

Partner in Capability Building for the Defense Technical Workforce

FESTO



What's inside?

Discover training solutions and guidance designed to build and sustain the effectiveness and readiness of maintenance personnel and radar specialists across key technical domains:

Radar technology | Electronics | Electrical power systems |
Industrial mechanics | Pneumatics and hydraulics |
Process control | Mechatronics | And more

Your Challenge: Keep Missions and Facilities Running Effectively



Technical mastery in today's military environment is no longer about knowing individual systems: it's about understanding how they interact, behave, and fail.

As military systems evolve toward electrified, automated, and digitally controlled architectures, technical personnel must operate across multiple technologies—often with limited access to operational equipment and under constraints where there is little room for error. Training must therefore build the ability to diagnose and act efficiently, while reducing reliance on mission-critical assets and associated costs.

System operators, maintenance technicians, and technical supervisors play a critical role in ensuring that systems and facilities remain operational across all environments. Preparing them for this responsibility requires training environments that address multiple roles while building a solid foundation in the technologies encountered across modern military systems. Personnel must be able to apply core skills directly—installing, maintaining, troubleshooting, and repairing equipment—to ensure mission continuity and efficient operations.

To achieve this, training must be:

- Skills-based and hands-on
- Realistic and rely on real-world components
- Adaptable and scalable to evolving requirements
- Directly applicable to real equipment
- Supported by turnkey curricula enabling guided, self-paced independent learning
- Rely on rugged, durable training systems
- Designed to develop systematic thinking and problem-solving skills
- Focus on fault finding and troubleshooting
- Enhanced through digital tools and multimedia

These requirements define the foundation of Festo Didactic's training approach.

Strengthen Skills-Based Training Programs in Key Technical Areas

Festo Didactic develops hands-on training systems that translate operational and industry requirements into structured learning environments for technical skill development—supporting education, industry, government, and defense sectors.

Supporting military and defense organizations worldwide, we deliver complete training solutions—from design and equipment supply to commissioning and instructor training—preparing personnel to diagnose, maintain, and restore mission-critical systems.



Courseware

Ready-to-teach learning content available in workbooks or in digital format on our portal Festo LX, combining curated theory, practical exercises, and clear learning objectives – giving you high-quality resources to deliver engaging, industry-relevant lessons with confidence.

Learning systems

From modular training packages to full-fledged learning factories, our robust, industrial-grade equipment brings real-world technology into the classroom – enabling learners to build practical skills through authentic, hands-on experience.

Digital tools

Innovative educational technologies – including our digital learning portal, VR/AR applications, and simulation software – help learners grasp complex concepts, support safe experimentation, and make learning more interactive and personalized.

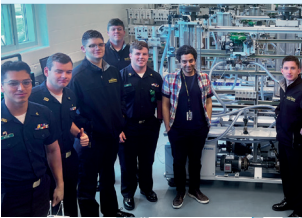
Training and support

With certification programs, expert guidance, workforce development, and responsive customer service, you can use our solutions confidently and sustainably – so you get the most from your investment and ensure long-term success.

A Selection of Training Projects in the Defense Sector

Training Cadets for Marine and Facilities Engineering

The Process Learning Systems LV 3531 was selected to update instrumentation and control laboratory spaces and curriculum with modern technologies for engineering training at Massachusetts Maritime Academy, Buzzards Bay, MA, USA.



Reskilling Military Service Graduates

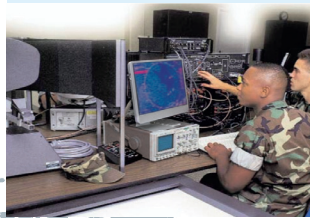
Festo helped modernize training by aligning curriculum frameworks, designing classrooms, supplying equipment, and coordinating external services, including installation, staff training, and certification. Instituto De Educación Superior Tecnológico Público De Las Fuerzas Armadas (IESTPFFAA), Lima, Peru

Training Active Military Workforce

Festo provided training systems to a new military technical college in the UAE region, a project was facilitated under the U.S. government-to-government Foreign Military Sale (FMS) system. Labs focusing on communications (radar, microwave, digital comm) and electronics, as well as fluid power, industrial mechanics, and process control.

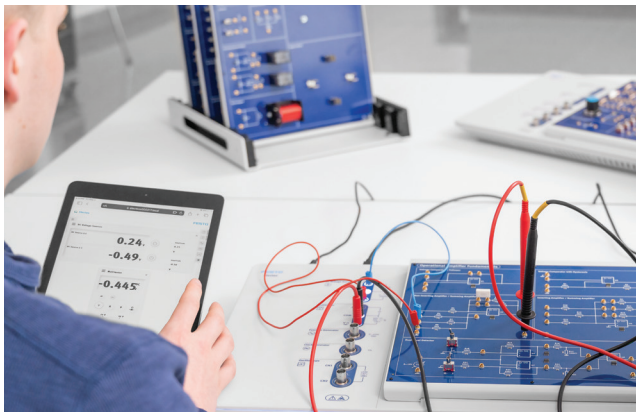
Radar Training

Festo has sold the radar learning system to defense and military departments/organizations in more than 50 countries through the Americas, Europe, Asia, and Middle-East. Because of confidentiality requirements, we are not allowed to disclose their names.



Explore the product pages in this catalog to discover the learning solutions most relevant for defense and military technical personnel—including radar specialists—featured in the projects above.

Electronic Systems



→ Video

Highlights

- Integrated digital data acquisition and software-based instruments that work even without an Internet connection
- Compatible with various devices and operating systems
- Curriculum available
- Purchase the topics you

A single platform to study electronics

The **Electronics Learning System Electeo** provides the essential electronics skills needed to maintain, troubleshoot, and sustain modern defense systems where performance increasingly depends on electronic control and signal integrity. Electeo covers the full spectrum from basic electrical principles to advanced troubleshooting and system understanding—giving defense technicians the skills needed to diagnose and maintain modern electronics-driven systems effectively. Start with the base unit, then pick the learning boards and courses you need that fit your needs.

Personnel gain the capability to quickly diagnose, analyze, and restore electronic systems—ensuring critical equipment remains operational and mission-ready in the field.

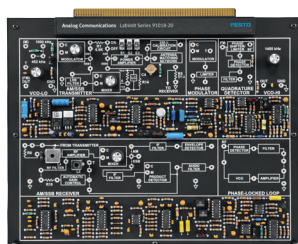
Key outcomes for your staff:

- + Analyze analog and digital circuits to understand system behavior
- + Operate test equipment (multimeters, oscilloscopes) with confidence
- + Interpret electrical signals and waveforms for accurate system assessment
- + Identify faulty components and validate repairs effectively
- + Understand signal flow across subsystems, enabling faster troubleshooting

An expanding topic coverage

AC/DC fundamentals; magnetism and electromagnetism; capacitors, inductors, and impedance; diodes and rectifiers; bipolar junction transistors (BJTs); and operational amplifiers.

Electeo is currently in its initial development phase. Additional topics, such as digital electronics and motor systems, will be progressively added to the offering.



Communication electronics

For advanced training in communication electronics—including PAM, PCM, TDM, ASK, PSK, FSK, DPSK, fiber optics, and transmission lines—please contact a sales representative for availability of the legacy **FACET** learning system.

Radar Systems



Highlights

- Real X-band radar for safe indoor operation
- Computer-based control of signal processing and display functions
- Fault-insertion capability for realistic troubleshooting training
- Modular design with expandable training configurations
- Comprehensive curriculum available
- Low-power operation ensuring safe training conditions
- Real jammer module
- Built-in protection against incorrect or faulty connections

A preferred choice for defense and aviation organization worldwide

Training on real radar equipment is often impractical due to safety risks, operational constraints, and high costs. The [Radar Training System](#) delivers precise, repeatable, and safe hands-on classroom training, without relying on operational assets.

Learners build the skills required to understand, operate, and maintain modern radar systems in a controlled and risk-free environment. It provides practical, real-world training in radar principles, signal processing, target detection and tracking, as well as system operation and maintenance.

Key outcomes for your staff:

- + Improve target detection and discrimination in the presence of noise and clutter.
- + Enhance target tracking accuracy in range, angle, and dynamic conditions.
- + Accelerate fault diagnosis through structured troubleshooting techniques.
- + Increase confidence in radar operation and interpretation of displays.
- + Strengthen understanding of signal behavior and radar processing principles.
- + Prepare for electronic interference scenarios.

Commissioning and training sessions

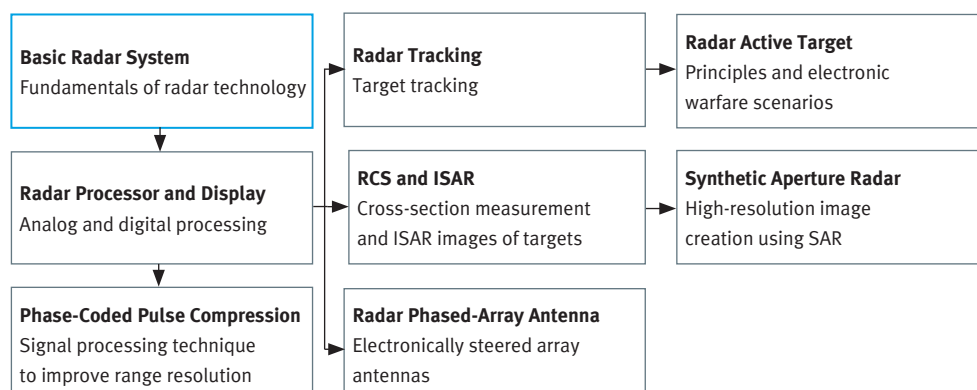
can be organized at your premises to support a smooth deployment and guide users through initial setup and operation.

Please note: This equipment is subject to export control regulations. Contact your Festo representative to verify applicability based on your location and use case.

Begin with the basic system and expand it with add-on packages that best suit your training needs:



→ Video



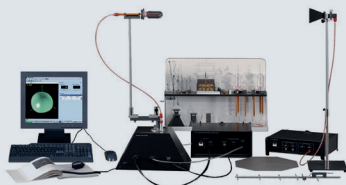
Communications



The [Digital Communications Learning Systems](#) are specifically designed for hands-on training across a wide range of communication technologies. They operate at real frequencies. Topic coverage: PAM, PWM, PPM, spectrum analysis, PCM, DPCM, delta modulation, ASK, FSK, BPSK, QPSK, DQPSK, QAM, ADSL, DSSS, FHSS, CDMA



The [Microwave Learning System](#) enables learners to explore how microwave signals are generated, transmitted, and measured at real operating frequencies. Curriculum available. Topic coverage: Microwave fundamentals, propagation, detection and measurement of microwaves, study of components, such as Gunn oscillators, directional couplers, tees, PIN diodes, etc.



The [Antenna Training and Measuring System](#) enables hands-on experimentation with antennas in the 1 GHz and 10 GHz bands. Curriculum available. Topic coverage: Basic measurements; measurement and display of antenna radiation patterns; microstrip and array antennas; optional multi-beam array antenna; optional two-element antenna phasing, etc.

Electrical Systems



Highlights

- Modular, customizable concept with a wide range of electrical modules
- Digital data acquisition and control
- Comprehensive curriculum with extensive topic coverage
- Rugged, durable, and safe equipment

A single platform for studying the fundamentals of electric power, renewable energy, smart grids, power electronics, and more.

Electric power systems are at the core of virtually all military platforms and infrastructure—from mobile generator sets and base power distribution to radar installations. The [Electric Power Technology Training Systems](#) (LabVolt Series 8010) provide a hands-on foundation in electrical energy systems, enabling personnel to understand, analyze, and troubleshoot applications ranging from rotating machines to power electronics and modern energy systems.

With a wide range of interchangeable modules—including motors, loads, filters, batteries, power supplies, inverters, transformers, and controllers—users can configure and analyze systems of increasing complexity, replicating real-world applications for hands-on experimentation.

Key outcomes for your staff:

- + Maintain reliable power across mission-critical systems and infrastructure.
- + Ensure consistent system availability across platforms and sites.
- + Identify and resolve faults safely under real operating conditions.
- + Respond quickly and effectively to power system failures.



→ [Brochure \(PDF\)](#)

Our most popular system configuration is the Electromechanical Training System (LabVolt 8010-9). It covers a wide range of foundational topics and is a perfect basis for expansion to other topics.

Electric Motor Controls



Variable-frequency drives (VFDs)

VFDs enable precise control of motor speed and performance, ensuring efficient, reliable operation of motor-driven equipment. The training suitcase [Variable-Frequency Drives](#) covers motor drives, three-phase induction motors, VFD operation with basic and advanced control functions, VFD load types and control methods, and VFD troubleshooting. Curriculum available.



The basics of electricity

Build foundational electrical skills required for any technical task with the training suitcase [AC/DC Fundamentals](#). It includes basic components (resistors, capacitors, inductors, switches...), allowing learners to build, test, and analyze real electrical circuits. Curriculum available.



Industrial controls

Electrically driven equipment can fail due to power issues, wiring faults, control system errors, or mechanical overload—requiring strong diagnostic and troubleshooting skills to restore operation quickly. The [Industrial Controls Learning Systems](#) conveys the basics of motor controllers, AC/DC drives, sensors, and PLCs. Curriculum available.



→ Video



Focus on electric motor controllers

The training suitcase [Basic Motor Control TP 1221-P](#) focuses on the installation, testing, and troubleshooting of the most common basic motor controllers through a wide range of hands-on learning activities. Digital twin for simulation and curriculum available.

Fluid Power Systems



Hydraulic systems enable high-force actuation, precise control, and reliable operation under demanding conditions. They are widely used in vehicles, aircraft, naval systems, and support equipment for steering, braking, lifting, and positioning.

Festo Didactic offers modular [training packages in basic and advanced hydraulics and electro-hydraulics](#), as well as proportional control and mobile hydraulics.

Key outcomes for your staff:

- + Understand system behavior under load
- + Diagnose faults in complex hydraulic circuits
- + Maintain and restore systems quickly
- + Work safely with pressurized systems

Pneumatic systems are also used in defense applications to provide rapid actuation and control for automated processes, handling systems, and supporting equipment. Festo Didactic offers modular [pneumatics and electropneumatics training packages](#).

All training packages stand out through their system-level approach, modular progression, and strong focus on diagnostic skills, enabling realistic, hands-on training beyond component-level understanding.

Mechanical Systems



Pumps and pumping circuits

Proper pump selection, installation, maintenance, troubleshooting, and repair skills are necessary to ensure efficiency and safety of pumps. The [Industrial Pumps Learning System](#) enables the study of the most common pump types within complete single- and multiple-pump system configurations, helping learners develop strong expertise.

Key outcomes for your staff:

- + Diagnose and repair faults quickly, minimizing downtime in fuel, water, and cooling systems.
- + Ensure reliability and availability of critical field infrastructure.
- + Operate pressurized systems safely, reducing risks to personnel and equipment.



→ Video



Mechanical power transmission

Used in systems such as vehicle transmissions, generator sets, conveyor systems, and pump or compressor drives, mechanical drives are essential for transmitting and controlling motion. The [Mechanical Drives Learning System](#) enables the study of the most common machine elements such as pulleys, gears, chains, shafts, pulleys, and bearings.

Key outcomes for your staff:

- + Install and align drive mechanisms correctly, ensuring reliable operation of vehicles, and support equipment.
- + Diagnose drive faults quickly, minimizing downtime in mission-critical machinery.
- + Maintain drive components effectively, preventing failures in harsh field and deployment conditions.



→ Video



Measurement and tolerancing

Accurate measurement of dimensions is essential to ensuring the reliability, fit, and performance of mechanical components. The [Training Packages in Basic Dimensional Metrology and Geometric Dimensioning and Tolerancing](#) enables linear and angular measurements and proper interpretation of dimensions and tolerances in technical drawings.

Key outcomes for your staff:

- + Use measuring tools and apply techniques correctly, improving equipment integrity.
- + Interpret technical drawings and tolerances accurately.
- + Inspect components against specifications, identifying wear and defects.



→ Video

Process Control Systems



Highlights

- Wide variety of system configurations
- Large choice of industrial components
- IIoT instrumentation
- Multi-variable interactions
- Advanced control strategies
- Safe boiler and heat exchangers
- Fault-insertion capability
- Extensive curriculum



→ Video

Regulation of pressure, flow, level, temperature, pH, and conductivity

Fuel systems, water treatment and supply, cooling systems, base utilities and HVAC, and naval systems all rely on precise regulation to operate safely, efficiently, and reliably. Preparing personnel for these systems requires training that combines realism with safety. The [Industrial Process Control Learning Systems](#) simulate real-world control loops using industrial components, enabling hands-on training in realistic, controlled environments.

Learners work with industrial components such as transmitters, control valves, controllers, and HMIs from leading manufacturers. The modularity of the system enables different configurations to replicate real control loops. Training focuses on troubleshooting, with exercises and fault insertion to develop the ability to diagnose issues and restore system performance.

Key outcomes for your staff:

- + Install and configure a variety of instruments and controllers.
- + Ensure systems run within safe limits through the monitoring of process variables.
- + Prevent system failures and optimize system performance and efficiency.
- + Use common loop tuning methods to keep systems stable during operation.
- + Identify and fix faults in control loops, such as faulty sensors, valves, or pumps.



A compact alternative

The [Process Control Learning System](#) provides hands-on, industrial-grade training in core process control skills, without compromising industrial realism, while offering flexible configurations. Curriculum available.

Automated Systems



Fundamentals of mechatronics

Modern military systems combine mechanical, electrical, and control technologies, making a foundation in automation and mechatronics essential for understanding system behavior and diagnosing cross-domain faults.

The [SkillsConveyor](#) provides a compact introduction to automation and system integration. Using a modular conveyor setup, it allows learners to work with sensors, actuators, and control logic while understanding system behavior, sequencing, and basic troubleshooting.

[MecLab](#) offers a hands-on introduction to mechatronic systems through modular stations combining mechanical, electrical, and control elements. It enables learners to assemble, operate, and analyze automated processes while developing system-level understanding and basic diagnostic skills.

Building on these foundations, learning factories such as [MPS and CP Lab](#) introduce complete automated processes, including interconnected stations and industrial networks.

PLC programming

PLCs are core control elements in military systems and infrastructure. Festo Didactic offers several training solutions that develop the ability to understand, program, and troubleshoot PLC-controlled systems. For example, the [Advanced PLC Learning System](#) builds skills across multiple programming languages. Curriculum available.

Cybersecurity

Communication networks, radar installations, and base infrastructure rely on secure, reliable data exchange. The training package [TP 1333](#) focuses on IT and network security in industrial environments, providing hands-on experience in network configuration, data communication, and protection of connected control systems.



Motion control

Precise positioning and controlled movement are essential in applications such as radar systems, targeting mechanisms, and automated equipment. The training package [Stepper and Servo Motor Control TP 1423](#) provides a safe, controlled environment to develop skills in installation, commissioning, configuration, maintenance, and troubleshooting of motor-driven systems. Curriculum available.



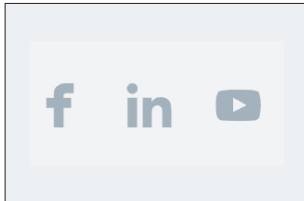
Sensor technology

From proximity and photoelectric sensors in automated systems to pressure, flow, and temperature measurement in fuel, water, and cooling applications, personnel must be able to install and troubleshoot a wide range of sensing technologies. The combination of training packages [Smart Sensors with IO-Link TP 1312](#) and [Sensors for Object Detection TP 1311](#) builds these practical skills within a compact workstation. Curriculum available.

This brochure provides an overview of our solutions. Visit our website for **more information and to explore additional solutions**, or contact our specialists, who will guide you in designing and scaling training rooms and workshops tailored to your requirements and objectives.

Get in Touch

If you have any questions or would like more information, please contact us at → services.didactic@festo.com



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Festo Didactic in brief

- Part of the Festo Group, a family-owned, independent company
- Founded in 1965 in Germany
- Local offices in 60 countries
- Over 36,000 customers
- Annual turnover of more than 160 M Euros
- Network of trusted resell partners across USA
- Customer Solution Center (Eatontown, NJ), Learning Center (Mason, OH), Manufacturing Facility (Quebec, Canada)
- Proven commitment to quality and customer service

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