2019 - 2020 Solutions

ADVANCED
Manufacturing

PLANNING GUIDE

- Additive & Subtractive Manufacturing
- Automation & Robotics
- Digital Fabrication Technologies

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Who We Are

AET Labs (Advanced Educational Technologies, LLC) was founded on the principle of bringing real-world industry experience into the technical training environment. Our technology consultants and products offer solutions that reflect that premise. As a value-added distributor for educational training products, AET Labs is committed to the concept that hands-on training provides necessary foundational skills in all technical areas.

For that reason, we represent manufacturers that offer only the latest technology based hardware training systems in harmony with current standards-based curriculum. This combination of expertise and quality of product helps instructors select the best possible solution for their labs while giving students what they need to be successful in today's competitive workplace.

Technology-Based Education Solutions

3D Technologies

CNC Technologies

Automation & Robotics
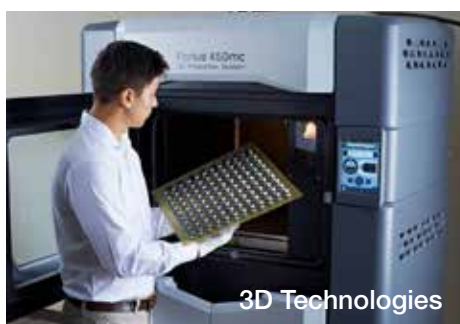
Massachusetts Higher Education Consortium
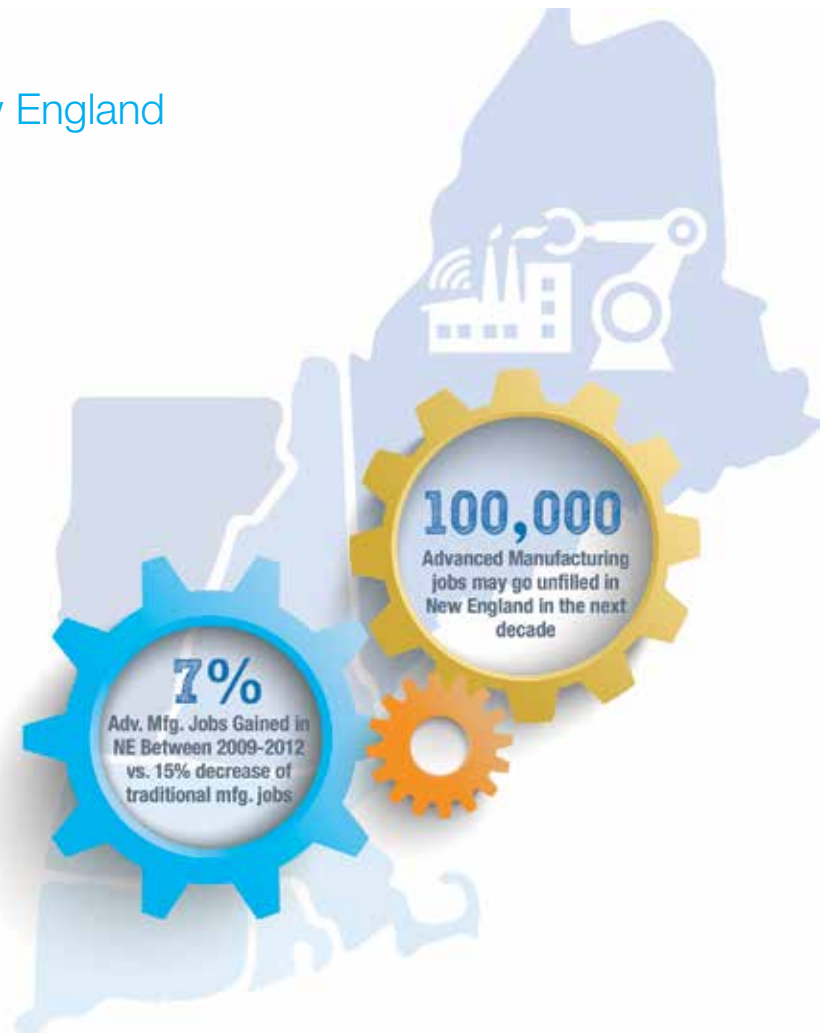**Member Pricing Available!**

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Advanced Manufacturing:
Transforming Jobs & Education in New England

New England has a rich heritage as the birthplace of the first Industrial Revolution and historically has been home to a thriving manufacturing industry. From the original mill towns that flourished along our waterways, to the med tech innovation hubs booming today, manufacturing in New England continues to thrive and transform. Today we are again in the midst of a true Industrial Revolution, fueled by the rapid advances in technology and materials, coupled with transformative technology and readily available data from the iOt.

How can our schools prepare students for advanced manufacturing careers in this era coined "Industry 4.0"? AET Labs is happy to be a part of the equation - offering assistance and guidance to schools seeking to set up advanced manufacturing "training grounds" for tomorrow's smart factories.

According to a 2015 Deloitte study, by 2025, 3.5 million jobs will be created in manufacturing nationwide—yet due to the skills gap, 2 million will remain unfilled.

100,000
Advanced Manufacturing jobs may go unfilled in New England in the next decade

7%
Adv. Mfg. Jobs Gained in NE Between 2009-2012 vs. 15% decrease of traditional mfg. jobs

THE FACTORY OF THE FUTURE IS HERE
Are Your Students Prepared?

connected lean agile adaptive clean customized

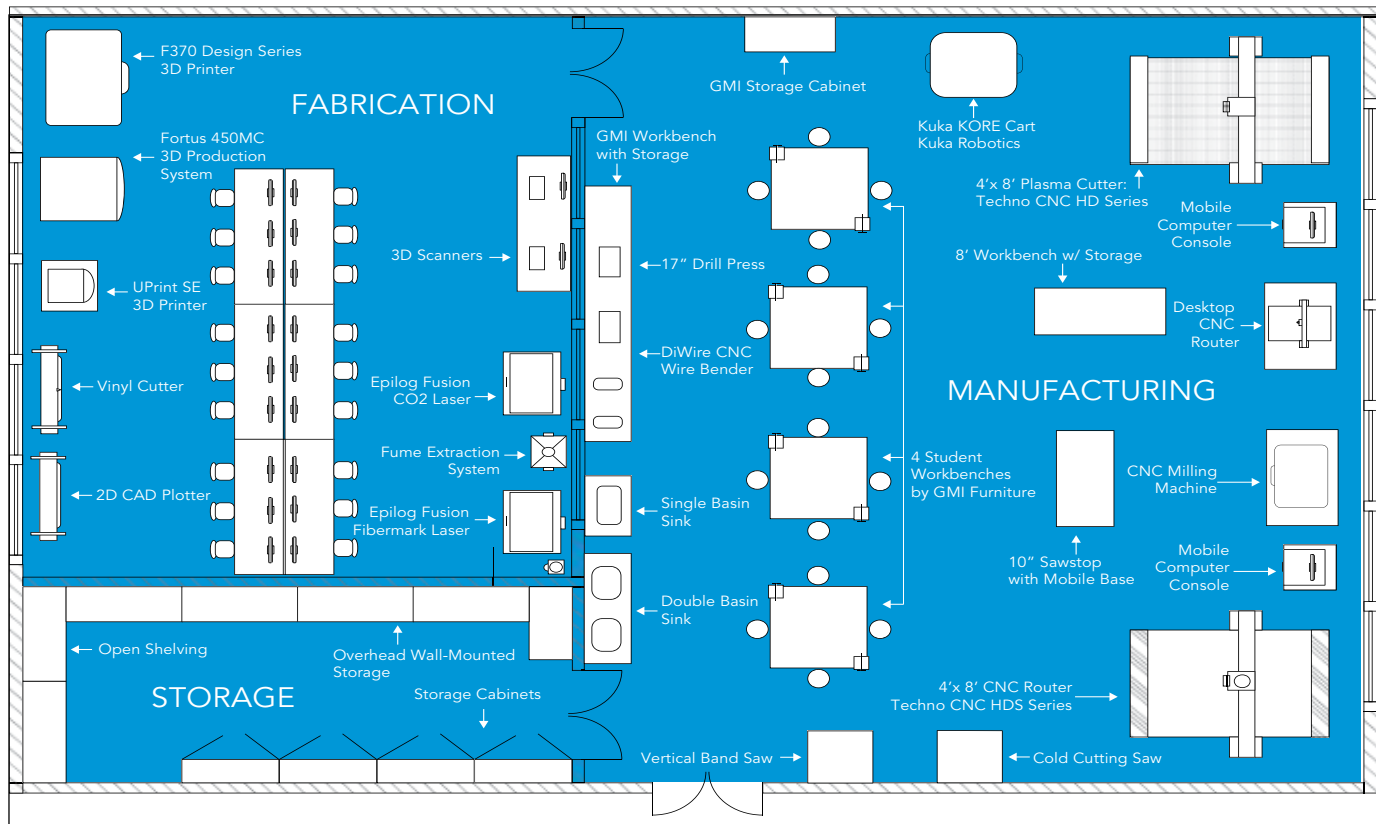|	
SENSOR DRIVEN:	Feedback provided in real-time by RFID sensors, regulating flow, temperature, speed, etc.
DIRECT DIGITAL:	Optimized design & production processes driven by CAD & 3D technologies & machines.
AUTOMATION & ROBOTICS:	Collaboration between humans & machines refine & optimize production.
INTEGRATED & SUSTAINABLE:	Lean & Clean processes and collaboration with global networks create production longevity.

FABRICATION

F370 Design Series
3D Printer

Fortus 450MC
3D Production
System

UPrint SE
3D Printer

Vinyl Cutter

2D CAD Plotter

3D Scanners →

Epilog Fusion
CO2 Laser →

Fume Extraction
System →

Epilog Fusion
Fibermark Laser →

GMI Workbench
with Storage

← 17" Drill Press

← DiWire CNC
Wire Bender

← Single Basin
Sink

← Double Basin
Sink

GMI Storage Cabinet

Kuka KORE Cart
Kuka Robotics

4'x 8' Plasma Cutter:
Techno CNC HD Series

8' Workbench w/ Storage

Mobile
Computer
Console

Desktop
CNC
Router

MANUFACTURING

4 Student
Workbenches
by GMI Furniture

CNC Milling
Machine

10" Sawstop
with Mobile Base

Mobile
Computer
Console

4'x 8' CNC Router
Techno CNC HDS Series

STORAGE

← Open Shelving

Overhead Wall-Mounted
Storage

Storage Cabinets

Vertical Band Saw →

← Cold Cutting Saw

AET Labs offers professional consulting & support, customized planning, and installation services for new and existing advanced manufacturing labs.

Consulting

Before the space planning begins, our staff will meet with you to understand your educational objectives and help to define a successful and sustainable program implementation. Still in the process of finding the funds for your school's project? We offer grant consultation too, and can identify & match grant opportunities for most STEM initiatives.

Planning

Next, we will assist in the careful planning of a total learning environment - not just a "lab." We'll work with your administrators, faculty and architects to help layout your space and provide you with detailed lab drawings and product specifications.

Implementation

When your building is ready, our factory-trained personnel will complete your furniture and equipment installation on time and within budget. Our manufacturing partners will provide effective professional development for all faculty and lab support staff either on-site or at our training facilities.

Support

Once your program is up and running, our team of field service engineers and inside support staff will work with you to ensure that your program continues to function as specified and is kept up to date for many years to come.

5

uPrint SE
Proven. Powerful. Professional

strataSys
PLATINUM
EDUCATION PARTNER
2017

Designers, engineers and educators — thousands of professionals rely on uPrint SE to test and perfect their work with 3D modeling. This do-it-all printer uses FDM Technology to build in real ABSplus thermoplastic, resulting in models and functional prototypes that are durable, stable and accurate. Evaluate form, fit and function in everything from ergonomics to manufacturing processes — right from your desktop. The optional dual material bays mean more uninterrupted print time, so you can maximize productivity even when you're not in the office.

The uPrint SE 3D Print Pack is everything you need to start 3D modeling:

- uPrint SE+ 3D Printer
- Startup supply of materials and bases
- CatalystEX software
- WaveWash support removal system

uPrint Series Features
GrabCAD Print Compatible
Network connectivity
Desktop size

uPrint SE+ Specs
Build Size: 8"x6"x6"
Print Material: ABSplus in ivory, white, blue, fluorescent yellow, black, red, nectarine, olive green or gray
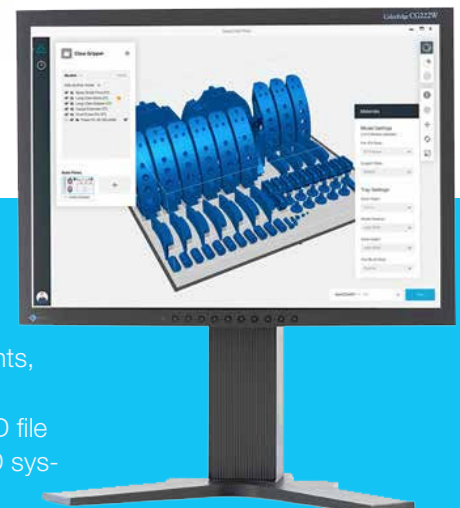
uPrint SE+

Powered with GrabCAD print!

GrabCAD Print simplifies the traditional 3D print preparation workflow and provides intelligence around printer usage so your team can get quality prints, faster. **Prepare** models for 3D printing through orientation, optimization, and support generation. **Print** STL, VRML and native 3D CAD file formats (Creo, SOLIDWORKS, NX, CATIA, Inventor) directly from your CAD system, and **schedule & queue** multiple files to print on shared machines.

F123 Series
The power of prototyping. Maximized.

stratasys
PLATINUM
EDUCATION PARTNER
2017

Smarter, Easier Prototyping

The all new Stratasys F123 Series is easy to operate and maintain for all levels of experience and is adept at every prototyping stage from concept verification to design validation and functional performance. The three printers in the platform, the F170, F270, & F370, support a broad range of capabilities and budgets for every stage of prototyping.

Performance so good, you won't believe it's so easy to use!

- **Minimal setup** means you can simply plug and play to give all students access to professional 3D printing.
- **Auto-calibration** ensures you spend less time troubleshooting and more time prototyping.
- **Fast and easy material** swaps help maximize your design team's productivity.

About Performance 3D Printers:

Powered by FDM Technology, Performance 3D Printers deliver models in real ABSplus thermoplastic. Parts are durable and dimensionally stable — perfect for tough testing. Materials are affordable, so you can work iteratively and test frequently.

Fortus Series

Build strong and accurate tools, prototypes & end use parts

stratasys
PLATINUM
EDUCATION PARTNER
2017

Get the latest FDM® technology for advanced prototyping and production.

Bring the speed, agility and design freedom of advanced additive manufacturing to your business while gaining the latest advances in FDM technology. The Fortus 380mc™ and Fortus 450mc™ 3D Production Systems build high-requirement prototypes, rugged jigs, fixtures and tooling, and custom production parts in familiar thermoplastics. These systems are engineered for ease of use, including an all-new, intuitive touchscreen interface for smooth workflow. Both let you choose materials individually or in economical bundles.
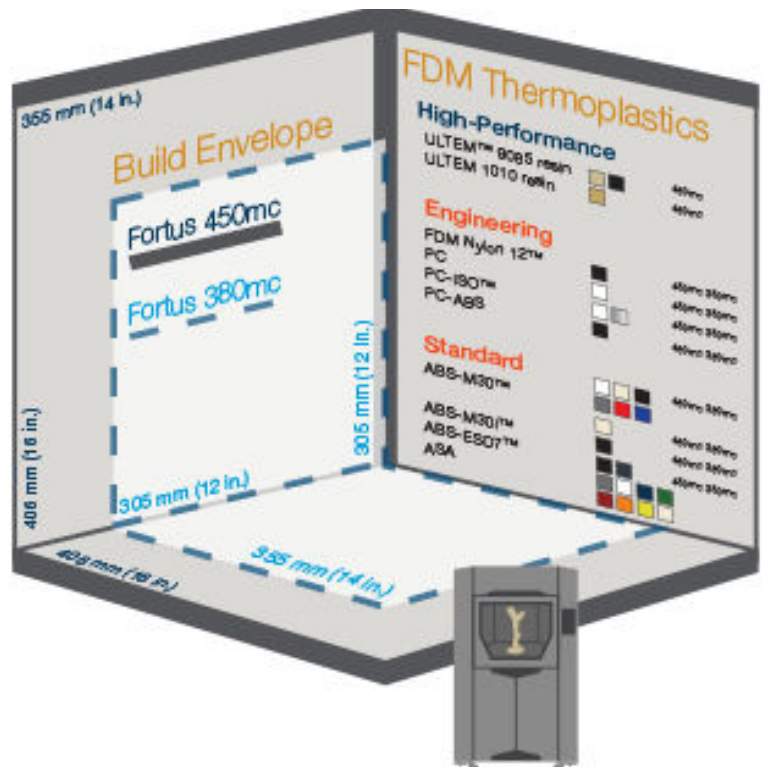
Fortus 380mc:

Quickly build advanced prototypes and production aids as large as 355 x 305 x 305 mm (14 x 12 x 12 in.) in eight standard and engineering thermoplastics.

Fortus 450mc:

Get all the capabilities of the Fortus 380mc, plus a larger build envelope (406 x 355 x 406 mm [16 x 14 x 16 in.]) and the option to run high-performance thermoplastics for specialized production parts in demanding fields such as medical, aerospace, research and defense.

Build Envelope

355 mm (14 in.)

Fortus 450mc

Fortus 380mc

406 mm (16 in.)

305 mm (12 in.)

305 mm (12 in.)

406 mm (16 in.)

355 mm (14 in.)

FDM Thermoplastics

High-Performance
ULTEM™ 9085 resin
ULTEM 1010 resin

Engineering
FDM Nylon 12™
PC
PC-ISO™
PC-ABS

Standard
ABS-M30™
ABS-M30i™
ABS-ESD7™
ASA

Desktop Metal Studio System

Office-friendly metal 3D printing for an education environment

Introducing the Studio System. Designed as an end-to-end solution, it's the only way to print complex metal parts in-house. The DM studio system is the first metal 3D printing solution designed for engineers and engineering programs.

10x Cheaper
The Studio system is up to ten times cheaper than comparable laser-based systems. With purchase and subscription pricing options, it's the only cost-effective metal 3D printing system on the market.

Safer
DM eliminated lasers and powders to make the Studio system safe for any facility. Unlike other systems, there are no special facilities or 3rd party equipment required – just power and an internet connection.

The Printer

The Studio printer is similar to the safest and most widely used 3D printing process–Fused Deposition Modeling (FDM).

The Furnace

DM has designed the first office-friendly sintering furnace. Fully automated with closed loop thermal control and sized to fit through an office door, it delivers industrial-strength sintering in an office-friendly package.
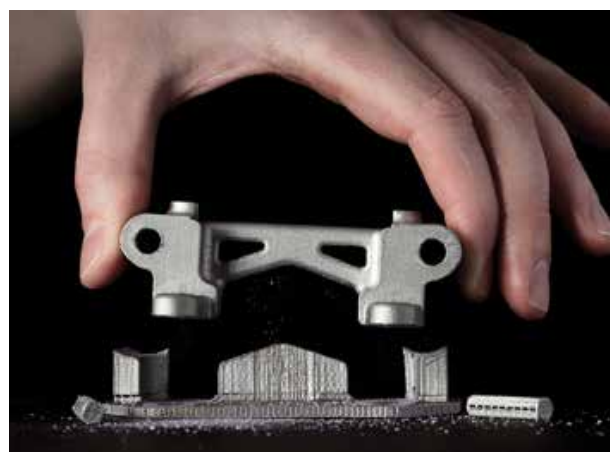
CREAFORM

The Go!SCAN 3D™ product line by Creaform offers our simplest portable 3D scanning experience, providing fast and reliable measurements. With these easy to use, handheld 3D scanners, you can even capture 3D data in full color.

Through a very efficient process, these self-positioning systems can be used by anyone without requiring any prior experience or background, and provide visual guidance as you are scanning. This innovative technology bypasses preparation steps and specific setups, provides a very fast measurement rate, and does not require manual data post-processing.

- Hybrid positioning: uses the parts' natural geometry and color.
- Point-and-shoot: no need to prepare parts. Just go!
- User-friendly: no experience required, up and running in minutes.
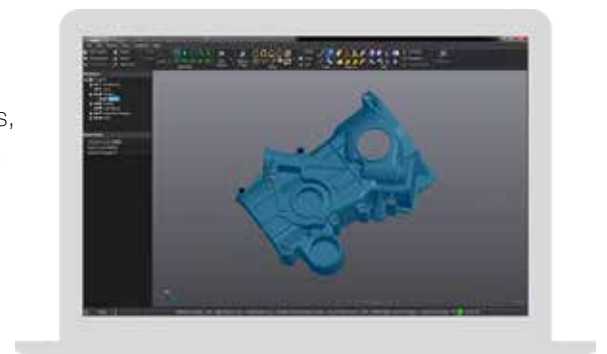- Scan in color: allows for seamless capture of high-quality geometry and colors simultaneously.

GO! SCAN 3D
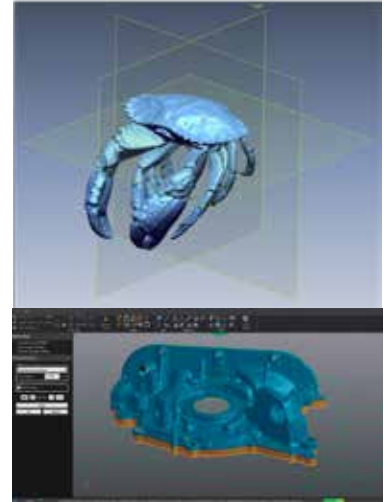
APPLICATION RECOMMENDATION: Art & Architecture

VXmodel

VXmodel is a post-treatment software that directly integrates into VXelements, and enables finalizing 3D scan data to use directly in any 3D printing or CAD software. VXmodel provides the simplest and fastest path from 3D scans to your computer-aided design or additive manufacturing workflow.

A great addition to any Creaform 3D scanner, VXmodel is simple but powerful, including only the features necessary to complement your CAD software. You already have all the design and modeling capabilities in your software: VXmodel only provides the tools you need for a quick and seamless integration into your scan-based design process.

3D Digital
Optix Scanner with SAS

High Accuracy Scanner

- Designed using cutting-edge optical and laser technology
- Unsurpassed accuracy and scan quality
- Ultra-high resolution

Single Axis Scanner

- Seamless integration with 3D scanner
- Simplifies scanning process by creating a single composite scan
- Economical and sophisticated
- Platform Rotates 360°

APPLICATION RECOMMENDATION: Reverse Engineering & Inspection

SPACECLAIM

**Edit, repair, and create any geometry quickly and easily!**

SpaceClaim is intuitive software that takes the struggle out of working with imperfect STL files.

SpaceClaim enables anyone to create, edit, or repair geometry without worrying about underlying technology. SpaceClaim offers intuitive tools for reverse engineering from 3D scans. STL files and solids can be easily altered to recreate perfect models for parts and fixtures. Users can even start with 2D models. Imperfect data from worn components or a dirty scan can be quickly corrected. With SpaceClaim, working with 3D modeling software becomes fast, easy, flexible, and rewarding, at any point in your workflow.
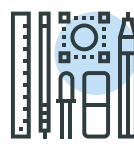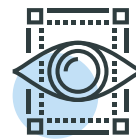
Manufacturing   **Design**   **3D Printing**   **Simulation**   **Reverse Engineering**

Epilog C02 Laser Systems

Metal marking logos on tools and parts with a CO2 laser is now possible. Using a simple three-step process using a metal marking compound, you can utilize a low-cost CO2 laser system for permanently marking all types of metal parts and tools.

Epilog Helix - For engravers looking to work with large engraving pieces, the Epilog Helix is an ideal choice. The Helix's generous 24" x 18" x 8.5" (610 x 457 x 215.9 mm) engraving area will allow you to engrave multiple pieces as well as thicker materials.

Epilog Mini 18 and 24 - Epilog Mini 18 Laser: Entry-level model providing an 18" x 12" work area, but with the highest-quality engraving. Move up to the Mini 24 for a larger 24"x12" work area that holds most standard engraving stock materials.

Versatile: Engraves a wide array of materials from glass to plastic to metals.

Affordable: 30-50% Less than comparable Fiber or YAG systems - perfect for a lower budget.

CerMark: Metal Marking Solution

With CerMark metal marking solution you can laser engrave text or images on uncoated metals. The solution can be sprayed or brushed on to clean metal and then laser engraved. Can be used on stainless steel, tool steel, brass, chrome, aircraft-grade aluminum, pewter and titanium.

Epilog Dual Source Fiber Laser Systems

Mark Industrial Tools with a Laser!

For marking and etching metals and permanently marking plastics, the low-cost, high-performance fiber laser systems from Epilog Laser have become the marking solution for companies around the world. You won't find a more affordable piece of equipment for professional metal marking.

Available in two models with a large table size of 32" x 20" or 40" x 28", the Fusion M2 incorporates the latest technology with the most options! The combination of top-quality components, high-speed servo motors, camera registration options, results in high-quality engraving across the entire table.

If you require the material versatility of a CO2 laser in addition to the direct metal etching of a fiber laser, the Fusion M2 32 can be purchased with dual sources. Choose a fiber laser (20, 30 or 50 watts) and add on a CO2 laser (50, 60 or 75 watts) to work with a wider range of materials.

Etch Bare Metal Without a Marking Compound!

If you are looking for a mark on bare metal without using a metal marking compound, take a look at the fiber laser systems. By adapting the flying-optic motion system that made our lasers famous, we incorporate a 1062 nm wavelength Ytterbium Pulsed Fiber Laser to engrave directly into metal and mark engineered plastics.

AP LAZER

AP Lazer's patented open architecture lasers can open the minds of your students to creative thinking and problem solving. Their patented 2-part machine design allows for laser cutting & engraving wood, plastic, stone, glass and metal, with NO size/weight restrictions!

Machine Features:

1. Level the machine top with any job surface using the E-Z Leveling System, saving you both time & money.

2. Open the top cover to easily load and maneuver objects.

3. Placing the laser top on the utility carriage create an open area below allowing for lasering objects with little to no size or weight restrictions.

4. Place heavy objects on the mechanical lift cart, then roll them directly under the laser.

5. Rolling the home base underneath the laser top allows you to use AP Lazer like a traditional 'boxed-up' laser machine.

Safe for Any Classroom

All AP Lazer models have easily accessible cutoff switches and stop buttons to prevent the laser from firing unless conditions are safe. On-site training is provided as well as video training and 24/7 customer support. The power range is from 40 watts to 100 watts, which is a safe range of laser power for teaching the fundamentals of lasers.

Patented 2-part design

APPLICATION RECOMMENDATION: Laser Cutting & Engraving

CorelDRAW

Combine your creativity with the unparalleled power of CorelDRAW® Graphics Suite X8 to design graphics and layouts, edit photos, and create websites. With advanced support for Windows 10, multi-monitor viewing and 4K displays, the suite lets first-time users, graphics pros, small business owners and design enthusiasts deliver professional results with speed and confidence. Discover high-caliber and intuitive tools within your graphic design software to create logos, brochures, web graphics, social media ads or any original project.

Special 50-seat discount license packs available!

Follow us on Twitter & LinkedIn for our Latest CorelDRAW for Laser Cutting instructor workshops!

PhotoLaser Plus!

The perfect companion product for CorelDraw™. Process photographic images in PhotoLaser Plus and ensure the highest quality laser engraving output. Design artwork or bring your photographic images into CorelDRAW™ then seamlessly transfer your job to PhotoLaser Plus. Use the PhotoLaser feature to output photos to your laser engraver. Easily touch-up and crop your photos with PhotoLaser Plus bitmap editing tools. Convert color, grayscale or monochrome photos into vector files in one step.

PhotoLaser Plus supports both raster engraving and vector cutting. Automatically auto condense text to fit on a nameplate. PhotoLaser's badging routine reduces layout time and improves production time by automatically substituting text from a variable list. PhotoLaser Plus and Laser packages can be combined into one product to meet all your laser engraving needs.

Seamless integration between Corel Draw and PhotoLaser Plus via the Corel application launcher.

Techno CNC Plasma Cutting System

Techno offers affordable, high powered and user friendly 4x4, 4x8 and 5x10 CNC Plasma Cutting Table Systems ideal for small to mid-sized shops and educational classrooms. **Techno CNC Plasma Cutters** are extremely useful for cutting sheet metal in curved or angled shapes.

KEY FEATURES:

- Available in 4' x 4', 4' x 8' and 5' x 10' stock sizes

- PC based WinCNC Controller

- Unique design, easy to learn and operate

- Brushless micro stepper motors and drives (servo optional)

- Precision Helical Rack-n-Pinion on X and Y axes with ball screw on the Z axes

- Water table / Steel V-grid / Down draft

- All steel construction for rigid platform

- Cuts up to 1.5" thick steel capacity

- High-speed cutting up to 800 IPM

Automatic Digital Torch Height Control increases consumable life and decreases torch errors

Techno CNC Systems

HD II CNC Router

Techno CNC Systems' HD-II CNC Router is manufactured using state-of the-art advanced engineering techniques, and workmanship. These machines are built to last, with all steel construction and superior components such as precision linear bearings and rails. Key features are a 12 HP HSD high frequency automatic tool changer spindle with 8-position tool rack, pneumatically retractable vacuum hood and multi-zone vacuum t-slot table. The system includes brushless micro-stepper motors and controls with a very easy-to-use hand-held controller.

SPINDLE:
The HD II Series machine comes standard with a 12 HP HSD high frequency automatic tool changer spindle.

Performance and value for smaller advanced manufacturing labs

SPECIFICATIONS:

- 4' x 4', 4' x 8' and 5' x 10' Stock sizes (Special sizes available upon request.)

- 12 HP HSD high frequency automatic tool changer spindle with 8-position tool rack

- Maintenance free high precision brushless stepper drive motors

- Automatic tool calibration for easy and accurate tool length and "Z" zero recording

- 4-Zone vacuum t-slot table

- Easy to use hand-held micro stepper controller

- Open architecture works with all industry standard CAD/CAM software

Available in Benchtop Model

Techno HDS Series CNC Router

Manufactured using global state-of-the-art techniques with advanced engineering and workmanship, the Techno HDS Series is built to last with all steel construction and superior components such as precision linear bearings and rails. Standard features of these machines include a 12 HP HSD high frequency automatic tool changer spindle with an 8-position tool holder rack, precision helical rack and pinion drives on the X and Y axes, a ball screw drive on the Z axis, maintenance-free AC servo motors, multi-zone vacuum t-slot table combination, and material placement stops.

Features:

- 12 HP HSD high frequency automatic tool changer spindle
- Maintenance free brushless AC servo motors and drives
- 4-Zone vacuum t-slot table
- Pneumatic material placement stops
- Hand-held pulse generator with rotary hand wheel controls the axis selected
- PC with flat screen monitor, keyboard and mouse
- Easy to use Techno CNC Interface

Professional class for highest quality & precision

Stress-relieved, heavy-duty tubular steel frame

Raised gantry option for up to 27" of process height

APPLICATION RECOMMENDATION: CNC Routing

Vectric software is designed to make cutting parts on a CNC an enjoyable and productive experience. The combination of power and simplicity lets you efficiently generate or manage your design, then quickly create precise toolpaths to drive your CNC. VCarve Pro and VCarve Desktop provide a powerful but intuitive software solution for cutting parts on a CNC Router. There are tools for 2D design and calculation of 2D and 2.5D toolpaths and along with the ability to import and toolpath a single 3D model (STL, OBJ etc.). There is also support to import multiple Vectric Clip Art 3D models (V3M) to create 3D assemblies.
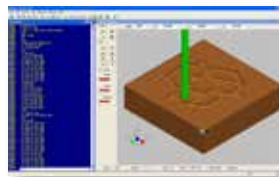
FESTO

CNC Classroom Training Systems

CNC Mill 5600

Using an industrial-grade microprocessor-driven CNC mill, Model 5600, provides training in computer-aided design (CAD) and computer-aided manufacturing (CAM)

The system allows students to practice computer numerical controlled (CNC) code programming and editing, learn to operate mill components, controls, and tools, set a programmed reference zero, follow the steps necessary to machine a part to programmed specifications, and apply the machine code language to current mill technology.

5660 Mill Training Software

CNC Lathe Systems 5500

The CNC Lathe Training Systems provide training in computer-aided design (CAD) and computer-aided manufacturing (CAM) using an industrial-grade microprocessor-driven CNC lathe.

The systems allow students to practice computer numerical controlled (CNC) code programming and editing, learn to operate lathe components, controls, and tools, set a programmed reference zero, follow the steps necessary to turn a specified part, and apply the machine code language to current lathe technology.

Light Duty CNC Training Systems

These smaller, more basic training systems allow students to practice computer numerical controlled (CNC) code programming and editing, and learn to operate mill & lathe components, controls, and tools in a smaller classroom setting.

5300 Lathe

5400 Mill

EMCO

EMCO CNC Training Machines

Scalable Industrial CNC Training Solutions

Concept Mill 55

- Compact CNC desktop Milling machine
- High-resolution axis motors
- Automatic 8 station tool turret
- Infinitely adjustable main drive

- Engraving Spindle Facility
- NC dividing unit as an optional fourth axis
- Robotic interface for integration into FFS/CIM systems

Concept Turn 460

- Integrated industrial PC with network and USB interface (front)
- Thermostable head stock with high drive power and C axis
- 12 x tool magazine with up to 6 driven tools
- Synchronized main spindle and C axis with max. 1000 rpm
- Programmable part collecting device

- Various clamping device and tool holder packages
- Easy2control user interface with 21,5" touchscreen
- State of the art drive technology, servomotors with absolute encoders
- DNC-Robotic Interface
- Safety technology CE compliant

MAXXMILL 400

- 5-axis processing in one setup
- Optional swiveling-rotary table for the 5-axis simultaneous engineering with high dynamic torque drive
- Travel: X-350, Y-250, Z-300 mm
- High thermostability and precision

- Modern travelling column concept
- Massive tilting rotary table with ø 400 mm for high stability and precision
- Compact machine design: 1630 x 2300 mm
- Attractive price-performance ratio

5-Axis Training & Certification Included!

EMCO CNC Training Software

EMCO Packages include the following value-added software solutions

E[MCO] Campus
A multimedia program that teaches all the basics of modern CNC technology. The cleverly-designed teaching format makes even complex concepts easy to grasp and learn. Interactive dialog features allow the students to progress at their own pace. Views are displayed using attractive 3D and 2D graphics, animations, and videos, sustainably improving the success of the learning process.

EMCO WinNC
Gives students the opportunity to install multiple CNC controls software on a single PC/laptop, so they can get trained on all CNC industry controls that are common on the market. Up to nine different CNC controls can be installed on one single PC/laptop e.g.

Win3D-View
A 3D simulation for turning and milling and is available as an option in addition to the WinNC Control. Graphic simulations of CNC controls are designed especially for industrial experience. Win3D-View displays exceed industry standards. Tools, blanks, clamping devices, and work processes are highly realistic.
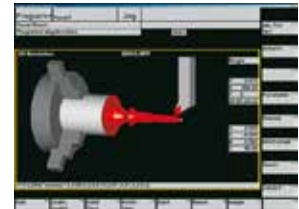
Basic-to-Advanced Siemens CNC Certification

All EMCO Packages include a 3 Level Siemens CNC Certification Program featuring an advanced 5-axis program.

The SINUMERIK CNC technology platform from Siemens has long dominated the world's high-end CNC manufacturing tiers. Today, SINUMERIK CNCs are increasingly preferred by employers wanting a competitive advantage. Prepare your students for real-world industry with game-changing machine tool performance combined with basic-to-advanced machine training - all on the same CNC platform.

- Level 1 — ShopMill and ShopTurn
- Level 2 — programGuide for Milling and Turning
- Level 3 — 5-axis and High-Speed Milling

DIWIRE PRO

Bends wire, tube & rod for rapid prototyping and short run production

The D.I.Wire PRO by Pensa Labs offers the kind of power, speed, and precision that professionals never thought possible from a desktop CNC machine. Originally built as a design solution for the invention firm's prototyping needs, this next generation D.I.Wire has a patented bend mechanism that delivers smooth, tight radius curves — from fine orthodontic retainer wire to 3/16" stainless steel parts applicable to jets, cars, home appliances, furniture, robotics and more.

The D.I.Wire PRO bends wire diameters ranging from 0.028" to 0.1875", making it a versatile tool for rapid prototyping and short-run production. Fully customizable but affordable, the D.I.Wire PRO bridges the gap between time-consuming hand-bending and expensive large-scale, mass production CNC wire bending.

D.I.WIRE PRO AT A GLANCE

- Great for rapid prototyping & short run production.
- Create segmented or smooth shapes.
- Bends up to 180 °.
- Strong enough for stainless steel.
- Professional-level accuracy and repeatability.
- Handles wire diameters 0.028" to 0.1875".
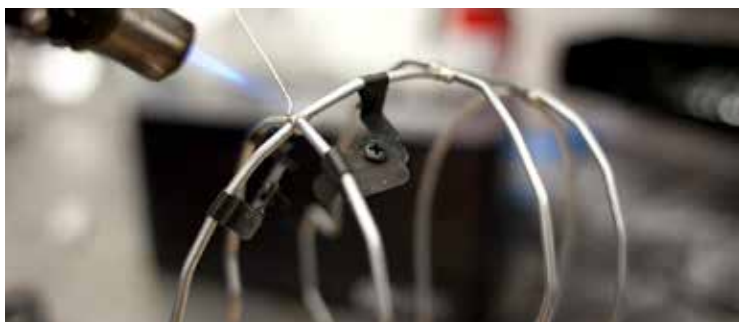
DESKTOP INJECTION MOLDING MACHINES

Mini-Jector Injection Molding Machine

A Mini-Jector injection molding machine reflects more than 40 years of quality design and building experience in injection molding machinery. The low price of the Mini-Jector, combined with its low tooling costs, makes small production runs of 100 pieces as economically efficient and practical as runs of much larger quantities.

Typical applications would include:

- Seismic cable overmolding
- Prototypes of new or experimental Parts
- Color mix testing
- Insert molding or overmolding
- Traditional ASTM tensile specimens
- Educational programs

Options:

- Mini-Jector Machines are available in pneumatic, hydraulic or electric models, with either plunger or reciprocating screw type plasticizing systems.
- All Mini-Jectors may be used with a wide range of thermoplastics, ceramics and various investment waxes.

Mini-Jector Provides Lower Cost & Quicker Tooling - Ideal for a School Lab Setting

- Can be producing parts before tooling for a big machine would even be off the drawing board!
- A typical "V" mold (with sprues, runners, and cavities) costs less than a small commercial mold blank
- Production runs as small as 100 pieces become economical
- Our simple design concept is suitable as a manual injection molding machine or as part of an automated process
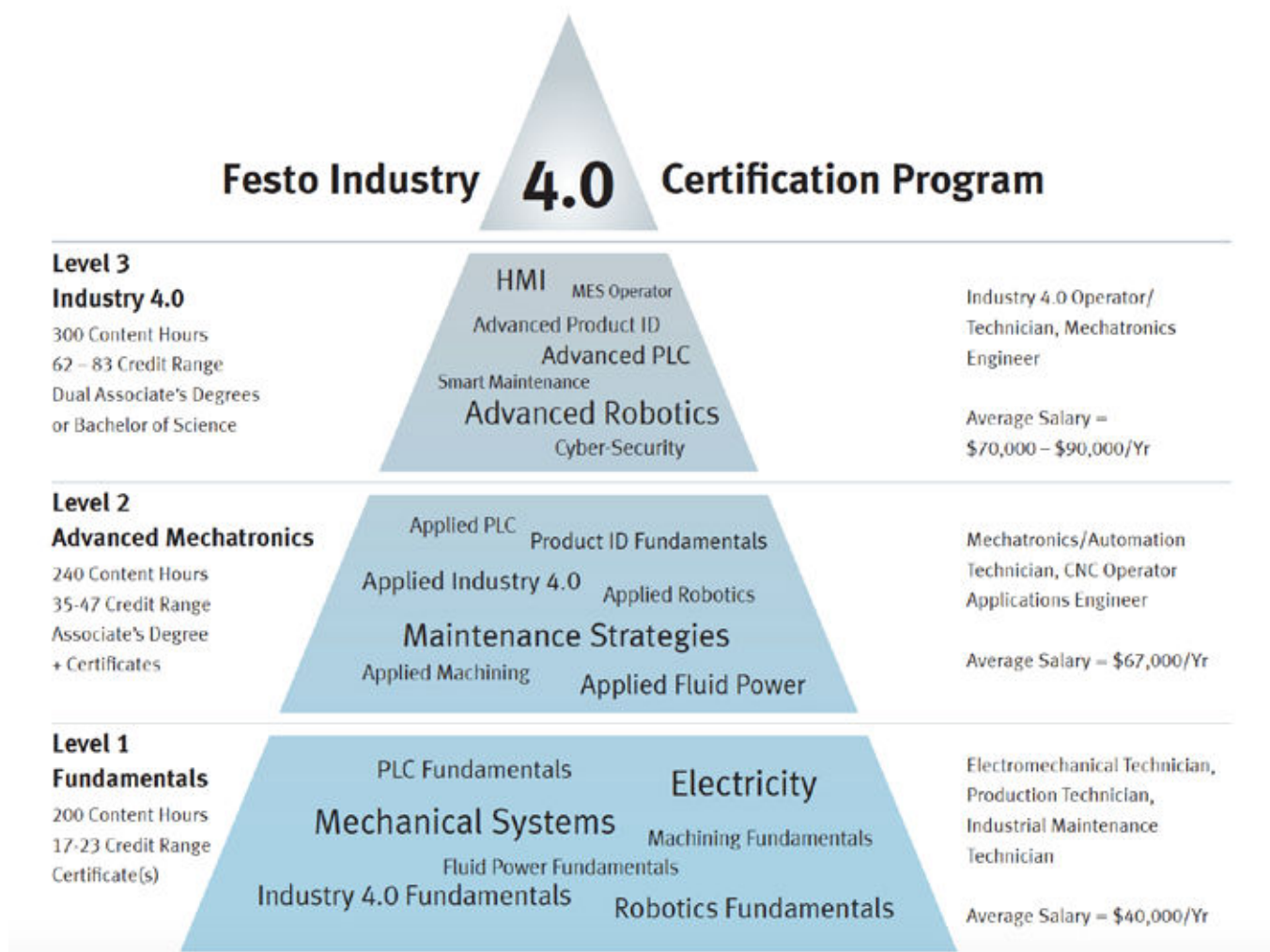

Learn more about V-Mold Technology
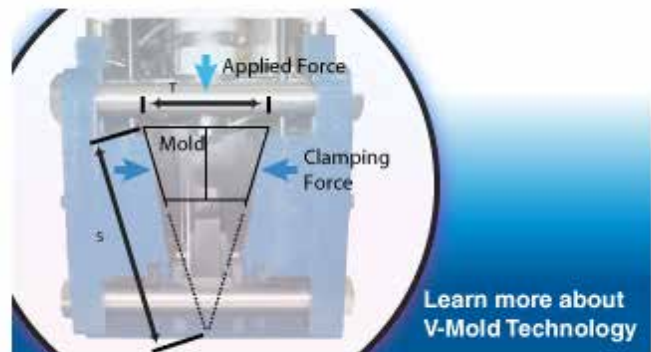
FESTO

Festo is a leading wordwide supplier of automation technology and the performance leader in industrial training and education programs. Driven by a core belief that quality education is the key to building a better world, Festo is committed to providing high-quality, cost-effective educational technology on a global scale.

Skills Gap Solution: Industry 4.0 Certification from FESTO

The U.S manufacturing industry is facing a hiring crisis. Today's workforce is not prepared for the industry of the future, making it harder to meet customer demand, take advantage of new technology, and increase productivity. Smart factories need workers who have high-tech and design engineering training, as well as polished critical-thinking skills to complete tasks.

The Festo Industry Certification Program (FICP) is based on industry and education partnerships to ensure students have the right set of skills to be industry ready. FICP evolved from our global industrial automation division and technical education experience over the past six decades.

Festo Industry 4.0 Certification Program

Level 3
Industry 4.0
300 Content Hours
62 – 83 Credit Range
Dual Associate's Degrees
or Bachelor of Science

HMI MES Operator
Advanced Product ID
Advanced PLC
Smart Maintenance
Advanced Robotics
Cyber-Security

Industry 4.0 Operator/
Technician, Mechatronics
Engineer

Average Salary =
$70,000 – $90,000/Yr

Level 2
Advanced Mechatronics
240 Content Hours
35-47 Credit Range
Associate's Degree
+ Certificates

Applied PLC Product ID Fundamentals
Applied Industry 4.0 Applied Robotics
Maintenance Strategies
Applied Machining Applied Fluid Power

Mechatronics/Automation
Technician, CNC Operator
Applications Engineer

Average Salary = $67,000/Yr

Level 1
Fundamentals
200 Content Hours
17-23 Credit Range
Certificate(s)

PLC Fundamentals Electricity
Mechanical Systems Machining Fundamentals
Fluid Power Fundamentals
Industry 4.0 Fundamentals Robotics Fundamentals

Electromechanical Technician,
Production Technician,
Industrial Maintenance
Technician

Average Salary = $40,000/Yr

FESTO

MecLab® - Mechatronics Training System

As one of the foundations of Advanced Manufacturing, automated systems are found in almost every industry today. With Festo MecLab®, students gain insight into the use of automation technology in a production environment. The three MecLab stations represent simplified models of typical production processes found in most automated factories.
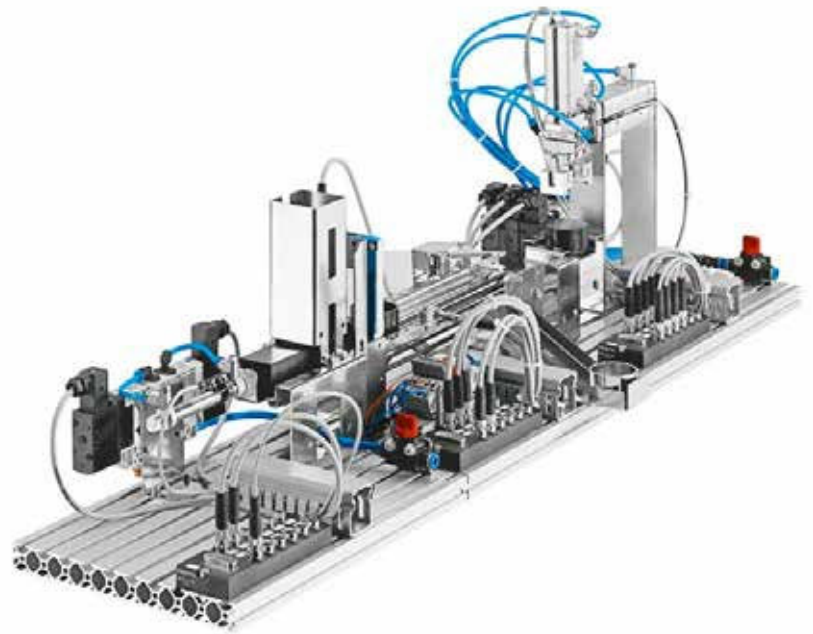
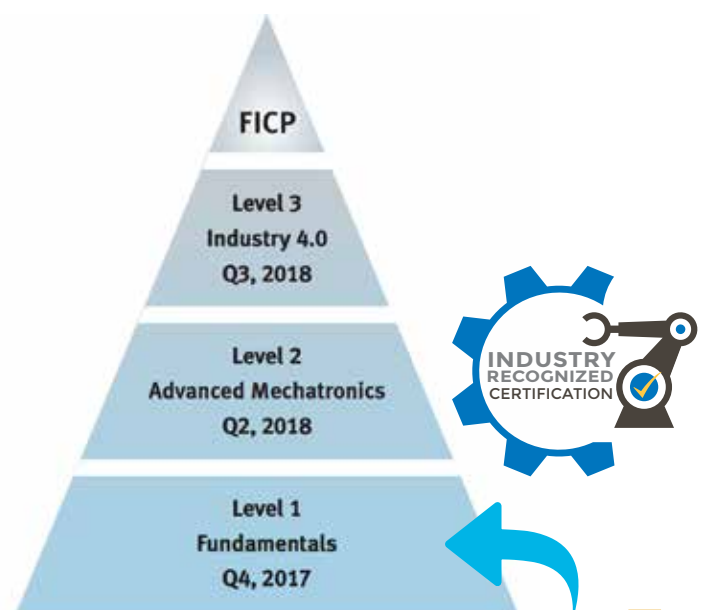### MecLab® covers a variety of topics and objectives including:

- Introduction to industrial automation technical terms
- Planning, developing, and building automated systems
- Technical documentation
- Building models and creating simulations
- Open and closed-loop control systems
- Pneumatic and electrical actuators,sensors and controllers
- Using computers as tools for programming and simulation

Modular and Flexible

MecLab® stations can be used individually. Each station performs a practical function and safely demonstrates the characteristics of a fully automated process. The stations can be joined together to form more complex "production lines". Students can take on the role of engineer and design special exercises and projects, including joining the three stations together to form a mini production line.

AET Sponsors the SkillsUSA Mechatronics compeition with FESTO each year.

FICP

Level 3
Industry 4.0
Q3, 2018

Level 2
Advanced Mechatronics
Q2, 2018

Level 1
Fundamentals
Q4, 2017

INDUSTRY
RECOGNIZED
CERTIFICATION

FESTO

MPS® The Modular Production System

The Modular Production System MPS® is the origin of and basis for almost all mechatronics training systems by Festo Didactic. These learning solutions also encompass a wide range of topics directly related to mechatronics and factory automation, such as robotics, CAD/CAM, and PLC - all of which can be tailored to specific training objectives and learning scenarios.

All systems are 100% modular, allowing for expansion and flexibility, making investments future-proof with no dead ends.

### Technical training objectives include the ability to:

- Analyze functional relationships in mechatronic systems
- Manufacture mechanical components
- Follow information and energy flow in electrical, pneumatic, and hydraulic subsystems

- Plan and organize work flow
- Commission, troubleshoot, and repair mechatronic systems
- Communicate using industrial network protocols, including DeviceNetTM and PROFIBUS

MPS® Modular Mechatronics Training System

Combination with Conveyor

FESTO
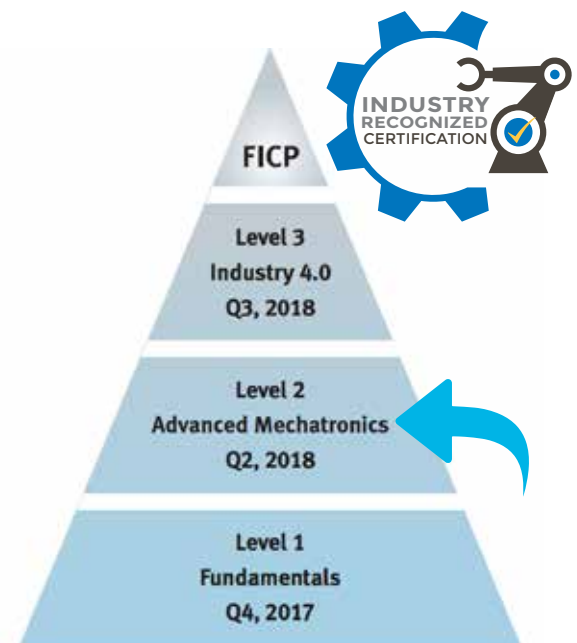
PLC's and Applications

The PLC Applications, Series 8075, aim to further develop student understanding of PLC programming. Basic principles are integrated with more advanced concepts in order to design small-scale systems typical of what can be found in the industry. The PLC Applications series is divided into several systems, each system covering a specific topic related to PLC controls. Through practical examples, students gain a strong knowledge of PLCs and of the studied applications.

Main features

- Tabletop systems with realistic components
- Cost-effective applications
- Can be interconnected with other training systems
- Highly modular systems; accessories available to make the applications more complex
- Fault-insertion capabilities
- Comprehensive curriculum included with each application

Servo Robot Training Systems

Festo 5250 Servo Robot Training Systems are complete and affordable training systems that cover the programming and operation of industrial robots. Through the curriculum and hands-on exercises with the Servo Robot Training Systems, students learn to create automated work cells ideal for Flexible Manufacturing Systems (FMS) and Computer Integrated Manufacturing (CIM).

The precision-built, articulated arm of the Servo Robot can be controlled and programmed using a hand-held terminal or from a host computer running the RoboCIM 5250 Software or the Robotics software. The software gives students the opportunity to prepare their sequences within the 3D environment, simulate them, and then switch to control mode to perform the sequence in the real world.

FESTO

CP Factory - The Industry 4.0 Learning System

CP Factory (Cyber-Physical Factory) reflects the new developments in Industry 4.0 network production and offers a modular Smart Factory system for teaching and research purposes. CP Factory illustrates the practical implementation of a networked factory and can be used to represent the entire value chain.
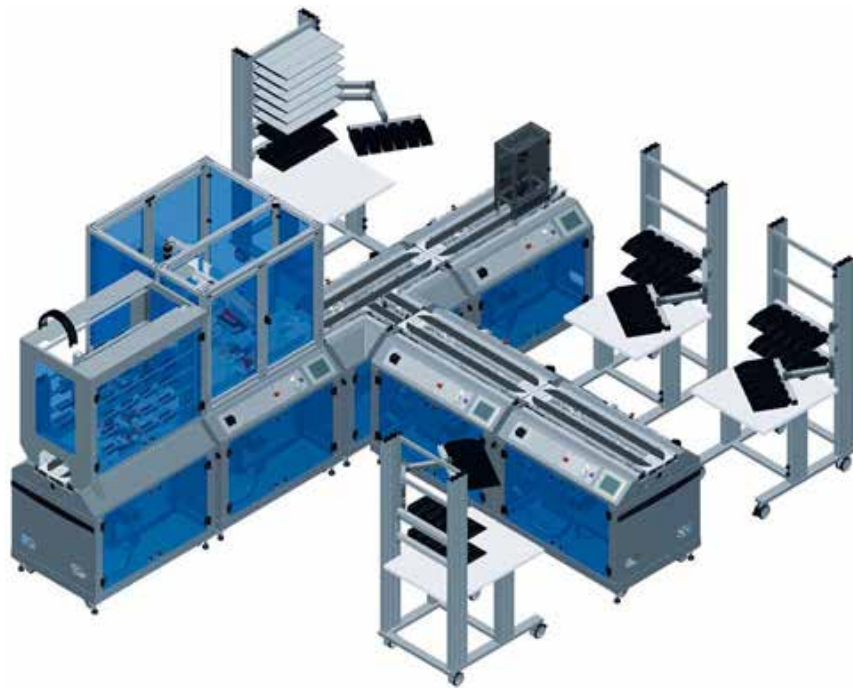
Seamless, modular and expandable

Flexibility, agility, openness to change and efficiency – these are the demands made on the production of the future. The CP Factory meets this demand with:
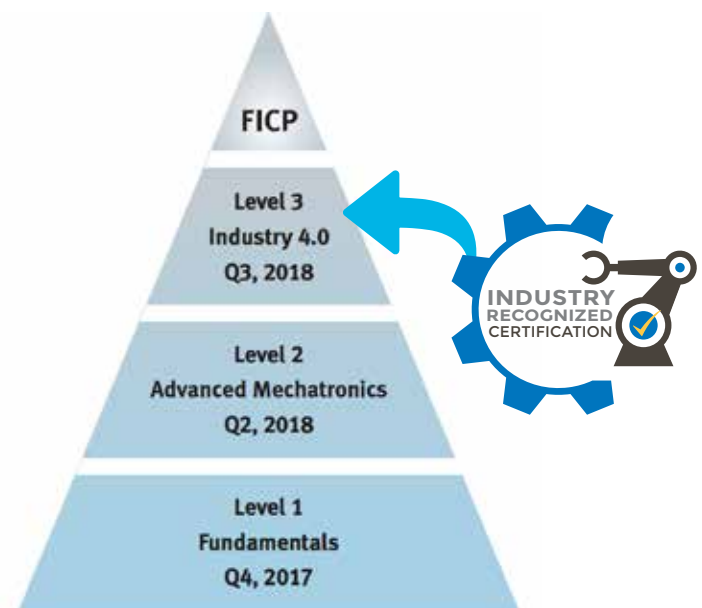

CP Factory with focus on production and assembly

- Standardised and mobile factory modules
- Open interfaces which conform to industrial standards
- Plug & produce methods

As a learning platform for Industry 4.0, the CP Factory has the following valuable features:

- Motivating, practical project exercises
- Information on Industry 4.0 relevant to the training topic in question
- Key topics such as RFID, NFC and cloud computing
- Step-by-step introduction of CPS
- Fast conversion for various training scenarios
- Internal differentiation thanks to different application modules
- Versatility demonstrated by the autonomous Robotino®
- Flexible robot cells with cameras to industry standard
- Solid introduction to reliable machine networking RFID

FESTO

Global Networking

Each factory and its components form part of a large network. This applies to both physical objects such as semi-finished and finished products and also a variety of data. Industry 4.0 delivers a clear benefit by optimising and intensifying networking at all levels. What's more, networking and data management generate additional business opportunities based on big data and non-location-specific cloud applications.

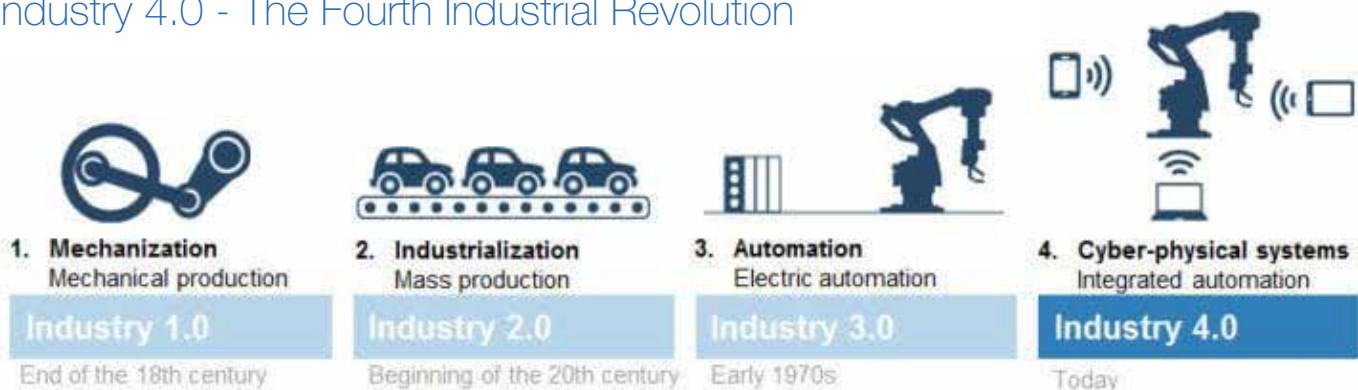The FESTO CP Factory offers many interesting project exercises for this and other Industry 4.0 topics such as:

• Logistics
• IT systems
• Networking
• IT security
• CP Factory Cloud

What does CP mean?

Cyber-physical systems permit the intelligent networking of people, products and production resources. Communication networks and physical systems thus merge into a single entity – an important characteristic for Industry 4.0 and also found in CP Factory.

Industry 4.0 - The Fourth Industrial Revolution

1. Mechanization Mechanical production	2. Industrialization Mass production	3. Automation Electric automation	4. Cyber-physical systems Integrated automation
Industry 1.0	Industry 2.0	Industry 3.0	Industry 4.0
End of the 18th century	Beginning of the 20th century	Early 1970s	Today

KUKA KORE Packages

The hands-on solution for high schools, community colleges, universities, and technical centers to teach students operational skills, fundamentals and control technology programming using real robotic hardware.

- 12 module KORE Program Curriculum including course labs, tests and student manuals
- Portable KORE Cart constructed of welded steel frame
- KR 6 R700 sixx robot from KR AGILUS sixx series with KR C4 compact controller and KUKA smartPAD teach pendant
- Retractable workspace & stabilization outriggers
- Quiet air compressor included
- 110 V transformer
- Rugged industrial lockable casters
- Safety interlocked access doors
- Schunk gripper module with overload protection device
- Size: collapsed: 31.75" wide x 54" long, expanded: 81.5" w x 54" l

KUKA Robotics KORE Machine Tending Education Cell

Designed to be utilized with an EMCO Concept Turn 260 Lathe. Allows students to experience the real world application of interfacing an industrial robot with a machining center.

Also Available (not shown): Kuka Kore Welding Education Cell

KUKA KORE Industry Certification Program

INDUSTRY RECOGNIZED CERTIFICATION

Package Includes:

- Course Curriculum Manuals
- 10-Seat server license of KUKA.SimPro & KUKA.OfficeLite simulation & programming software
- KORE Referenced Exercise Hardware Mounting SubPlate
- KORE Wave Plate With Replaceable Surface
- Aluminum Handling Blocks & Receiver Tray

- Tool Center Point (TCP) Teaching Tool
- Aluminum Dry Erase Pointer/Marker Tool & Stand
- Dry Erase Drawing Board
- Wire Ring Tracing Loop Tool & Stand
- Wire Trace Teaching Tools & Stands

KR 3 AGILUS

KUKA expertise, packed into minimal space.

With the KR 3 AGILUS, we are setting new standards for robots in the 3 kilogram class. This lightweight robot produces the smallest of components in manufacturing cells measuring just 600 x 600 mm in an agile and cost-efficient manner and with top precision.

- High performance in the smallest of spaces
- Maximum output with minimal costs

LBR iiwa - Collaborative Robots

The LBR iiwa is the world's first series-produced sensitive, and therefore HRC-compatible, robot. LBR stands for "Leichtbauroboter" (German for lightweight robot), iiwa for "intelligent industrial work assistant". This signals the beginning of a new era in industrial, sensitive robotics – and lays the foundations for innovative and sustainable production processes.

For the first time, humans and robots can work together on highly sensitive tasks in close cooperation. This opens up the possibility of new applications and the way is paved for greater cost-effectiveness and utmost efficiency. The collaborative and sensitive LBR iiwa robot is available in two versions with payload capacities of 7 and 14 kilograms.

MANUFACTURING LAB FURNITURE

Since it's humble beginnings in 1969, GMI has grown to become one of the leading manufacturers of industrial and technical furniture for schools and industry. AET Labs offers a complete GMI product lineup - from high quality work benches and storage cabinets to welding lab and computer furniture.

GMI Features

- Custom Manufacturing
- On-Site Consultations
- Build to Specification
- Delivery Logistics and Installation Coordination
- CNC Punching, Cutting and Bending Operations
- Factory Installations
- CNC Machining
- Construction Trades Coordination
- Metal and Wood Fabrication Capabilities

GMI work stations are offered in a variety of sizes and work surface configurations with a multitude of options

Design and Rendering Services

GMI provides floor plan and layout services for all our customers upon request. Full color rendered drawings are available on a case by case basis.

Turn-key Installation

Together, GMI and AET Labs can provide complete set-up and installation of your furniture. From new school construction to lab renovations, we'll work with the construction trades to coordinate our installations so you don't have to.
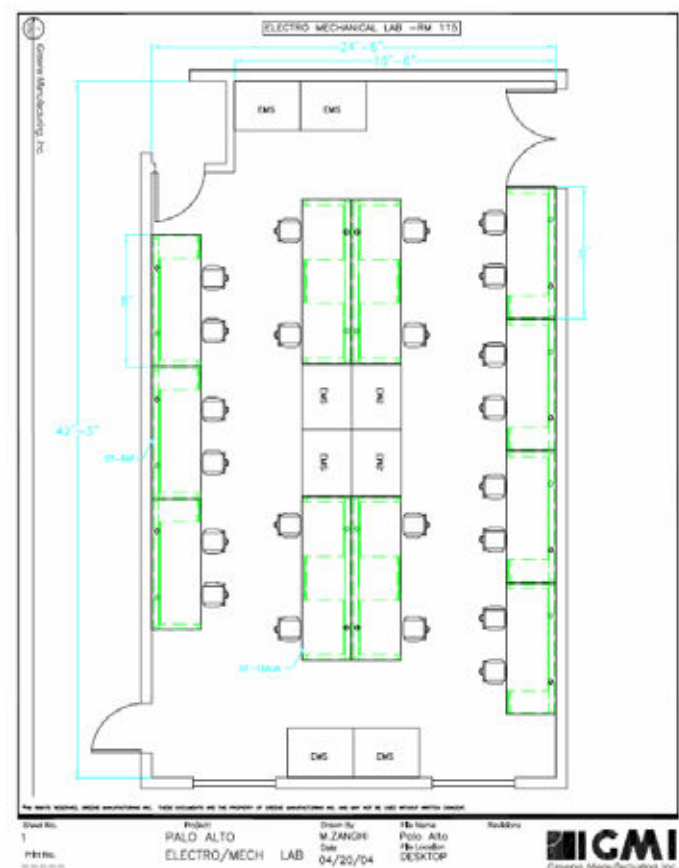
INSTALLATION & TRAINING

AET Labs aims to offer the best in digital fabrication solutions to New England STEM instructors, by advocating for schools to identify grants and funding, as well as sponsoring STEM challenges around the region. The following professional development workshops are available at our Essex Training Space and throughout the New England area.

- CorelDraw for Epilog Laser Workshop
- Epilog Laser Advanced Applications Workshop
- Post Processing Workshops for 3D Printing

- Stratasys Advanced Manufacturing Training Workshops
- Drone Building with 3D Printing Workshop
- Festo Principles of Mechatronics Workshop

Visit AETLabs.com/training-workshops for our current listing and information on our on-site training packages.

EVENTS & CERTIFICATIONS

Extreme Redesign Challenge

This "People's Choice" semi-final event honors New England students who are entering the worldwide GrabCAD & Stratasys challenge, or are simply looking to compete on a local level. The challenge invites students to invent, innovate or improve something by re-engineering it to be printed in 3D.

From Stratasys: "This is a fantastic opportunity to learn how 3D printing product prototypes can turn brainstorms into fly-off-the-shelf sensations."

Digital Fabrication Showcase

Watch in action the machines being used in some of the most successful pre-engineering programs around at this yearly event held at WPI! See engaging presentations, try them out first-hand in learning labs, & hear insights from thought leaders on Fab Labs, 3D printing software, laser cutting & engraving techniques.

Held in conjunction with the Extreme Redesign Semifinals competition, this is a highly anticipated event for CAD, pre-engineering, art & design, carpentry and machine tech instructors alike.

Skills USA

We are proud to be SkillsUSA industry partners, serving as overseers over the Mechatronics and Advanced Manufacturing competitions in the Massachusetts state championships. Lining up squarely with our core beliefs as a company, the SkillsUSA program impacts the lives of America's future workforce through the development of personal, workplace, and technical skills grounded in academics.

As a champion of career and technical education programs, SkillsUSA fosters the development of personal and workplace skills such as work ethic, professionalism, responsibility, and self motivation, and flexibility in student participants.

We are pleased to provide the following industry certifications:

FESTO
3 Levels of Industry 4.0 Certification

KUKA
Kuka Kore Robot Packages & Certifications

SIEMENS
Industry Certification for CNC Machining

stratasys
3D Printing Professional Certification

INDUSTRY RECOGNIZED CERTIFICATION