

Mechanical Drives Learning System

Convey the fundamentals of mechanical maintenance

FESTO



Highlights

- Safe, versatile, and space-saving workstation
- Industrial-grade components
- Broad topic coverage with comprehensive curriculum
- Aimed at vocational school students and industry workers
- Quick and easy equipment set-up

The industrial landscape presents a remarkable diversity of mechanical drive systems, each tailored to specific applications and needs. How can teachers reflect this variety in the training programs, taking into account budgetary, space, and time constraints?

Even with increased digitalization, skilled industrial mechanics are in demand worldwide to install, maintain, repair, and replace a vast array of mechanical equipment to keep plants running.

To be successful, industrial mechanics must be exposed to and get extensive, practical experience with the wide range of components, tools, and techniques that they will encounter in the workplace.

This is the purpose of the Mechanical Drives Learning System. It covers the identification, installation, and troubleshooting of common machine elements.

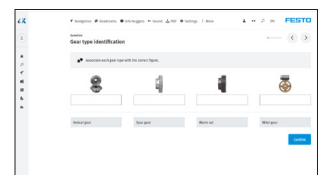
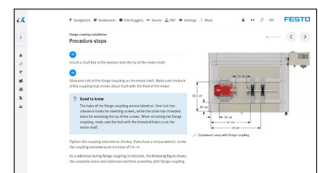
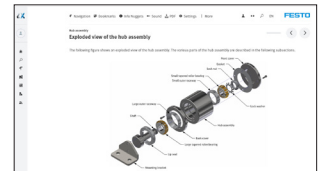
Industrial-grade equipment, coupled with hands-on exercises convey industry-relevant skills to beginners in vocational schools, as well as industrial mechanics who need to sharpen their skills.

Video Presentation

→ bit.ly/video-mech-drives



The system enables learners to quickly assemble and test mechanical drive setups.



Ergonomic design

The workstation is designed with movable, T-slotted extrusions to minimize assembly time.

Positioning the extrusions and the main components requires just a single tool and a couple of minutes, allowing students to focus their attention on the most relevant learning objectives.

The variable-frequency drive and the prony brake control the motor speed and load, creating various usage scenarios.

Space-efficiency

Packages contain all necessary machine elements, tools, and accessories to conduct practical experimentation.

Industrial-grade machine elements, such as pulleys, gears, chains, or bearings, are sized specifically so that experiments can be performed within the tabletop workstation.

Components are stored on panels for better organization, storage, and inventory control. Panels can be wall-mounted on the optional support or stored in the optional, mobile workbench.

Safety first

Safety is maintained with an industrial-grade detection circuit that cuts power when the polycarbonate cover is opened. The cover can also be locked when closed to further improve safety during operation and allow instructors to control access to the components.

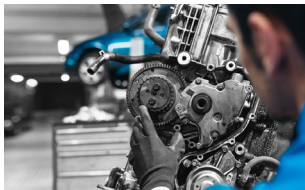
A lockout/tag out procedure is performed by students on the main switch each time they work with the system.

Guided learning

Comprehensive courses complement the training system. They present theory in a straightforward way followed by varied practical exercises, offering self-paced experiments with step-by-step procedures. Questions during procedures and evaluation questions help monitor progress. The turnkey courses are ideal for autonomous learning, and enables instructors to optimize the time they spend with students.

Courses are available on the digital portal Festo LX or as PDF workbooks.

Create a solution tailored to your needs:
Start with the workstation and add necessary packages.



Workstation package

The Workstation package is the foundation of the learning system and includes the workstation and the components common to most experiments. The workstation can be enriched through the addition of one or more levels packages. Courseware covers the introduction to mechanical drives; safety; pillow block bearings and shafts; motor, variable-frequency drive, and tachometer; shaft alignment and couplings; torque, power, and efficiency.



Level 1 package

Properly aligned pulleys, sprockets, and gears, along with the adjustment of belt tension, chain slack, and gear backlash, are essential to minimize vibration, maximize power transmission, and meet the expected service life of mechanical drives. Level 1 conveys basic skills related to the installation and commissioning of belt, chain, and gear drives. Recognizing the most common problems is also part of the curriculum.



Level 2 package

Level 2 offers students more practice in installation procedures for belt, chain, and gear drives, along with familiarization with additional hardware and setups commonly found in the industry. Topics covered include multiple- and variable-speed belt drives, synchronous belt drives, multiple belt/chain setups; types of gears and their specific installation procedures; bevel, helical, and worm/worm gear setups; gearbox components and operation; and more.



Level 3 package

Level 3 introduces couplings and additional shaft alignment methods. In the context of real industrial applications, students learn techniques for installing/removing bearings and seals in housings and on shafts. Topics covered include the installation of couplings with various misalignment tolerances, such as the universal joint; shaft alignment methods; the use of dial and reverse indicators, a press, a pusher/puller, or a heating plate; and more.



Level 4 package

Level 4 delves into the fundamentals of engaging and braking loads. The learning materials also incorporate a linear slide application to introduce the hardware necessary for converting between rotary and linear motion. Topics covered include the installation and operation of an electromagnetic clutch-brake unit, roller ramp clutch, and torque limiter; construction of a linear slide; measurements of backlash, lead, and speed ratio; and more.

Video: Exercise "Belt Drive"

→ bit.ly/video-ex-belt-drive



Video: Exercise "Hub Assembly"

→ bit.ly/video-ex-hub-assembly



Video: Exercise "Laser Alignment"

→ bit.ly/video-ex-alignment



Offer diverse and extensive experimentation opportunities for a comprehensive learning experience.

