, and reduced voltage starters.



Loads and Drives

TP 1410 facilitates the study and analysis of common electrical AC and DC machines in different load scenarios. Learners explore machine operation, characteristics, control circuit development, motor characterization, and result analysis.



Electromechanics in the Mining and Metals Industry

Conveyor, hoisting, pumping, and ventilation systems, drill rigs, and crushing and grinding equipment—these are just a few examples of electromechanical systems used in the mining and metal industry. Overall, electromechanical systems play a vital role in enhancing mining efficiency, safety, and productivity by combining electrical and mechanical technologies for various mining processes and operations.



Variable-Frequency Drives (VFD)

The Sinamics G120 provides precise control over the speed and torque of motors used in mining equipment. The G120 is well-suited as a beginner device, however its comprehensive functions offer plenty of potential for advanced users who want to implement complex drive tasks.

VFD Training in a Suitcase *

This system * covers motor drives, three-phase induction motors, VFD operation, basic and advanced control functions, load types and control methods, troubleshooting, and their use with PLCs and HMIs.



Electromechanical Systems

The Electromechanical Learning System * and its courses cover AC and DC power circuits, and the operation of commonly-used permanent magnet DC motors, three-phase induction machines, and three-phase synchronous machines.

It is part of the extensive Electric Power Technology Training Program, a collection of self-guided courses that covers the fundamentals of electric power fundamentals, rotating machines, industrial controls, renewable energies, and smart grid topics.

Programmable Logic Controllers and Sensors



Various Training Options

There are several learning solutions available to meet various training requirements, whether it is for familiarization or programming. Practical learning activities specifically prepares learners to work effectively with PLCs and contribute to the design, programming, implementation, operation and maintenance of industrial automation systems.



Digital Learning Content

Discover our vast learning resources on Festo LX, where you can easily find relevant courses by searching with the keyword "PLC". To get started, visit lx.festo.com.



Industrial Controllers

To study control technologies or simply to use with your learning systems, a broad selection of controllers from Festo, Siemens, and Allen-Bradley is available.

EduTrainer Universal fits in A4 or ER mounting frames and can be used as a tabletop device.

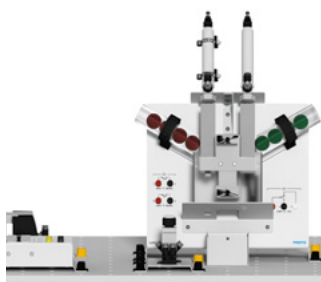
EduTrainer Compact fits in ER mounting frames and is the ideal control system for fluid power applications.

An online configurator provides support in selecting and combining the appropriate components.



Control Systems in the Mining and Metals Industry

Sensors play a vital role in monitoring various parameters and conditions in mining operations. PLCs control mining equipment, including conveyors, crushers, pumps, fans, hoists, and drilling rigs. They ensure safety, monitor operations, and integrate with other systems. With remote monitoring and control capabilities, sensors and PLCs optimize production and enable data-driven decision-making.



Typical PLC Applications *

Basic PLC programming principles are combined with advanced concepts to allow learners to design and troubleshoot small-scale systems commonly found in the industry, such as electromechanical systems with DC or stepper motors and level process control systems.



Advanced PLC Programming *

This compact and portable system, with high-end products from Siemens or Rockwell Automation, allows students to acquire hands-on design, programming, and troubleshooting experience with industrial control equipment (PLC and HMI) and software.



Sensor Technology

Two specific training packages address the topic of sensor technology:

- TP 1311 covers the structure, function and areas of application of various sensors.
- TP 1312 introduces learners to smart sensors equipped with IO-Link technology.



DCS, SCADA, and More

Many learning solutions cover industrial control:

- Distributed control systems (DCS)
- Supervisory control and data acquisition (SCADA) systems
- Industrial communication networks and protocols
- Industrial instrumentation



Productivity and Safety

Continuous and efficient mining and metals operations depend on a skilled workforce.

With over 60 years of experience in providing technical education learning solutions globally, Festo Didactic is a premier partner for industrial companies, technical institutions, and vocational schools seeking impactful skills development.

To discuss your requirements and initiate the planning of a successful training project:

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