

Release Date: July 2018

2018/19

Training Course Catalog

Welcome to the Training Department

Located in Farmington, Connecticut, the TRUMPF Training Center encompasses 38,000 square feet of floor space with 17 classrooms and 13 machines designated specifically for training purposes. Each year over 2,500 students come to TRUMPF to attend more than 500 training classes. Regardless of whether you are coming here for training or sign up for our online learning options, we make sure our students have an enjoyable learning experience and acquire all the skills they need.

TRUMPF Training Department is authorized by the **International Association for Continuing Education and Training (IACET)** as training provider. Customers attending our training classes will receive continuing education units (CEUs) authorized by the IACET. These CEUs can be translated to academic credit at many colleges and learning organizations or used to sustain various certifications.

We are also pleased to announce that we are granted by the **Connecticut State Approving Agency** with an official certification to train eligible VA educational beneficiaries. Veterans now have the opportunity to enroll in our training courses and earn CEUs at no cost to them.

We'd like to encourage you to browse through this catalog to find the courses you need. Knowledge leads to success. We look forward to seeing you in our training center!

We're fully committed. We make your employees' skills and performance our focus; your productivity and profitability our goals.

-- Training Manager

We provide experienced instructors, in-depth training, and a state-of-the-art facility to ensure that you get the best out of your training.

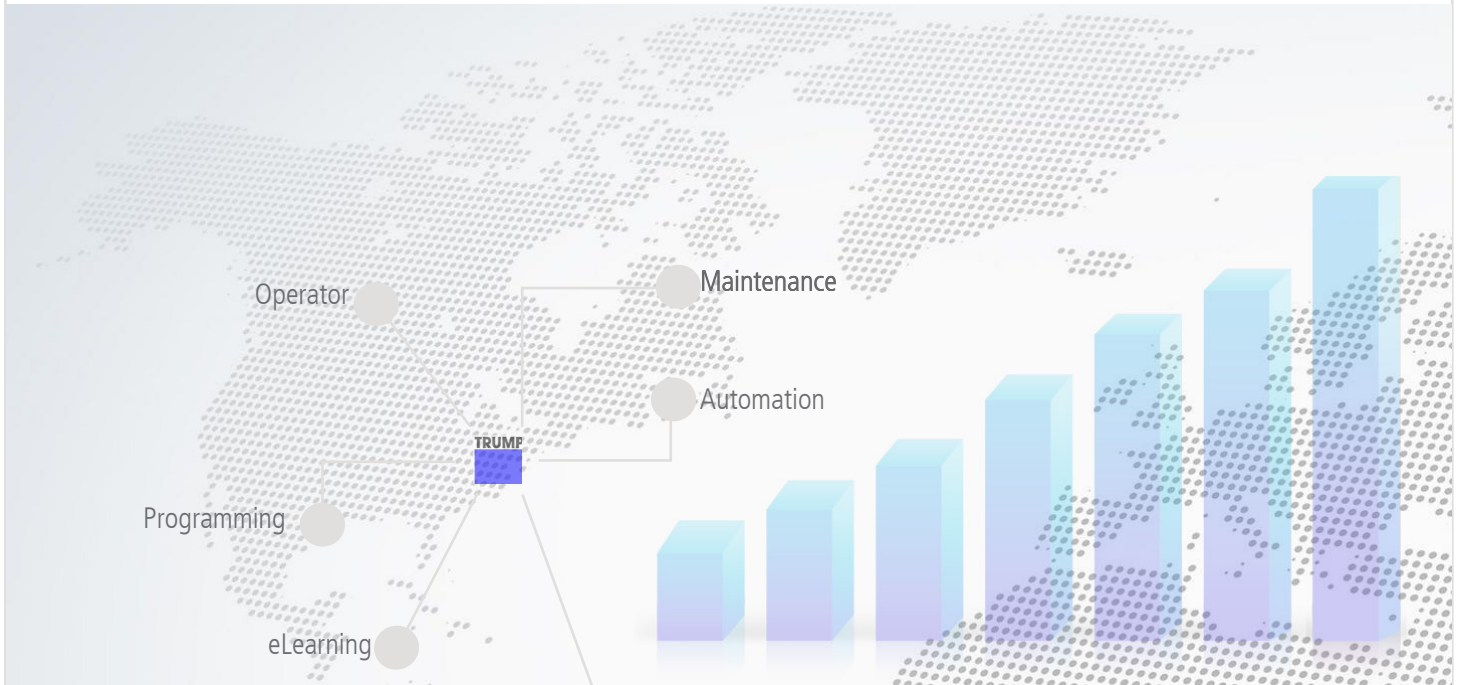
--Assistant Training Manager

The needs of the learner have evolved; accessibility, flexibility, increased retention, and just-in-time learning are requirements expressed by learners and there is no better learning platform available that meets those needs than E-learning.

--eLearning Team



Our Accomplishments



In 2017, we achieved these milestones:



Training Events

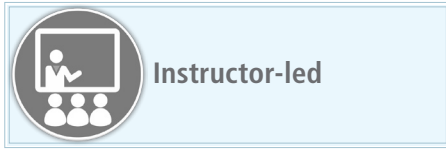


Participants Trained



Total CEUs Awarded

TRUMPF Training Overview



Instructor-led

Where and When

- TRUMPF Training Center
- Structured class sessions

How

- Training instructor

Instructional Material

- Printed course materials and handouts
- Multimedia presentations
- Instructor live demonstrations
- Instructor-guided hands-on practices
- Daily quizzes and reviews



Virtual Online

Where and When

- Customer's own learning environment
- Real-time/synchronous online learning
- Fixed course completion time and dates

How

- Course content delivered via web

Instructional Material

- Electronic course materials to download
- Audios, videos, simulations
- Virtual practices
- Quizzes and tests
- Chat/video-conferencing with instructor



Self-Paced Online

Where and When

- Customer's own learning environment
- Off-line/asynchronous online learning
- Indefinite course completion time

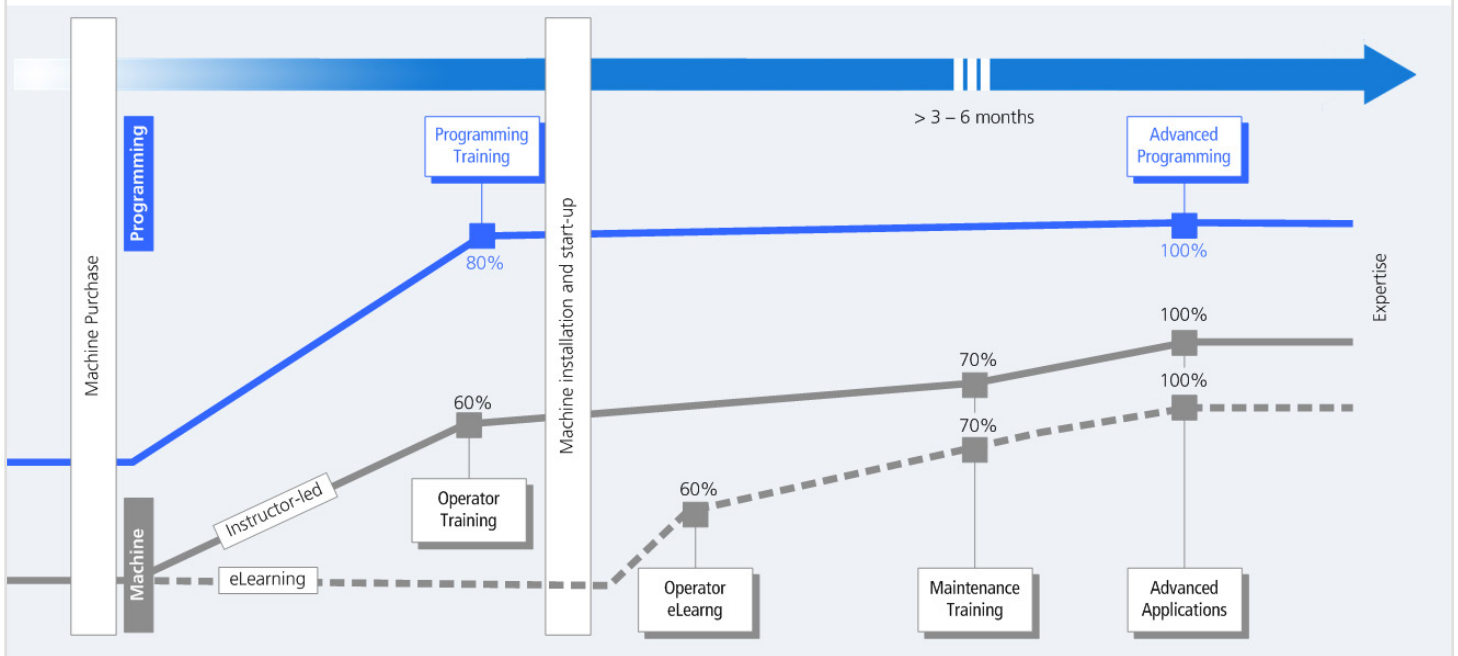
How

- Course content delivered via web

Instructional Material

- Electronic course materials to download
- Audios, videos, simulations
- Virtual practices
- Quizzes and tests

Road Map to Competency



With the purchase of your new TRUMPF machine(s), you cannot wait to run production and explore the endless applications they are capable of. To help you tap into the full potential of your machine, we have put together a multi-faceted training program. You cannot fully utilize your cutting-edge TRUMPF machine until you become familiarized with its functions and capabilities.

Above is the timeline that shows the different tracks and the sequence in which the training courses should be taken. With a bit of planning and coordination of these training events, you will not only be up-to-speed in learning the basics of your machine, with time you will also become a competent machine user to maximize your company's profitability.

List of Courses



Instructor-Led Courses

TruLaser

TruLaser 1030 - Operator
TruLaser 1030/2030 fiber - Operator
TruLaser 3030 Classic - Operator
TruLaser 3030 - Operator
TruLaser 3030 fiber - Operator
TruLaser 5030 fiber - Operator
TruLaser Tube 5000 fiber - Operator
TruLaser RotoLas - Operator
LiftMaster Compact with PartMaster - Operator (Basic)
TruStore - Operator (Basic)
LiftMaster Compact with PartMaster & TruStore- Operator
Advanced Laser Applications
TruLaser 1030 - Maintenance
TruLaser 1030/2030 fiber - Maintenance 2
TruLaser 3030 Classic - Maintenance 1
TruLaser 3030 Classic - Maintenance 2
TruLaser 3030 - Maintenance 1
TruLaser 3030 - Maintenance 2
TruLaser 3030/5030 fiber - Maintenance
TruLaser Tube 5000 fiber - Maintenance

TruPunch

TruPunch/TruMatic 1000 - Operator
TruPunch 1000/2000 - Operator
TruPunch 3000/5000 - Operator
TruPunch 5000 - Maintenance
TruPunch/TruMatic 1000 - Maintenance (spring, 2019)

TruBend

TruBend Series 5000 - Operator
TruBend Series 7000 - Operator
TruBend Series 5000 - Maintenance
Advanced Bending Applications

Programming

TruTops Laser - Programming
TruTops Tube and Tube Design - Programming
TruTops Bend - Programming
TruTops Boost Laser - Programming
TruTops Boost Punch - Programming
TruTops Boost Bend - Programming
TruTops Boost Design - Programming

Additional

Smart Glasses
Sheet Metal Design



Virtual/Synchronous Courses

TruLaser 1030 fiber - Operator
TruLaser 2030 fiber - Operator (new)
TruTops Boost Design - Programming
TruLaser 3030 fiber - Operator (fall, 2018)
TruLaser 5030 fiber - Operator (fall, 2018)



Self-Paced/Asynchronous Courses

TruTops Punch - Programming
TruTops Bend Inch - Programming (summer, 2018)
TruTops Laser Inch - Programming (fall, 2018)

Class Registration

Book Your Classes Online

We encourage you to book your class(es) directly on our website. You can browse for all courses including courses not listed in this catalog, their dates, pricing, and seating availability. Or, if you prefer, contact us by phone, email, or fax. Our Training Administrators will assist you every step of the way and make your enrollment as easy as possible.


https://www.mytrumpf.com/us_training


Enrollment Packet

Once we receive your registration form, we will send you a "Course Enrollment Packet." In the packet, you will find the prerequisite skills you need for different classes and what to bring to the class to make your training a successful experience. The packet also includes our company rules and our cancellation policy. Information such as hotel accommodations with special TRUMPF rates, car rentals, directions, and transportation and van services can also be found in the packet.

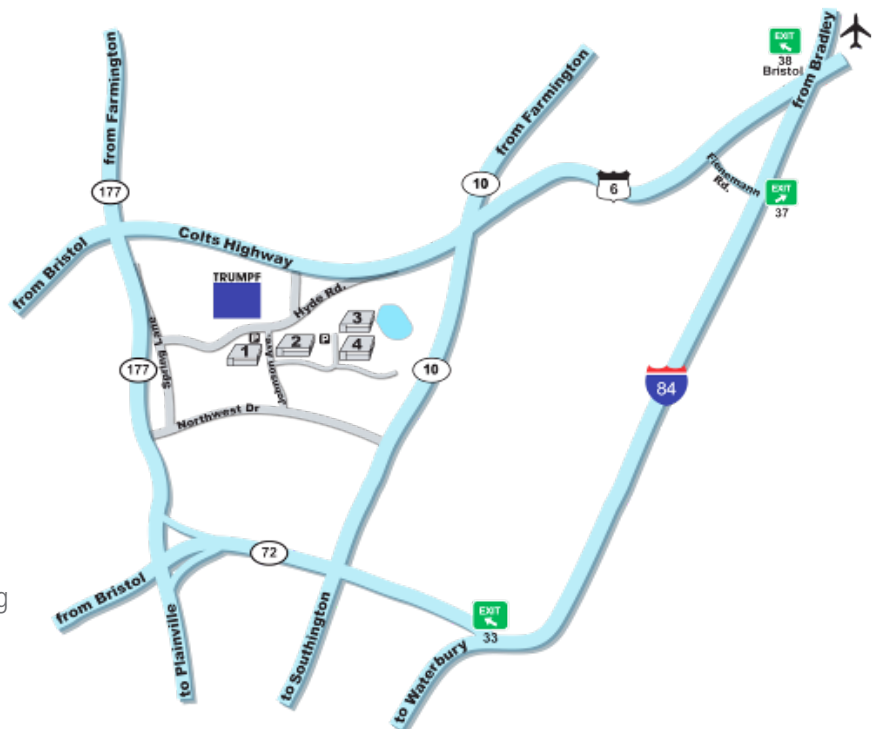
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Farmington, CT 06032

 training@us.trumpf.com

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 860-255-6079

 https://www.mytrumpf.com/us_training



TruLaser



TruLaser 1030

Operator



COURSE DESCRIPTION

The TruLaser 1030 Operator Course is intended for operators who have limited or no prior operating experience. The goal of this course is to provide students with essential technical and practical knowledge necessary to become a skilled operator. Upon completion of this course, students will possess the skills to operate the machine safely, utilize the HMI control panel, perform the operator's responsibilities, evaluate and improve cut quality, maximize machine cutting performance, and produce high-quality parts.

TARGET AUDIENCE

Machine operators

PREREQUISITES

Good mechanical aptitude, general knowledge of CNC control, and familiarity with measuring tools

COURSE DURATION

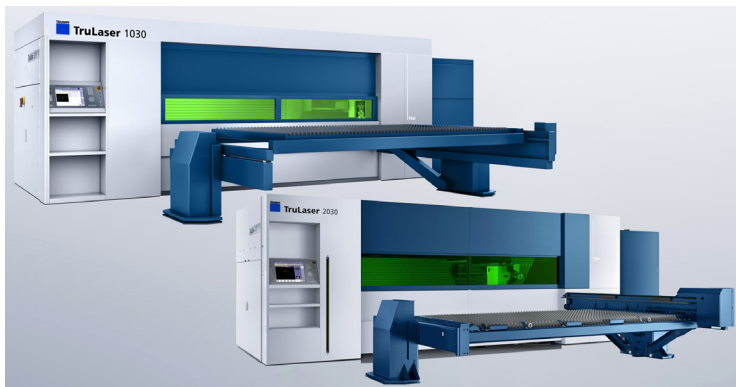
4 days

LEARNING OBJECTIVES

- Demonstrate safe laser work practices and operate the TruLaser 1030 in a safe manner
- Name major machine subassemblies and their functions
- Name various machine features and their functions
- Identify HMI operator interface components and function menus
- Perform machine start-up and shut-down operations
- Identify major components on the cutting head
- Remove, disassemble, and reassemble the cutting head
- Clean the cutting lens and perform maintenance on cutting head
- Perform nozzle alignment and focus test
- Maneuver the pallet changer, load material, measure sheet size, and set ZPO
- Import and manage part programs
- Process parts with Shop Floor Programming
- Modify technology tables
- Identify basic maintenance points
- Identify various parameters that impact on cut quality

COURSE AGENDA

- Overview of laser hazards and discuss safe laser work practices
- Discuss laser theories and TRUMPF laser design principles:
 - laser characteristics
 - laser cutting process
- Discuss major machine sub-assemblies and their functions
- Overview of machine features such as FocusLine, ControlLine, etc.
- Overview of HMI control panel components and interface
- Perform basic machine operations:
 - start up the machine
 - shut down the machine
- Overview of the cutting head:
 - components on the cutting head
 - remove and reassemble the cutting head
- Overview of operator's responsibilities:
 - clean the cutting lens
 - perform nozzle alignment
 - perform focus test
- Practice running production
- Overview of various cutting techniques
- Practice cutting techniques
- Overview of laser technology tables:
 - read and understand TC_Laser_ON statement
 - modify LTT parameters, restore to default values
 - create new LTTs, rename LTTs
- Introduction to part program management:
 - import/load a program from a different source
- Discuss how to apply Flexible-Entry to resume cutting
- Demonstrate how to create job lists
- Discuss variables that affect cut quality
- Review of preventive maintenance points
- Discuss most common cutting problems and solutions



TruLaser 1030/2030 fiber Operator

COURSE DESCRIPTION

The TruLaser 1030/2030 fiber Operator Course is intended for operators who have limited or no prior operating experience. The goal of this course is to provide students with essential technical and practical knowledge necessary to become a skilled operator. Upon completion of this course, students will possess the skills to operate the machine safely, utilize the HMI control panel, perform the operator's responsibilities, evaluate and improve cut quality, maximize machine cutting performance, and produce high-quality parts.

TARGET AUDIENCE

Machine operators

PREREQUISITES

Good mechanical aptitude, general knowledge of CNC control, and familiarity with measuring tools

COURSE DURATION

4 days

LEARNING OBJECTIVES

- Demonstrate safe laser work practices and operate the TruLaser 1030/2030 fiber machine in a safe manner
- Name major machine subassemblies and their functions
- Name various machine features and their functions
- Identify HMI operator interface components and function menus
- Perform machine start-up and shut-down operations
- Identify major components on the cutting unit
- Clean the protective glass
- Perform nozzle alignment and focus test
- Maneuver the pallet changer, load material, measure sheet size, and set ZPO
- Import and manage part programs
- Process parts with Shop Floor Programming
- Modify technology tables
- Identify basic maintenance points
- Identify various parameters that impact on cut quality

COURSE AGENDA

- Overview of laser hazards and discuss safe laser work practices
- Overview of laser hazards and discuss safe laser work practices
- Discuss laser theories and TRUMPF laser design principles:
 - laser characteristics
 - laser cutting process
- Discuss major machine sub-assemblies and their functions
- Overview of machine features such as FocusLine, ControlLine, etc.
- Overview of HMI control panel components and interface
- Perform basic machine operations:
 - start up the machine
 - shut down the machine
- Overview of the cutting unit:
 - components on the cutting unit
 - remove and reassemble the cartridge
- Overview of operator's responsibilities:
 - clean the protective glass
 - perform nozzle alignment
 - perform focus test
- Practice running production
- Overview of various cutting techniques
- Practice cutting techniques
- Overview of laser technology tables:
 - read and understand TC_Laser_ON statement
 - modify LTT parameters, restore to default values
 - create new LTTs, rename LTTs
- Introduction to part program management:
 - import/load a program from a different source
- Discuss how to apply Flexible-Entry to resume cutting
- Demonstrate how to create job lists
- Discuss variables that affect cut quality
- Review of preventive maintenance points
- Discuss most common cutting problems and solutions



For the virtual/synchronous online class:

- 1-hr virtual classroom (with an instructor) per day
- Self-paced, hands-on practices/assignments



TruLaser 3030 Classic

Operator



COURSE DESCRIPTION

The TruLaser 3030 Classic Operator Course is intended for operators who have limited or no prior operating experience. The goal of this course is to provide students with essential technical and practical knowledge necessary to become a skilled operator. Upon completion of this course, students will possess the skills to operate the machine safely, utilize the HMI control panel, perform the operator's responsibilities, evaluate and improve cut quality, maximize machine cutting performance, and produce high-quality parts.

TARGET AUDIENCE

Machine operators

PREREQUISITES

Good mechanical aptitude, general knowledge of CNC control, and familiarity with measuring tools

COURSE DURATION

4 days

LEARNING OBJECTIVES

- Demonstrate safe laser work practices and operate the TruLaser 3030 Classic machine in a safe manner
- Name major machine subassemblies and their functions
- Name various machine features and their functions
- Identify HMI operator interface components and function menus
- Perform machine start-up and shut-down operations
- Identify major components on the cutting head
- Remove, disassemble, and reassemble the cutting head
- Clean the cutting lens and perform maintenance on cutting head
- Perform nozzle alignment and focus test
- Maneuver the pallet changer, load material, measure sheet size, and set ZPO
- Import and manage part programs
- Process parts with Shop Floor Programming
- Modify technology tables
- Identify basic maintenance points
- Identify various parameters that impact on cut quality

COURSE AGENDA

- Overview of laser hazards and discuss safe laser work practices
- Discuss laser theories and TRUMPF laser design principles:
 - laser characteristics
 - laser cutting process
- Discuss major machine sub-assemblies and their functions
- Overview of machine features such as FocusLine, ControlLine, etc.
- Overview of HMI control panel components and interface
- Perform basic machine operations:
 - start up the machine
 - shut down the machine
- Overview of the cutting head:
 - components on the cutting head
 - remove and reassemble the cutting head
- Overview of operator's responsibilities:
 - clean the cutting lens
 - perform nozzle alignment
 - perform focus test
- Practice running production
- Overview of various cutting techniques
- Practice cutting techniques
- Overview of laser technology tables:
 - read and understand TC_Laser_ON statement
 - modify LTT parameters, restore to default values
 - create new LTTs, rename LTTs
- Introduction to part program management:
 - import/load a program from a different source
- Discuss how to apply Flexible-Entry to resume cutting
- Demonstrate how to create job lists
- Discuss variables that affect cut quality
- Review of preventive maintenance points
- Discuss most common cutting problems and solutions



TruLaser 3030

Operator

COURSE DESCRIPTION

The TruLaser 3030 Classic Operator Course is intended for operators who have limited or no prior operating experience. The goal of this course is to provide students with essential technical and practical knowledge necessary to become a skilled operator. Upon completion of this course, students will possess the skills to operate the machine safely, utilize the HMI control panel, perform the operator's responsibilities, evaluate and improve cut quality, maximize machine cutting performance, and produce high-quality parts.

TARGET AUDIENCE

Machine operators

PREREQUISITES

Good mechanical aptitude, general knowledge of CNC control, and familiarity with measuring tools

COURSE DURATION

4 days

LEARNING LEARNING OBJECTIVES

- Demonstrate safe laser work practices and operate the TruLaser 3030 machine in a safe manner
- Name major machine subassemblies and their functions
- Name various machine features and their functions
- Identify HMI operator interface components and function menus
- Perform machine start-up and shut-down operations
- Identify major components on the cutting head
- Remove, disassemble, and reassemble the cutting head
- Clean the cutting lens and perform maintenance on cutting head
- Perform nozzle alignment and focus test
- Maneuver the pallet changer, load material, measure sheet size, and set ZPO
- Import and manage part programs
- Process parts with Shop Floor Programming
- Modify technology tables
- Identify basic maintenance points
- Identify various parameters that impact on cut quality

COURSE AGENDA

- Overview of laser hazards and discuss safe laser work practices
- Discuss laser theories and TRUMPF laser design principles:
 - laser characteristics
 - laser cutting process
- Discuss major machine sub-assemblies and their functions
- Overview of machine features such as FocusLine, ControlLine, etc.
- Overview of HMI control panel components and interface
- Perform basic machine operations:
 - start up the machine
 - shut down the machine
- Overview of the cutting head:
 - components on the cutting head
 - remove and reassemble the cutting head
- Overview of operator's responsibilities:
 - clean the cutting lens
 - perform nozzle alignment
 - perform focus test
- Practice running production
- Overview of various cutting techniques
- Practice cutting techniques
- Overview of laser technology tables:
 - read and understand TC_Laser_ON statement
 - modify LTT parameters, restore to default values
 - create new LTTs, rename LTTs
- Introduction to part program management:
 - import/load a program from a different source
- Discuss how to apply Flexible-Entry to resume cutting
- Demonstrate how to create job lists
- Discuss variables that affect cut quality
- Review of preventive maintenance points
- Discuss most common cutting problems and solutions



TruLaser 3030 fiber

Operator



COURSE DESCRIPTION

The TruLaser 3030 fiber Operator Course is intended for operators who have limited or no prior operating experience. The goal of this course is to provide students with essential technical and practical knowledge necessary to become a skilled operator. Upon completion of this course, students will possess the skills to operate the machine safely, utilize the HMI control panel, perform the operator's responsibilities, evaluate and improve cut quality, maximize machine cutting performance, and produce high-quality parts.

TARGET AUDIENCE

Machine operators

PREREQUISITES

Good mechanical aptitude, general knowledge of CNC control, and familiarity with measuring tools

COURSE DURATION

4 days

LEARNING OBJECTIVES

- Demonstrate safe laser work practices and operate the TruLaser 3030 fiber machine in a safe manner
- Name major machine subassemblies and their functions
- Name various machine features and their functions
- Identify HMI operator interface components and function menus
- Perform machine start-up and shut-down operations
- Identify major components on the cutting unit
- Clean the protective glass
- Perform nozzle alignment and focus test
- Maneuver the pallet changer, load material, measure sheet size, and set ZPO
- Import and manage part programs
- Process parts with Shop Floor Programming
- Modify technology tables
- Identify basic maintenance points
- Identify various parameters that impact on cut quality

COURSE AGENDA

- Overview of laser hazards and discuss safe laser work practices
- Overview of laser hazards and discuss safe laser work practices
- Discuss laser theories and TRUMPF laser design principles:
 - laser characteristics
 - laser cutting process
- Discuss major machine sub-assemblies and their functions
- Overview of machine features such as FocusLine, ControlLine, etc.
- Overview of HMI control panel components and interface
- Perform basic machine operations:
 - start up the machine
 - shut down the machine
- Overview of the cutting unit:
 - components on the cutting unit
 - remove and reassemble the cartridge
- Overview of operator's responsibilities:
 - clean the protective glass
 - perform nozzle alignment
 - perform focus test
- Practice running production
- Overview of various cutting techniques
- Practice cutting techniques
- Overview of laser technology tables:
 - read and understand TC_Laser_ON statement
 - modify LTT parameters, restore to default values
 - create new LTTs, rename LTTs
- Introduction to part program management:
 - import/load a program from a different source
- Discuss how to apply Flexible-Entry to resume cutting
- Demonstrate how to create job lists
- Discuss variables that affect cut quality
- Review of basic maintenance points
- Discuss most common cutting problems and solutions



The virtual/synchronous online class:

- Available in fall, 2018



TruLaser 5030 fiber

Operator

COURSE DESCRIPTION

The TruLaser 5030 fiber Operator Course is intended for operators who have limited or no prior operating experience. The goal of this course is to provide students with essential technical and practical knowledge necessary to become a skilled operator. Upon completion of this course, students will possess the skills to operate the machine safely, utilize the HMI control panel, identify the operator's responsibilities, evaluate and improve cut quality, maximize machine cutting performance, and produce high-quality parts.

TARGET AUDIENCE

Machine operators

PREREQUISITES

Good mechanical aptitude, general knowledge of CNC control, and familiarity with measuring tools

COURSE DURATION

4 days

LEARNING OBJECTIVES

- Demonstrate safe laser work practices and operate the TruLaser 5030 fiber machine in a safe manner
- Name major machine subassemblies and their functions
- Name various machine features and their functions
- Identify HMI operator interface components and function menus
- Perform machine start-up and shut-down operations
- Identify major components on the cutting unit
- Clean the protective glass
- Perform nozzle alignment and focus test
- Maneuver the pallet changer, load material, measure sheet size, and set ZPO
- Import and manage part programs
- Process parts with Shop Floor Programming
- Modify technology tables
- Identify basic maintenance points
- Identify various parameters that impact on cut quality

COURSE AGENDA

- Overview of laser hazards and discuss safe laser work practices
- Overview of laser hazards and discuss safe laser work practices
- Discuss laser theories and TRUMPF laser design principles:
 - laser characteristics
 - laser cutting process
- Discuss major machine sub-assemblies and their functions
- Overview of machine features such as FocusLine, ControlLine, etc.
- Overview of HMI control panel components and interface
- Perform basic machine operations:
 - start up the machine
 - shut down the machine
- Overview of the cutting unit:
 - components on the cutting unit
 - remove and reassemble the cartridge
- Overview of operator's responsibilities:
 - clean the protective glass
 - perform nozzle alignment
 - perform focus test
- Practice running production
- Overview of various cutting techniques
- Practice cutting techniques
- Overview of laser technology tables:
 - read and understand TC_Laser_ON statement
 - modify LTT parameters, restore to default values
 - create new LTTs, rename LTTs
- Introduction to part program management:
 - import/load a program from a different source
- Discuss how to apply Flexible-Entry to resume cutting
- Demonstrate how to create job lists
- Discuss variables that affect cut quality
- Review of basic maintenance points
- Discuss most common cutting problems and solutions



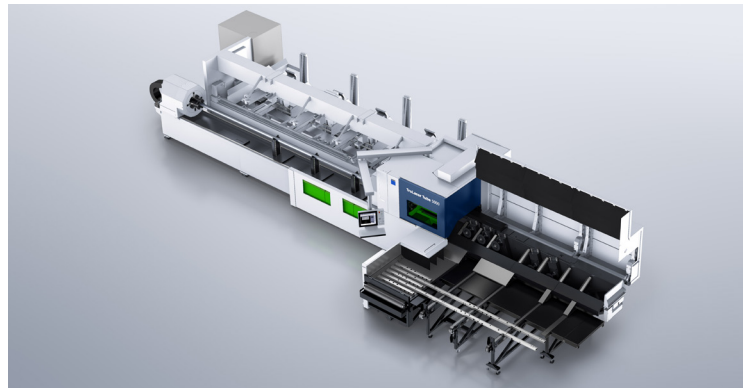
The virtual/synchronous online class:

- Available in fall, 2018



TruLaser Tube 5000 fiber

Operator



COURSE DESCRIPTION

The TruLaser Tube 5000 fiber Operator Course is intended for operators who have limited or no operating experience. The goal of this course is to provide students with essential technical and practical knowledge necessary to become a skilled operator. Students will obtain a working knowledge of cutting techniques and processing parameters. Upon completion of this course, students will possess the skills to operate the machine safely, manage/prepare part programs, manage stocks, modify tube layouts, evaluate and improve cut quality, maximize cutting performance, and produce high-quality parts.

TARGET AUDIENCE

Machine operators

PREREQUISITES

Good mechanical aptitude, general knowledge of CNC control, and familiarity with measuring tools

COURSE DURATION

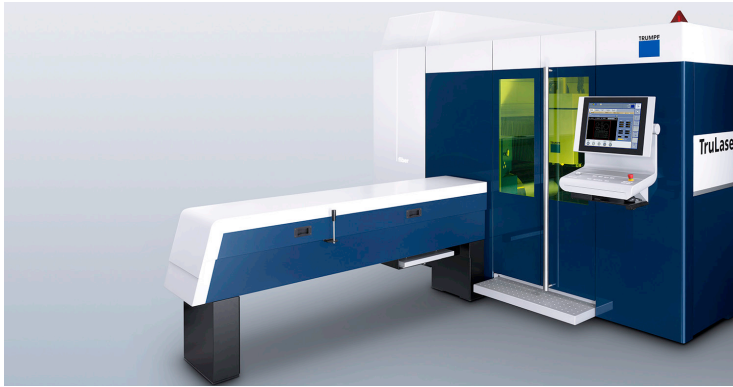
4.5 days

LEARNING OBJECTIVES

- Demonstrate safe laser work practices and operate the TruLaser Tube 5000 fiber in a safe manner
- Name major machine subassemblies and their functions
- Name various machine features and their functions
- Identify HMI operator interface components and function menus
- Perform machine start-up and shut-down operations
- Identify major components on the cutting unit
- Clean the protective glass and perform maintenance on cutting unit
- Perform nozzle alignment and focus test
- Import and manage program files
- Modify technology tables and prepare workpieces for production
- Manage and modify stock inventories
- Create, modify, export, import tube layouts
- Successfully generate production plans

COURSE AGENDA

- Overview of laser hazards and discuss safe laser work practices
- Discuss laser theories and TRUMPF laser design principles:
 - laser characteristics
 - laser cutting process
- Discuss major machine sub-assemblies and their functions
- Overview of machine features such as FocusLine, Controlline, etc.
- Overview of HMI control panel components and interface
- Perform basic machine operations:
 - start up the machine
 - shut down the machine
 - operate the loading and unloading unit
- Overview of the cutting unit:
 - components on the cutting unit
 - remove and reassemble the cartridge
- Overview of operator's responsibilities:
 - clean the protective glass
 - perform nozzle alignment
 - perform focus test
- Practice running production
- Overview of various cutting techniques
- Practice cutting techniques
- Introduction to laser technology tables:
 - read and understand TC_Laser_ON statement
 - modify LTT parameters, restore to default values
 - create new LTTs, rename LTTs
- Introduction to part program management:
 - import/load a program from a different source
- Overview stock inventories management
- Review tube layouts: create, modify, export, import
- Demonstrate how to create production plans
- Demonstrate how to use the LoadMaster (optional)
- Review of basic maintenance points
- Discuss most common cutting problems and solutions



TruLaser RotoLas

Operator with TruTops Tube Programming

COURSE DESCRIPTION

The TruLaser RotoLas Operator with TruTops Tube Programming course is intended for customers who already have experience running TRUMPF lasers and are ready to use their RotoLas option. The goal of the course is to provide students with essential technical and practical knowledge necessary to run RotoLas, draw parts using the TruTops Tube software, and produce satisfactory RotoLas parts. Students will obtain a working knowledge of tube cutting fundamentals and operation, and how to program with TruTops Tube. Upon completion of this course, students will possess the required skills to operate RotoLas in a safe manner, maximize tube material processing capabilities, and successfully produce tube parts.

TARGET AUDIENCE

Students attend in teams with 1 operator and 1 programmer

PREREQUISITES

TruLaser Operator and/or TruTops Laser Programming courses preferred. Familiarity with CAD drawings is a plus.

COURSE DURATION

4 days

LEARNING OBJECTIVES

- Identify RotoLas components
- Setup machine and run spatter guards, support disc, and shims
- Add and remove covers
- Reference the chuck and identify automatic chuck key functions
- Add and remove support arms and jaws for clamping
- Locate different positions of the chuck
- Create tube profiles and draw standard intersections
- Create and save GEOs, ROTs, RPFs, VLG, RMT, LST
- Create tool paths
- Import *.TEO from TubeDesign
- Modify contour approaches and withdraws, piercing, and tool path
- Create NC code
- Setup machine and run tube programs
- Identify basic maintenance points

COURSE AGENDA

- Overview of laser safety
- Discuss TRUMPF RotoLas theories and design
- Demonstrate and practice:
 - set-up the machine, remove pallets and covers, change clamping jaws
- Demonstrate how to cut shims, spatter guards, support discs, etc.
- Review table modification options for loading, clamping, etc.
- Discuss how to apply adapters and extensions to laser head
- Overview of loading support fixture and disc
- Overview of {Setup} functions to set manual NC stop, dead areas, home position, etc.
- Overview of TruTops Tube software interface, applications, components and their functions, and sequence
- Demonstrate and practice how to import and export files
- Overview of the {Drawing} Application: create drawings with for round, square, rectangular tubes
- Discuss different ways to use 3D viewer to review drawings
- Overview of file management: manage and save drawings (files)
- Discuss how to apply tube measure
- Demonstrate and practice how to create and edit tube profiles
- Demonstrate and practice how to draw standard intersections
- Demonstrate and practice how to create GEO, ROT, RPF, VLG, RMT, and LST
- Discuss different ways to create and modify tool path
- Overview of various technology applications:
 - processing strategies, processing extras
- Demonstrate and practice how to modify contour approaches and withdraws, and MicroJoints
- Discuss how to import *.TEO from TubeDesign
- Practice setting up the machine and running tube programs
- Practice tube cutting techniques
- Discuss various maintenance points



LiftMaster Compact with PartMaster

Operator (Basic)



COURSE DESCRIPTION

This half-day course is intended for customers with the LiftMaster Compact and the PartMaster options. Students will learn the critical knowledge and skills to use the LiftMaster and PartMaster for automatic production. The students will learn how to operate and cycle the conveyor system to maximize the unloading of parts and scrap material. Upon completion of this half-day course, students will be able to create production plans and inventories to run production fully automatic. The students will also learn how to modify suction cups and transport options as well as troubleshoot the most common mechanical problems associated with suction cups and loading mechanisms.

TARGET AUDIENCE

Machine operators

PREREQUISITES

TruLaser Operator Training Course

COURSE DURATION

0.5 day

LEARNING OBJECTIVES

- Follow safety guidelines and operate the LiftMaster Compact and the PartMaster in a safe manner
- Identify components on the LiftMaster Compact and PartMaster
- Switch the LiftMaster ON and OFF
- Create and execute production plans
- Create and change inventory
- Operate LiftMaster in manual, semi-automatic, and automatic modes
- Modify suction cups and transportation options
- Set up sheet loading options
- Modify incorrect material thickness
- Cycle the PartMaster conveyor system
- Unload parts and scrap incrementally with the PartMaster
- Reset E-Stop button
- Troubleshoot problems related to suction cups

COURSE AGENDA

- Overview of potential hazards and safety features
- Overview of LiftMaster Compact and PartMaster:
 - discuss technical data and specifications of the devices
 - discuss the control elements on the LiftMaster and PartMaster
- Perform basic operations:
 - switch the LiftMaster Compact ON and OFF
- Demonstrate and practice how to:
 - create and execute a production plan
 - create and change inventory
 - create and modify production options
- Discuss how to modify suction cup layouts
- Overview of sheet loading options and modifications
- Demonstrate operating the LiftMaster Compact in different modes:
 - manual mode
 - semi-automatic mode
 - automatic mode
- Demonstrate and practice sheet measuring
- Overview of automatic sheet separation function
- Review of PartMaster conveyor belt cycles:
 - singularly
 - concurrently (to maximize unloading)
 - incrementally
- Practice running LiftMaster Compact with the PartMaster
- Overview of basic maintenance points on the LiftMaster and PartMaster
- Demonstrate and practice how to reset the E-Stop
- Demonstrate and practice modifying incorrect material thickness



TruStore

Operator (Basic)



COURSE DESCRIPTION

This half-day course is intended for customers with the TruStore system. Students will learn the critical knowledge and skills to use the TruStore for automatic production. The students will learn how to create inventory on the Cell Server, identify storage locations, track stock/modify stock data, choose a transport method, and cycle the TruStore. Upon completion of this half-day course, students will be able to run production plans with the TruStore in fully automatic mode to maximize the unloading of parts and scrap materials.

TARGET AUDIENCE

Machine operators

PREREQUISITES

TruLaser Operator Training Course

COURSE DURATION

0.5 day

LEARNING OBJECTIVES

- Follow safety guidelines and operate the TruStore in a safe manner
- Identify components and specifications of the TruStore
- Switch the TruStore ON and Off and select the desired mode for operation
- Identify all control elements and their functions
- Automate the transport system pallets to/from storage
- Manually position the axes of the picker crane
- Manually move the pallet picker crane to the maintenance position
- Move the front storage/transfer cart with the lift axis
- Move system pallet to the front storage/transfer cart
- Start and exit the Cell Server
- Create, modify, and delete stock
- Specify storage location, pallet data, and stock data
- Place and/or retrieve stock to/from storage
- Check alarms with the {Diagnostics} function

COURSE AGENDA

- Overview of potential hazards and safety features
- Overview of the TruStore components:
 - discuss technical data and specifications of the TruStore
 - discuss the control elements on the TruStore pedestal
- Perform basic operations:
 - switch the TruStore ON and OFF
- Demonstrate how to perform manual and automatic pallet transport using the picker crane and loading cart
 - automate the transport system pallets to/from storage
 - move the front storage/transfer cart with lift axis
- Overview of the Cell Server:
 - discuss the components on the Cell Server interface
 - operate the Storage Manager software
 - prepare pallet and stock data using the Storage Manager
 - Load inventory into the TruStore
 - Create and modify stock options
- Demonstrate and practice how to:
 - Create a production plan
 - Verify and modify the production options with Technology Correction
 - Operate the TruStore in automatic mode
- Demonstrate and practice how to reset the E-stop
- Prepare TruStore for day and lights-out production
- Overview of basic maintenance points on the TruStore
- Demonstrate how to check alarms with the {Diagnostics} function
- Troubleshoot common TruStore problems



LiftMaster Compact with PartMaster & TruStore

Operator (Advanced)

COURSE DESCRIPTION

This course is intended for customers with the LiftMaster Compact PartMaster, and TruStore options. Students will learn the critical knowledge and skills to use the LiftMaster, PartMaster, and the storage for automatic production. Upon completion of this course, students will be able to create production plans, packages, and manage stock inventory for fully automated production. The students will also learn how to modify transport options to maximize the loading and unloading process as well as troubleshoot the most common problems associated with suction cups and loading mechanisms.

TARGET AUDIENCE

Machine operators

PREREQUISITES

TruLaser Operator Training Course

COURSE DURATION

3 days

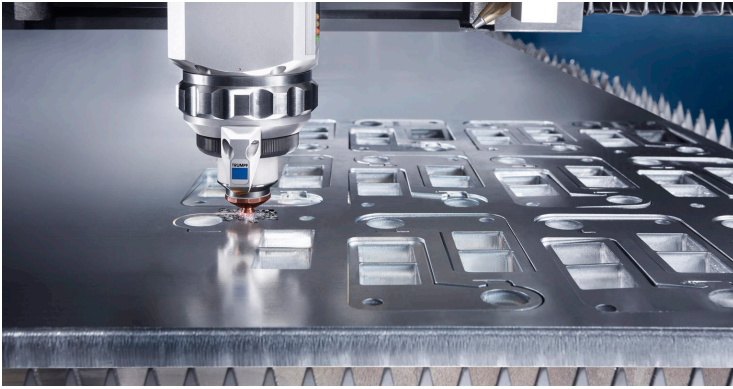


LEARNING OBJECTIVES

- Follow safety guidelines and operate the automation system in a safe manner
- Identify components on each of the individual automation devices
- Switch each automation devices ON and OFF
- Identify control elements on the TruStore panel
- Create and execute production plans
- Operate LiftMaster in manual, semi-automatic and automatic mode
- Modify suction cups and set up sheet loading options
- Use the Cell Server to create, modify, and delete stock
- Specify storage location, pallet data, and stock data
- Place and/or retrieve stock to/from storage
- Cycle PartMaster conveyor system
- Unload parts and scrap incrementally with the PartMaster
- Modify incorrect material thickness
- Reset E-Stop button
- Troubleshoot problems related to suction cups

COURSE AGENDA

- Overview of potential hazards and safety features
- Overview of LiftMaster Compact, TruStore, and PartMaster
 - discuss technical data and specifications
 - discuss the control elements
- Perform basic operations:
 - switch the TruStore ON and OFF
 - switch the LiftMaster Compact ON and OFF
- Demonstrate and practice how to:
 - create and execute production plan
 - create and change inventory
 - create and modify production options
- Discuss how to modify suction cup layouts and sheet loading options
- Demonstrate operating the LiftMaster Compact in different modes:
 - manual mode
 - semi-automatic mode
 - automatic mode
- Demonstrate how to perform manual and automatic pallet transport using the picker crane and loading cart
- Overview of the Cell Server:
 - discuss the components on the Cell Server interface
 - prepare pallet and stock data using the storage manager
- Demonstrate and practice how to:
 - Create a production plan with Technology Correction
 - Operate the TruStore in automatic mode
- Discuss automatic sheet separation function and practice modifying incorrect material thickness
- Review of PartMaster conveyor belt cycles:
 - singularly
 - concurrently (to maximize unloading)
 - incrementally
- Prepare TruStore for day - and lights out production
- Overview of basic maintenance points
- Demonstrate and practice how to reset the E-stop
- Troubleshoot common mechanical problems



Advanced Laser Applications

COURSE DESCRIPTION

The Advanced Laser Applications Course is designed for the maximization of state-of-the-art cutting technologies in TRUMPF TruLaser machines. It is intended for customers who are experienced with TRUMPF TruLaser machines. Students will gain in-depth as well as comprehensive knowledge about different types of materials, different types of cutting gases, latest cutting technologies, and programming capabilities. Students will be able to customize their newly acquired knowledge specifically to their machines, increasing productivity. Upon completion of the course, students will be able to maximize TRUMPF TruLaser machine processing capabilities, flexibility, and performance to achieve high-quality parts.

TARGET AUDIENCE

Operators experienced in operating TRUMPF TruLaser machines, and/or programmers with experience in using the TruTops Laser software

PREREQUISITES

TruLaser operator and/or TruTops Boost Laser programming courses

COURSE DURATION

2 days

LEARNING OBJECTIVES

Learning objectives for this course are based on the customers' needs and requirements

COURSE AGENDA

- Overview of laser safety
- Overview of laser fundamentals:
 - laser nomenclature
 - laser fundamentals: beam, source, medium
- Overview of different types of laser cutting
- Overview of TRUMPF laser theories and design:
 - RF excitation theory and principles
 - coax laser theory and principles
 - disk laser theory and principles
- Overview of variables affecting laser cutting
- Discuss various cutting methods and techniques
- Overview of technology tables and processing parameters:
 - laser parameters
 - machine parameters
 - workpiece parameters
 - cutting parameters
 - piercing parameters
- Overview of laser power control:
 - overview of ramp cycles
 - modify and/or create new ramp cycles
- Discuss different ways to cut special materials:
 - brass
 - copper
 - customer's special materials
- Discuss how to assess cut quality
- Overview of advanced cutting, programming, and application techniques



TruLaser 1030

Maintenance



COURSE DESCRIPTION

The TruLaser 1030 Maintenance Course is intended for customer maintenance and/or service personnel. The goal of this course is to provide students with essential knowledge and skills to successfully perform maintenance on the laser system and the machine, including the cutting head, optics, Lanny Valve, cooling water circuit, pneumatic panel, pallet changer, catcher, and compact dust extractor. Students will also be able to verify beam positions and obtain baseline power data. Upon completion of the course, students will be able to maintain their machines and troubleshoot common machine problems with schematics.

TARGET AUDIENCE

Personnel with maintenance responsibility

PREREQUISITES

Basic on-the-job laser/electrical maintenance experience

COURSE DURATION

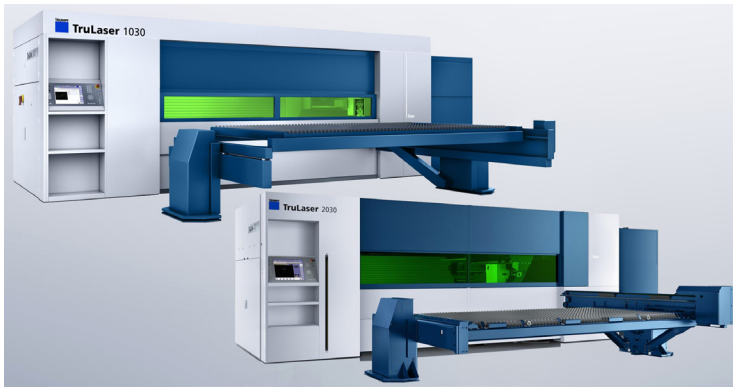
4 days

LEARNING OBJECTIVES

- Identify potential laser and electrical hazards during maintenance
- Identify control components on the HMI
- Remove and clean the cutting head
- Perform tape shot (nozzle alignment) and focus test
- Identify external optics and clean them
- Perform maintenance on the Lanny Valve and identify error LEDs
- Verify beam positions
- Obtain baseline power data with the Primes Pocket Monitor
- Identify maintenance tasks for the cooling water circuit, pneumatic panel, and the dust extractor
- Reset pallet homing position, check chain tension, and reset the index sensors
- Perform maintenance on the catcher
- Read TRUMPF schematics for troubleshooting purposes

COURSE AGENDA

- Overview of laser hazards and discuss safe laser work practices
- Overview of electrical hazards and safe electrical work practices
- Overview of machine layout, machines sub-assemblies
- Discuss machine standard features/special options
- Discuss TRUMPF laser and TruCoax resonator design theory
- Overview of control elements on the HMI
- Perform basic machine operations:
 - starting up and shutting down the machine
 - jog axes with 3 different methods
- Discuss the {Setup} function menu for maintenance tasks
- Review of maintenance tasks on the cutting head:
 - remove and clean the cutting lens
 - perform tape shot
 - perform and evaluate focus test
- Review of maintenance tasks on the optics:
 - clean the external optics
 - clean the FocusLine filter
- Review of maintenance tasks on the Lanny Valve:
 - check Lanny Valve condition on the HMI
 - replace the Lanny Valve
 - clean the filter screens
- Discuss how to verify beam positions
- Demonstrate how to obtain baseline power data with the Primes Pocket Monitor
- Review of maintenance points on the chiller unit, pneumatic panel, and the dust extractor
- Overview of maintenance points the pallet changer:
 - reset pallet homing position
 - check pallet chain tension
 - replace/adjust pallet index sensors
- Review of maintenance tasks for the catcher
- Discuss most common machine problems and solutions
 - {Diagnostics} function menu
 - how to read an error message
 - how to read TRUMPF schematics
 - create MIO files



TruLaser 1030/2030 fiber

Maintenance

COURSE DESCRIPTION

The TruLaser 1030/203 fiber Maintenance Course is intended for customer maintenance and/or service personnel. The goal of this course is to provide students with essential knowledge and skills to successfully perform maintenance on the laser system and the machine, including the cutting unit, Lanny Valve, cooling water circuit, pneumatic panel, pallet changer, catcher, and compact dust extractor. Students will also be able to verify beam quality and obtain baseline power. Upon completion of the course, the students will be able to maintain their machines and troubleshoot common machine problems with schematics.

TARGET AUDIENCE

Personnel with maintenance responsibility

PREREQUISITES

Basic on-the-job laser/electrical maintenance experience

COURSE DURATION

3.5 days

LEARNING OBJECTIVES

- Identify potential laser and electrical hazards during maintenance
- Identify control components on the HMI
- Remove, inspect, and replace the cutting unit
- Remove and clean the protective glass
- Perform tape shot (nozzle alignment) and focus test
- Perform maintenance on the Lanny Valve and identify error LEDs
- Verify beam quality
- Identify maintenance tasks for the cooling water circuit, pneumatic panel, and the dust extractor
- Reset pallet homing position, check chain tension, and reset the index sensors
- Perform maintenance on the catcher, slat replacement, and cutting sheet stops
- Read TRUMPF schematics for troubleshooting purpose

COURSE AGENDA

- Overview of laser and electrical hazards and safe work practices
- Overview of machine layout, machines sub-assemblies
- Discuss machine standard features/special options
- Discuss TRUMPF laser and TruDisk resonator design theory
- Overview of control elements on the HMI
- Perform basic machine operations
- Discuss the {Setup} function menu for maintenance tasks
- Review of maintenance tasks on the cutting unit:
 - remove and clean the protective glass
 - perform tape shot
 - perform and evaluate focus test
- Overview of laser air cleaner maintenance, removal, and replacement
- Review of maintenance tasks on the Lanny Valve:
 - check Lanny Valve condition on the HMI
 - replace the Lanny Valve
 - clean the filter screens
- Discuss how to verify beam quality
- Review of maintenance points on the chiller unit, pneumatic panel, and the dust extractor
- Overview of maintenance points the pallet changer:
 - reset pallet homing position
 - check pallet chain tension
 - replace/adjust pallet index sensors
- Discuss energy chain inspection and maintenance
- Discuss axis guide rail cleaning and lubrication maintenance
- Review of maintenance tasks on the catcher, slats (replacement), and cutting sheet stops
- Review of light barrier maintenance and alignment
- Discuss most common machine problems and solutions:
 - {Diagnostics} function menu
 - how to read an error message
 - how to read TRUMPF schematics
 - create MIO files



TruLaser 3030 Classic

Maintenance - 1



COURSE DESCRIPTION

TruLaser 3030 Classic Maintenance 1 is the first course in TRUMPF's two-part *Maintenance Training* course series. This course focuses on the laser system and the optics. The goal of this course is to provide students with knowledge and skills to carry out proper maintenance tasks on the laser system, including cleaning internal and external optics, beam delivery alignment, and other key maintenance points. Students are also expected to learn basic troubleshooting techniques and strategies to quickly identify laser-related problems in order to reduce machine down time to a minimum. (*This course is intended for older classic TruLaser models with similar controls.)

TARGET AUDIENCE

Personnel with maintenance responsibility

PREREQUISITES

TruLaser 3030 Operator Course, or on-the-job laser/electrical maintenance experience

COURSE DURATION

4.5 days

LEARNING OBJECTIVES

- Identify potential laser and electrical hazards during maintenance
- Demonstrate safe laser and electrical work practices when performing maintenance on TruLaser 3030 machines
- Discuss laser theory and the design of the resonator
- Identify MMC controls and manual switch elements
- Perform standard start-up, warm-up, and shut-down procedures
- Perform basic maintenance on the cutting head
- Perform beam alignment
- Perform mode shots and evaluate mode shot quality
- Collect baseline power data
- Perform maintenance on resonator optics and discharge tubes
- Perform laser gas leak test inside the resonator
- Identify all maintenance tasks as scheduled
- Identify machine, program, material, and cutting head parameters
- Troubleshoot laser system-related problems

COURSE AGENDA

- Overview of laser and electrical hazards
- Discuss safe laser and electrical work practices
- Introduction to TRUMPF laser principles and design:
 - laser beam characteristics
 - RF excitation theory
 - resonator theory and design
 - the cutting process
- Introduction to MMC controls and switch elements
- Perform basic machine operations:
 - start up the machine
 - shut down the machine
 - warm up the laser
- Discuss the {Setup} function menu for maintenance tasks
- Review of maintenance tasks on the cutting head:
 - remove and clean the cutting lens
 - perform tape shot
 - perform and evaluate focus test
 - reset lens error
- Overview of resonator internal optics:
 - clean internal optics
 - replace internal optics
- Introduction to resonator discharge tubes:
 - perform a leak test
 - practice replacement procedures
- Mode quality evaluation shots at the cutting head including four-corner cross-hair shots (alignment)
- Introduction to beam alignment:
 - demonstrate safe work practices
 - perform beam alignment procedure
- Collect baseline laser power data with Primes Pocket Monitor
- Review of additional maintenance points
- Overview of machine, beam, material, processing-related parameters and their impact on cut quality
- Discuss most common machine problems and solutions



TruLaser 3030 Classic

Maintenance - 2

COURSE DESCRIPTION

TruLaser 3030 Classic Maintenance 2 is the second part in TRUMPF's two-part *Maintenance Training* course series. This course focuses on maintenance tasks related to mechanical components such as the RF generator, TASC controller, modular cabinets, Controlline, pallet changer, and the safety circuit. The goal of this course is to provide students with essential knowledge and skills to carry out proper maintenance to ensure fault-free machine operation. Upon completion of this course, students will be able to perform all required maintenance tasks on the machine and troubleshoot common machine-related problems with schematics. (*This course is intended for older classic TruLaser models with similar controls.)

TARGET AUDIENCE

Personnel with maintenance responsibility

PREREQUISITES

TruLaser 3030 Maintenance - 1 Training Course

COURSE DURATION

4.5 days

LEARNING OBJECTIVES

- Identify potential electrical and RF hazards during maintenance
- Demonstrate safe electrical and RF work practices when performing maintenance on TruLaser 3030 machines
- Perform maintenance on the RF cabinet and troubleshoot RF generator-related faults
- Perform maintenance inside the gas cabinet
- Explain the TASC and its role in laser control and troubleshoot TASC controller faults
- Troubleshoot BOSCH I/O module-related faults
- Identify Controlline functions and troubleshoot Controlline errors
- Perform maintenance on the pallet changer and troubleshoot pallet changer faults with schematics
- Identify TRUMPF schematic symbols and read schematics
- Troubleshoot safety circuit with schematics
- Troubleshoot common machine problems with schematics

COURSE AGENDA

- Overview of electrical and RF hazards
- Discuss safe electrical and RF work practices
- Introduction to RF cabinet:
 - discuss RF theory
 - discuss the functions and characteristics of individual RF sub-assemblies
 - review of maintenance tasks in the RF sub-assemblies
 - calibrate RF characteristic curves
 - troubleshoot RF generator faults with error list
- Perform basic maintenance on the gas and vacuum system:
 - set pressure on the pilot dome regulator
 - determine and adjust gas exchange duty cycles
- Overview of the TASC controller:
 - explain the role of TASC in the laser control
 - analyze the functions of various circuit boards
 - troubleshoot TASC controller faults by means of error list
- Introduction to BOSCH I/O module
- Discuss Controlline functions and common faults
- Introduction to schematics:
 - identify TRUMPF schematic symbols
 - identify major sections in TRUMPF schematics
 - practice tracing signals using the schematics
- Overview of pallet changer:
 - operate the pallet changer
 - identify components on the pallet changer
 - perform maintenance on the pallet changer
 - troubleshoot pallet changer faults with schematics
- Introduction to safety circuit and troubleshoot safety circuit faults with schematics
- Discuss most common machine problems and solutions



TruLaser 3030

Maintenance - 1



COURSE DESCRIPTION

TruLaser 3030 Maintenance 1 is the first course in TRUMPF's two-part *Maintenance Training* course series. This course focuses on the laser system and the optics. The goal of this course is to provide students with knowledge and skills to carry out proper maintenance tasks on the laser system, including cleaning internal and external optics, beam delivery alignment, and other key preventive maintenance points. Students are also expected to learn basic troubleshooting techniques and strategies to quickly identify laser-related problems and reduce machine down time to a minimum.

TARGET AUDIENCE

Personnel with maintenance responsibility

PREREQUISITES

TruLaser 3030 (L20) Operator Course, or on-the-job laser/electrical maintenance experience

COURSE DURATION

4.5 days

LEARNING OBJECTIVES

- Identify potential laser and electrical hazards during maintenance
- Demonstrate safe laser and electrical work practices when performing maintenance on TruLaser 3030 (L20) machines
- Identify major machine sub-assemblies
- Discuss laser theory and the design of the resonator
- Identify HMI control components and function menus
- Perform standard start-up, warm-up, and shut-down procedures
- Perform basic maintenance on the cutting head
- Perform mode shots and evaluate mode shot quality
- Collect baseline power data
- Perform mode adjustments
- Perform maintenance on external optics
- Perform additional maintenance tasks as scheduled

COURSE AGENDA

- Overview of laser and electrical hazards
- Discuss safe laser and electrical work practices
- Identify machine layout and sub-assemblies
- Overview of machine features such as automatic nozzle changer, Controlline, FlyLine, SprintLine, PierceLine, LensLine, etc.
- Introduction to TRUMPF laser principles and design:
 - laser beam characteristics
 - RF excitation theory
 - resonator theory and design
 - the cutting process
- Overview of HMI control elements and function menus
- Perform basic machine operations:
 - start up the machine
 - shut down the machine
 - warm up the laser
- Discuss the {Setup} function menu for maintenance tasks
- Overview of maintenance tasks on the cutting head:
 - identify components on the cutting head
 - remove and install the cutting head
 - clean the focus lens
 - perform nozzle alignment
 - perform and evaluate focus test
 - reset lens error
- Check mode at the cutting head and 4 corners
- Collect baseline laser power data with Primes Pocket Monitor
- Demonstrate mode adjustments including pre- and final adjustments
- Demonstrate cleaning the external mirrors
- Demonstrate aligning the beam path in the work area
- Review of additional maintenance points
- Discuss most common machine problems and solutions



TruLaser 3030

Maintenance - 2

COURSE DESCRIPTION

TruLaser 3030 Maintenance 2 is the second part in TRUMPF's two-part *Maintenance Training* course series. This course focuses on maintenance tasks related to mechanical components such as the RF generator, TASC controller, modular cabinets, Controlline, bus systems, Gateway module, and pallet changer. The goal of this course is to provide students with essential knowledge and skills to carry out proper maintenance to ensure fault-free machine operation. Upon completion of this course, students will be able to perform all required maintenance tasks on the machine and troubleshoot common machine-related problems with schematics.

TARGET AUDIENCE

Personnel with maintenance responsibility

PREREQUISITES

TruLaser 3030 (L20) Maintenance - 1 Training Course

COURSE DURATION

4.5 days

LEARNING OBJECTIVES

- Identify potential electrical and RF hazards during maintenance
- Demonstrate safe electrical and RF work practices when performing maintenance on TruLaser 3030 (L20) machines
- Perform maintenance inside the gas cabinet
- Diagnose frequency converter related problems.
- Perform maintenance on the RF cabinet and troubleshoot RF generator-related faults
- Explain the TASC and its role in laser control and troubleshoot TASC controller faults
- Identify TRUMPF schematic symbols and read schematics
- Troubleshoot common machine problems with schematics
- Identify Controlline functions and troubleshoot Controlline errors
- Perform maintenance on the pallet changer and troubleshoot pallet changer faults with schematics

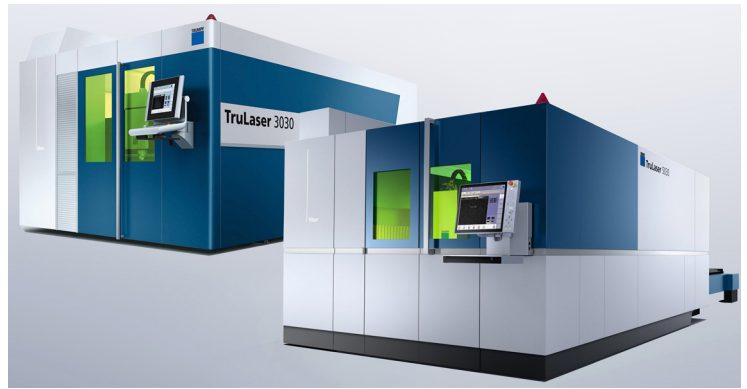
COURSE AGENDA

- Overview of electrical and RF hazards
- Discuss safe electrical and RF work practices
- Perform basic maintenance on the gas and vacuum system:
 - set pressure on the pilot dome regulator
 - determine and adjust gas exchange duty cycles
- Introduction to RF cabinet:
 - discuss RF theory
 - discuss the functions and characteristics of individual RF sub-assemblies
 - review of maintenance tasks in the RF sub-assemblies
 - calibrate RF characteristic curves
 - troubleshoot RF generator faults with error list
- Overview of the TASC controller:
 - explain the role of TASC in the laser control
 - analyze the functions of various circuit boards
 - troubleshoot TASC controller faults by means of error list
- Overview of layout and components inside the modular cabinet
- Introduction to the bus systems, including TRUMPF bus, ProfiBus, and ASI bus
- Review of maintenance tasks on the Gateway module
- Introduction to TRUMPF schematics:
 - identify schematic symbols
 - identify major sections in TRUMPF schematic manual(s)
 - practice tracing signals using the schematics manual(s)
- Discuss Controlline functions and common faults
- Overview of the pallet changer:
 - operate the pallet changer
 - identify components on the pallet changer
 - perform maintenance on the pallet changer
 - troubleshoot pallet changer faults with schematics
- Discuss most common machine problems and solutions



TruLaser 3030/5030 fiber

Maintenance



COURSE DESCRIPTION

The TruLaser 3030/5030 fiber Maintenance Course is intended for customer maintenance and/or service personnel. The goal of this course is to provide students with the essential knowledge and skills required to successfully perform diagnostics on the TruDisk generator including replacing the power supply, perform maintenance on the cutting unit, the nozzle changer, the pallet changer as well as the lubrication, cooling, and dust extracting systems. Upon completion of the course, students will be able to diagnose and troubleshoot common machine- and laser-related problems.

TARGET AUDIENCE

Personnel with maintenance responsibility

PREREQUISITES

Basic on-the-job laser/electrical maintenance experience

COURSE DURATION

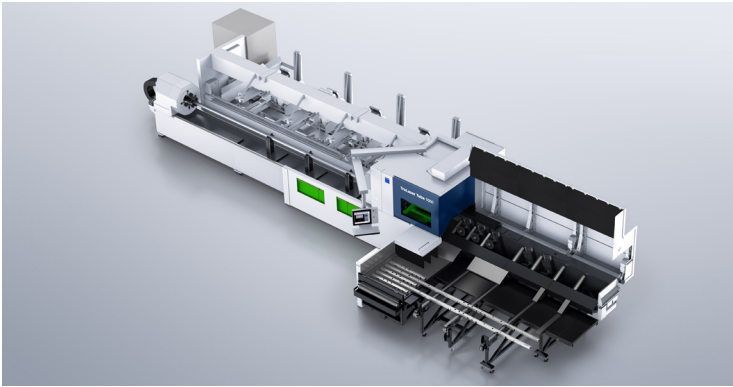
4 days

LEARNING OBJECTIVES

- Identify potential laser and electrical hazards during maintenance
- Discuss TRUMPF solid-state laser theory and design
- Identify and use the control components on the HMI
- Identify components on the cutting unit
- Remove the cutting unit, inspect and clean the protective glass
- Perform tape shot (beam-nozzle alignment) and focus test
- Perform nozzle changer calibration and routine maintenance
- Check and refill/replace lubrication fluids according to schedules
- Check and replace filters for the air and gas systems
- Check laser functions and water conductivity levels through the TruControl laser interface
- Troubleshoot pallet changer related faults, and perform preventive maintenance tasks on the pallet changer
- Read TRUMPF schematics for troubleshooting purposes

COURSE AGENDA

- Discuss beam hazards specific to solid-state lasers
- Overview of machine layout and major sub-assemblies
- Overview of machine standard devices and optional features
- Discuss TRUMPF solid-state laser theory
- Overview of control elements on the HMI
- Perform basic machine operations
- Discuss the [Setup] function menu for maintenance tasks
- Demonstrate and practice maintenance tasks on the cutting unit:
 - remove and install the cutting unit
 - clean the protective glass
 - perform nozzle alignment
 - perform and evaluate focus test
- Demonstrate maintenance and calibration on the DetectLine
- Demonstrate how to align and calibrate the nozzle changer
- Discuss diagnostics of the TruDisk generator:
 - overview of TruControl software program and functions
 - various preventive maintenance points in the TruDisk
- Overview of the lubrication system:
 - central lubrication; for motion unit and bearings
 - inspect and clean drive component
 - inspect conveyor belt lube reservoir, tubing, brush lube ports
 - sheet surface spray (optional)
- Discuss and demonstrate maintenance on the pallet changer:
 - hydraulic system, oil pump, hoses, filters
 - chain tension, replacement and lubrication
 - slat cleaning and replacement
- Discuss maintenance points on the LiftMaster Compact
- Review of maintenance tasks of the compact dust extractor
- Review of electrical and control system troubleshooting:
 - error diagnostics on the HMI
 - laser cutting parameters and problems
 - Gateway module I/O system
 - electrical schematics reading
- Discuss most common machine problems and solutions



TruLaser Tube 5000 fiber

Maintenance

COURSE DESCRIPTION

The TruLaser Tube 5000 fiber Maintenance Course is intended for customer maintenance and/or service personnel. The goal of this course is to provide students with the essential knowledge and skills required to successfully perform diagnostics on the TruDisk generator including replacing the pump module, maintenance on the cutting unit, the chuck, the clamps, the LoadMaster, various machine axes as well as the pneumatic systems. Upon completion of the course, students will be able to diagnose and troubleshoot common machine- and laser-related problems.

TARGET AUDIENCE

Personnel with maintenance responsibility

PREREQUISITES

Basic on-the-job laser/electrical maintenance experience

COURSE DURATION

4.5 days

LEARNING OBJECTIVES

- Identify potential laser and electrical hazards during maintenance
- Discuss TRUMPF solid-state laser theory and design
- Remove the cutting head, inspect and clean the cutting lens
- Perform tape shot (beam-nozzle alignment) and focus test
- Perform basic maintenance on the LoadMaster
- Troubleshoot sensor problems on the LoadMaster with schematics
- Check machine axes initialization
- Perform basic adjustments on machine axes
- Perform basic maintenance on the clamping chuck and the chuck sensor. Adjust and set chuck concentricity
- Perform adjustment on the E-Stop cams
- Perform basic maintenance on the pneumatic cylinder and clamp gripper stopper
- Check initialization on the U- and the W-axes
- Perform basic maintenance on the light barrier for the unloader
- Check and refill/replace lubrication fluids according to schedules
- Read TRUMPF schematics for troubleshooting purposes

COURSE AGENDA

- Discuss beam hazards specific to solid-state lasers
- Overview of machine layout and major sub-assemblies
- Discuss TRUMPF solid-state laser theory
- Perform basic machine operations
- Discuss the {Setup} function menu for maintenance tasks
- Review of maintenance tasks on the cutting head:
 - remove and clean the lens
 - perform tape shot
 - perform and evaluate focus test
- Discuss diagnostics of the TruDisk generator
- Discuss and demonstrate maintenance on the LoadMaster:
 - locate sensors and troubleshoot sensor problems
 - overview of LoadMaster drive system
 - overview of rotary encoders for machine axes
 - check axis initialization
- Discuss maintenance tasks on the clamping chuck
- Review of maintenance tasks on the E-Stop cams
- Overview of the cylinder:
 - discuss the functions of the pneumatic cylinder
 - discuss the functions of the clamp gripper stopper
- Discuss maintenance tasks on the U- and W-axes
- Demonstrate and practice maintenance on light barrier:
 - adjust the settings of the light barrier for the unloading unit
 - set the transmitter and the receiver
 - set the light barrier for the scrap/part removal
- Overview of the lubrication system:
 - central lubrication; for motion unit and bearings
 - inspect and clean drive components
 - conveyor belt: lube reservoir, tubing, brush lube ports
 - sheet surface spray (optional)

TruPunch



TruPunch/TruMatic 1000

Operator



COURSE DESCRIPTION

The TruPunch/TruMatic 1000 Operator Course is intended for operators who have limited or no prior operating experience. The goal of this course is to provide students with essential technical and practical knowledge necessary to become a skilled operator and produce satisfactory punched and laser-cut parts. Students will develop a working knowledge of machine configuration, punching and laser theories, punching head/laser cutting unit, and punching tools. Upon completion of this course, students will possess the skills to operate the machines in a safe manner, manage tools, identify the operator's responsibilities, maximize material processing capabilities, evaluate and improve part quality, and produce high-quality parts.

TARGET AUDIENCE

Machine operators

PREREQUISITES

Good mechanical aptitude, general knowledge of CNC control, and familiarity with measuring tools

COURSE DURATION

4 days without automation/4.5 days with automation

LEARNING OBJECTIVES

- Identify potential hazards during operation
- Identify major machine sub-assemblies and components
- Identify various types of tools, calculate die clearances and tool dimensions
- Set up tooling, alignment rings, and stripper plate selection
- Turn on, reference, and shut down the machine
- Identify controls and switch elements on the HMI
- Import, copy, transfer and manage part programs
- Successfully create production plans
- Apply flexible entry
- Safely and successfully operate the SheetMaster
- Modify technology tables
- Identify various parameters that impact on part quality
- Identify basic maintenance points
- Troubleshoot common tooling and machine problems

COURSE AGENDA

- Discuss punch and laser safety and safe work practices
- Overview of TRUMPF punch and laser principles
- Discuss machine specifications and working ranges
- Introduction to tooling:
 - types of punches: standard, long, and special
 - types of dies: size 1, size 2
 - stripper and alignment ring
- Discuss die clearance and its importance
- Demonstrate and practice of how to correctly measure the punch and die dimensions
- Perform basic machine operations:
 - start up the machine
 - shut down the machine
 - reference the machine
- Review of tooling maintenance tasks:
 - measure tool dimensions with caliper and QuickSet
 - set up alignment ring, stripper plate, tool cartridge
- Overview of HMI control elements and menus
- Overview of part program management:
- Practice running production
- Practice applying flexible-entry to resume operation
- Introduction to tooling data in the tooling library
- Demonstrate how to create production plans
- Demonstrate how to manually release the X-axis brake
- Demonstrate basic SheetMaster Compact operations
 - modify SheetMaster load/unload cycles
- Overview of basic maintenance points and tasks
- Discuss most common machine problems and solutions
- Troubleshooting and correcting machine faults
- Overview of basic maintenance of the SheetMaster:
 - set the reference position
 - perform alignment adjustment
 - troubleshoot SheetMaster Compact common problems



TruPunch 1000/ 2000

Operator

COURSE DESCRIPTION

The TruPunch 1000/2000 Operator Course is designed to provide students with essential technical and practical knowledge necessary to become a skilled operator. Students will learn how to operate the machine by learning punching fundamentals, machine components and controls, material processing capabilities of the machine, tooling, and various punching techniques. Upon completion of this course, students will possess the skills to successfully run the TruPunch 1000/2000 machine in a safe manner, select the most appropriate tooling, maximize machine performance, and produce high-quality punched parts.

TARGET AUDIENCE

Machine operators

PREREQUISITES

Good mechanical aptitude, general knowledge of CNC control, and familiarity with measuring tools

COURSE DURATION

4 days without automation/4.5 days with automation

LEARNING OBJECTIVES

- Follow safe work practices and establish a safe work environment when operating the TruPunch 1000/2000 machine
- Identify machine specifications and working ranges
- Identify all major machine subassemblies and components
- Identify various types of tools and set up tooling
- Calculate die clearance
- Turn on, reference, and shut down the machine
- Operate HMI controls and manual functions
- Manage part programs
- Successfully run production
- Successfully resume production with flexible entry
- Successfully create production plans
- Diagnose and correct tooling problems in an efficient manner
- Successfully operate the SheetMaster Compact
- Identify basic maintenance points

COURSE AGENDA

- Discuss punch safety and safe work practices
- Discuss machine specifications and working ranges
- Introduction to tooling:
 - types of punches: standard, long, and special
 - types of dies: size 1, size 2
 - stripper and alignment ring
- Discuss die clearance and its influence on part quality
- Demonstrate and practice of how to correctly measure the punch and die dimensions
- Perform basic machine operations:
 - start up the machine
 - shut down the machine
 - reference the machine
- Review of tooling maintenance tasks:
 - measure tool dimensions with caliper and QuickSet
 - set up alignment ring, stripper plate, tool cartridge
- Overview of HMI control elements and manual functions
- Overview of part program management:
 - import and export part programs
 - delete a program
 - store part programs
 - add and delete tools from the library
- Practice running production
- Practice applying flexible-entry to resume operation
- Introduction to tooling data in the tooling library
- Demonstrate how to create production plans
- Demonstrate how to manually release the Y-axis brake
- Demonstrate basic SheetMaster Compact operations
- Overview of basic maintenance points and procedures:
 - lubrication points
 - mechanical components
 - pneumatic components
 - electrical components
 - hydraulic components



TruPunch 3000/ 5000

Operator

COURSE DESCRIPTION

The TruPunch 3000/5000 Operator Course is designed to provide students with essential technical and practical knowledge necessary to become a skilled operator. Students will learn how to operate the machine by learning punching fundamentals, machine components and controls, material processing capabilities of the machine, tooling, and various punching techniques. Upon completion of this course, students will possess the skills to successfully run the TruPunch 3000/5000 machine in a safe manner, select the most appropriate tooling, maximize machine performance, and produce high-quality punched parts.

TARGET AUDIENCE

Machine operators

PREREQUISITES

Good mechanical aptitude, general knowledge of CNC control, and familiarity with measuring tools



COURSE DURATION

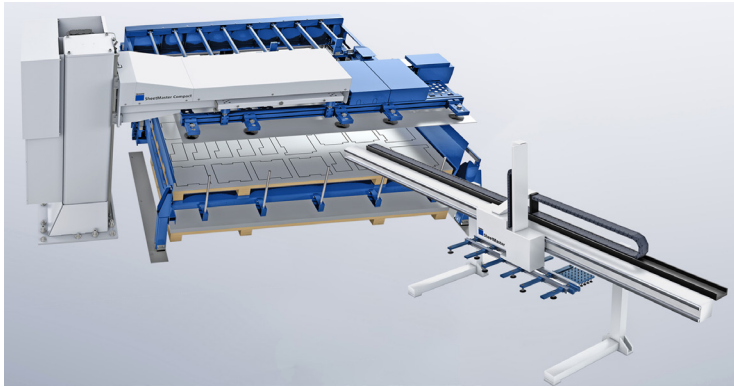
4.5 days

LEARNING OBJECTIVES

- Follow safe work practices and establish a safe work environment when operating the TruPunch 3000/5000 machine
- Identify machine specifications and working ranges
- Identify all major machine subassemblies
- Identify various types of tools
- Set up tooling
- Turn on, reference, and shut down the machine
- Identify controls on the MMC
- Manage part programs
- Successfully create production plans
- Diagnose and correct tooling problems in an efficient manner
- Safely and successfully operate the SheetMaster
- Identify basic maintenance points

COURSE AGENDA

- Discuss punch safety and safe work practices
- Overview of machine specifications and working ranges
- Introduction to tooling:
 - types of punches: standard, extended, and special
 - types of dies: size 1, size 2
 - die clearance
- Discuss clearance and its influence on part quality
- Perform basic machine operations:
 - start up the machine
 - shut down the machine
 - reference the machine
- Overview of tooling maintenance tasks:
 - measure tool dimensions with caliper and QuickSet
 - set up alignment ring, stripper plate, tool cartridge
- Overview of MMC control elements and menus
- Overview of various fast key combinations
- Overview of operator's responsibilities
- Overview of part program management:
 - import and export part programs
 - delete a program
 - store part programs
 - add and delete tools from the library
- Practice applying flexible-entry to resume operation
- Introduction to tooling data in the tooling library
- Introduction to production plans
- Demonstrate how to operate the SheetMaster system
- Overview of basic maintenance points and procedures:
 - lubrication points
 - mechanical components
 - pneumatic components
 - electrical components
 - hydraulic components
- Discuss most common machine problems and solutions



SheetMaster

Operator

COURSE DESCRIPTION

This half-day course is intended for customers with the SheetMaster and/or the SheetMaster Compact options. Students will learn the critical knowledge and skills to use these systems for automatic production. The students will learn how to operate the system to maximize the unloading of parts and scrap material. Upon completion of this half-day course, students will be able to create production plans and inventories to run production fully automated. The students will also learn how to modify suction cups and unloading options as well as troubleshoot the most common mechanical problems associated with suction cups and loading mechanisms.

TARGET AUDIENCE

Machine operators

PREREQUISITES

TruPunch Operator Training Course

COURSE DURATION

0.5 day

LEARNING OBJECTIVES

- Follow safety guidelines and operate the SheetMaster and/or the SheetMaster Compact in a safe manner
- Identify components on the SheetMaster and/or the SheetMaster Compact
- Create and execute production plans
- Create and change unloading options
- Operate SheetMaster in manual and automatic modes
- Modify suction cups
- Set up sheet loading options
- Modify incorrect material thickness
- Reset E-Stop button
- Troubleshoot problems related to suction cups

COURSE AGENDA

- Overview of potential hazards and safety features
- Overview of SheetMaster and/or the SheetMaster Compact:
 - discuss technical data and specifications of the devices
 - discuss the control elements
- Perform basic operations:
 - automate the SheetMaster and/or the SheetMaster Compact
- Demonstrate and practice how to:
 - create and execute a production plan
 - create and change unloading options
 - create and modify production options
- Discuss how to modify suction cup layouts
- Overview of sheet loading options and modifications
- Demonstrate operating the SheetMaster and/or the SheetMaster Compact in different modes:
 - manual mode
 - automatic mode
- Overview of automatic sheet separation and stripping functions
- Overview of basic maintenance points on the SheetMaster and/or the SheetMaster Compact
- Demonstrate and practice how to reset the E-Stop
- Demonstrate and practice modifying incorrect sheet thickness



TruPunch/TruMatic 1000

Maintenance



COURSE DESCRIPTION

The TruMatic 1000 Maintenance Course is intended for customer maintenance and/or service personnel. The goal of this course is to provide students with the essential knowledge and skills required to successfully maintain their machine, prevent breakdowns, and keep their machine performing at its fullest capacity. Upon completion of this course, students will be able to perform regular checks, make adjustments as needed, and resolve common machine problems in a timely manner to reduce machine downtime to a minimum.

TARGET AUDIENCE

Personnel with maintenance responsibility

PREREQUISITES

Basic on-the-job laser/electrical maintenance experience

COURSE DURATION

4.5 days with automation

LEARNING OBJECTIVES

- Identify potential hazards during maintenance
- Identify major machine sub-assemblies and components
- Remove the cutting unit, inspect and clean the protective glass
- Perform tape shot (beam-nozzle alignment) and focus test
- Adjust the offset between the laser beam and the punching head
- Perform maintenance on the stripper adapter and stripper segment
- Check ram working positions
- Adjust concentricity
- Align and perform maintenance on the die base adapter
- Set parallelism and reference points on the C1 and C2 axes
- Replace the X-, C1-, C2-, Y1b-, Y2f-, and Y2-axis motors
- Read schematics of the hydraulic, pneumatic, and the electrical systems
- Perform maintenance on the hydraulic system
- Perform maintenance on the pneumatic system
- Perform maintenance on the SheetMaster Compact
- Verify laser output power on the HMI
- Troubleshoot common machine problems

COURSE AGENDA

- Discuss punch and laser safety and safe work practices
- Overview of control elements on the HMI
- Discuss the {Setup} function menu for maintenance tasks
- Review of maintenance tasks on the cutting unit:
 - remove and clean the protective glass
 - perform tape shot
 - perform and evaluate focus test
- Demonstrate adjusting the offset between the laser beam and the punching head
- Demonstrate removing and replacing the stripper adapter and the stripper segment
- Demonstrate adjusting the working height (position) of the ram and set the reference parameters
- Review of maintenance tasks for the die base, die base, adapter and die clamp
- Demonstrate aligning the die base with tapered dowel pins
- Discuss parallelism on C1 and C2 axes
- Discuss how to set the reference points on C1 and C2 axes
- Demonstrate replacing the X-axis motor
- Discuss how to set the reference points on the X-axis
- Demonstrate replacing the Y1b-, Y2f-, and Y2- motor
- Discuss how to set the reference points on the Y-axis
- Demonstrate replacing C1 and C2 motors
- Discuss the importance of concentricity on the C1 and C2 axes
- Review procedures for bleeding the hydraulic system for the sheet clamps
- Overview of schematics for the hydraulic, pneumatic, and the electrical systems
- Review of maintenance tasks on the SheetMaster Compact:
 - set the reference position
 - perform alignment adjustment
 - read the schematics of the pneumatic system
 - troubleshoot SheetMaster Compact common problems
- Demonstrate aligning the light barrier
- Discuss most common machine problems and solutions

Available in Spring, 2019



TruPunch 5000

Maintenance

COURSE DESCRIPTION

The TruPunch 5000 Maintenance Course provides students with the knowledge and skills to maintain their machine, prevent breakdowns, and keep their machine performing at its fullest capacity. Through lectures and hands-on practice, students will develop an extensive knowledge of all aspects of the internal workings of their punch machines. Upon completion of this course, students will be able to perform regular checks, make adjustments as needed, and resolve common machine problems in a timely manner to reduce machine downtime to a minimum.

TARGET AUDIENCE

Qualified maintenance personnel

PREREQUISITES

Basic understanding of electrical, hydraulic and pneumatic theories. The ability to read schematics is a plus.

COURSE DURATION

4.5 days

LEARNING OBJECTIVES

- Identify potential hazards during maintenance
- Replace the stripper receiving ring and set stripper adapter at tool change position
- Check the ram working positions and adjust the ram reference point parameters
- Replace the linear amplifier and normalize cycle for the linear amplifier
- Set the stripper sensor
- Check the LEDs on the linear amplifier
- Perform maintenance on the die base
- Replace the X-, Y-, C1-, C2-, and Z-axis motors
- Set up ProfiNet participants
- Perform backup and clone (restore) procedures
- Read hydraulic, pneumatic, and electrical schematics
- Perform maintenance on the SheetMaster
- Diagnose and troubleshoot most common machine problems

COURSE AGENDA

- Discuss punch safety and safe work practices
- Overview of punch machine controls and components
- Overview of major components on the punching head
- Review of maintenance tasks on the punch head:
 - practice disassembling the punching head
 - practice adjusting ram height and ram cap position and setting reference point
 - practice checking tool clamping, piston, and wedge
 - practice removing and reinstalling stripper adapter
 - practice replacing the linear amplifier and normalizing the cycle
 - practice checking the LEDs on the linear amplifier and setting the mean position
- Discuss maintenance tasks on the major components of the die base:
 - practice disassembling the die base, checking die plate, checking die sensor, checking rotary drive, and checking and adjusting the backlash
 - demonstrate how to replace the X-, Y-, C-, and Z-axis motors
 - demonstrate setting reference points on the X-, Y-, C-, and Z-axis motors
- Review of maintenance tasks on the hydraulic, pneumatic, and the electrical systems
- Discuss how to set up the ProfiNet participants
- Overview of backup and restore procedures
- Introduction to TRUMPF schematics: for hydraulic, pneumatic, and electrical systems
- Review of maintenance tasks on the SheetMaster:
 - set the reference position
 - perform alignment adjustment
 - read the schematics of the pneumatic system
 - troubleshoot SheetMaster common problems
- Demonstrate aligning the light barrier
- Discuss most common machine problems and solutions

TruBend



TruBend Series 5000

Operator

COURSE DESCRIPTION

The TruBend Series 5000 Operator Course is designed to provide students with essential technical and practical knowledge necessary to become a skilled operator. Students will learn how to operate the machine by learning bending fundamentals, machine controls, machine specifications and capabilities, tooling, programming, bend sequence, and ACB (optional). The course offers hands-on practice guided closely by the instructor. Upon completion of the course, students will have the necessary skills to create accurate parts, select appropriate tooling, apply proper bending techniques, and modify bending parameters to produce high-quality parts.

TARGET AUDIENCE

Machine operators

PREREQUISITES

Good mechanical aptitude, general knowledge of CNC control, and familiarity with measuring tools



COURSE DURATION

4.5 days

LEARNING OBJECTIVES

- Demonstrate safe bending work practices and follow safety guidelines to establish a safe operating environment
- Discuss bending principles and different types of bending
- Apply BendGuard method when creating programs
- Start up, reference, and shut down the machine
- Identify all buttons on the mobile control
- Select the menus and identify tab keys
- Select, set up tooling, and customize tool library
- Identify backgauge configurations and set up I-axis
- Create programs in Manual Mode
- Create a multi-bend NC program
- Create 2D programs using BendGraph
- Customize program parameters
- Utilize the ACB angle sensor/ACB laser
- Identify basic maintenance points

COURSE AGENDA

- Overview of bending hazards and discuss safe work practices
- Overview of BendGuard
 - BendGuard modes and applications
- Overview of bending:
 - bending nomenclature, air-bending vs. bottom bending
 - bend allowance
- Overview of mobile control and footswitch:
 - mobile control buttons/foot switches
 - switch cabinet control elements
 - machine axes
- Discuss bending tools:
 - punch, die, flattening dies
 - how to read tool technical data
 - how to select proper tooling
- Overview of I-axis working range and how to set up I-axis
- Demonstrate how to load tools and perform "offset tool check"
- Demonstrate how to startup and shutdown the machine
- Overview of TASC 6000/touch-point panel control elements
- Overview of programming applications:
 - manual programming
 - NC code programming
 - Profile Editor programming (BendGraph)
- Overview of tool library:
 - manage/import tools
 - customize tool library to reflect inventory
- Discuss the ACB Angle Sensor/ACB laser:
 - what is ACB/ACB laser?
 - electronic module
 - sensor disk combinations
 - calibration of ACB and ACB configurations
 - program a learned bend
 - bend with 2 and 3 sensors
 - ACB applications and limitations
- Review of basic maintenance tasks:
 - tool maintenance
 - preventive maintenance tasks and schedules
 - maintenance checks for the bending aid (optional)



TruBend Series 7000

Operator

COURSE DESCRIPTION

The TruBend Series 7000 Operator Course is designed to provide students with essential technical and practical knowledge necessary to become a skilled operator. Students will learn how to operate the machine by learning bending fundamentals, machine controls, machine specifications and capabilities, tooling, programming, and bend sequence. The course offers hands-on practice guided closely by the instructor. Upon completion of the course, students will have the necessary skills to create accurate parts, select appropriate tooling, apply proper bending techniques, and modify bending parameters to produce high-quality parts.

TARGET AUDIENCE

Machine operators

PREREQUISITES

Good mechanical aptitude, general knowledge of CNC control, and familiarity with measuring tools

COURSE DURATION

3.5 days

LEARNING OBJECTIVES

- Demonstrate safe bending work practices and follow safety guidelines to establish a safe operating environment
- Discuss bending principles and different types of bending
- Start up, reference, and shut down the machine
- Select the menus and identify soft keys
- Select and position the tooling for best results
- Customize the tool inventory
- Identify various backgauge configurations
- Create programs in Manual Mode
- Create a multi-bend NC program
- Create 2D programs using BendGraph
- Customize programming parameters
- Run part programs on the machine
- Overview of basic maintenance points

COURSE AGENDA

- Overview of bending hazards and discuss safe work practices
- Overview of the BendGuard:
 - BendGuard modes and applications
- Overview of bending:
 - bending nomenclature, air-bending vs. bottom bending
 - bend allowance
- Overview of TASC 6000 control panel:
 - buttons, menus, soft keys
- Overview of machine axes
- Discuss bending tools:
 - punches, dies
 - how to read tool technical data
 - how to select proper tooling
- Perform basic machine operations:
 - startup/shutdown the machine
 - reference procedure
- Demonstrate how to load tools and perform "offset tool check"
- Overview of programming applications:
 - manual programming
 - NC code programming
 - Profile Editor
- Demonstrate how to create and run programs on the machine
- Review of basic maintenance tasks:
 - tool maintenance
 - preventive maintenance tasks and schedules



TruBend Series 5000

Maintenance

COURSE DESCRIPTION

The TruBend series 5000 Maintenance Course intended for customer maintenance and/or service personnel. The goal of this course is to provide students with the essential knowledge and skills required to successfully maintain their machine, prevent breakdowns, and keep their machine performing at its fullest capacity. Students will develop an extensive knowledge of all aspects of the internal workings of their TruBend machines. Upon completion of this course, students will be able to perform regular checks, make adjustments as needed, and resolve common machine problems in a timely manner to reduce machine downtime to a minimum.

TARGET AUDIENCE

Qualified maintenance personnel

PREREQUISITES

Basic understanding of electrical, hydraulic and pneumatic theories. The ability to read schematics is a plus.



COURSE DURATION

3.5 days

LEARNING OBJECTIVES

- Identify potential hazards during maintenance
- Identify the elements of the mobile control and pedestal control and state their proper uses
- Identify Touch-Point / TASC 6000 components and their uses for maintenance tasks
- Identify machine and back gauge axes and how axis settings affect part creation
- Start, reference, and shut down the machine
- Select the correct menu and soft keys for maintenance tasks
- Create simple maintenance programs
- Setup and qualify specific machine axes
- Discuss maintenance on the crowning motor, linear scale, lower die clamping, and drive amps
- Review of electrical schematics for maintenance purposes
- Perform preventive maintenance tasks as scheduled

COURSE AGENDA

- Overview of press brake safety and discuss safe work practices
- Overview of machine control components:
 - identify control components on the mobile control
 - identify control components on the Touch-Point / TASC 6000 control panel
- Overview of machine axes and the backgauge
- Perform basic machine operations:
 - start up the machine
 - reference the machine
 - shut down the machine
- Overview of Touch-Point / TASC 6000 menus and tab keys
- Overview menus and tab keys for various maintenance tasks
- Demonstrate how to create a simple maintenance program
- Review of maintenance tasks on hydraulic valves:
 - identify all hydraulic valves and their functions
 - read hydraulic schematics
- Overview of machine axes maintenance tasks:
 - set up and qualify all axes
- Discuss maintenance tasks on the crowning motor
- Discuss maintenance tasks on the linear scale
- Review maintenance tasks on the lower die clamp
- Review maintenance tasks on the PCSS unit
- Review maintenance tasks on the drive amps
- Introduction to schematics:
 - overview of TRUMPF schematics structure/sections
 - read electrical schematics for maintenance tasks
- Review of additional maintenance points and schedules



Advanced Bending Applications

COURSE DESCRIPTION

The Advanced Bending Applications Course is designed for the maximization of state-of-the-art bending technologies in TRUMPF TruBend machines. It is intended for customers who are experienced with TruBend machines. Students will gain in-depth as well as comprehensive knowledge about different types tooling, bending technologies, bending angles, and programming capabilities. Students will be able to customize their newly acquired knowledge specifically to their machines, increasing productivity. Upon completion of the course, the students will be able to maximize TruBend machine processing capabilities, flexibility, and performance to achieve the highest quality in their parts.

TARGET AUDIENCE

Operators experienced in operating TruBend machines, or programmers experienced in using the TruTops Bend software

PREREQUISITES

TruBend Operator and/or TruTops Boost Bend Programming Courses

COURSE DURATION

3 days

LEARNING OBJECTIVES

- Acquire a broad understanding of the variety of bending capabilities of TruBend machines, TRUMPF bending tools, and advanced TruTops Bend programming techniques
- Acquire comprehensive knowledge and techniques to maximize the quality of bent parts

COURSE AGENDA

- Overview of bending safety and BendGuard operation principals
- Overview of bending theory:
 - bending nomenclature
 - air-bending vs. bottom bending
 - bending process, bend allowance, bend deduction
 - pressing force, tonnage, tensile strength
- Overview of machine control system:
 - control system components
- Discuss bending tools:
 - best practices for selecting tools
 - import and export tool drawings
 - manage the tool inventory
 - modify existing or create customized special tools
- Overview of material management
- Discuss bending methods and techniques
- Overview and demonstration of the ACB angle sensor:
 - ACB design theory and capabilities
 - compare programs using ACB vs. programs without ACB
 - modify existing programs to incorporate ACB
- Discuss 2D graphical programming using BendGraph:
 - BendGraph basics and capabilities
 - create and run 2D graphical programs
- Practice programming complicated parts
- Practice bending techniques

Programming



TruTops Laser

Programming

COURSE DESCRIPTION

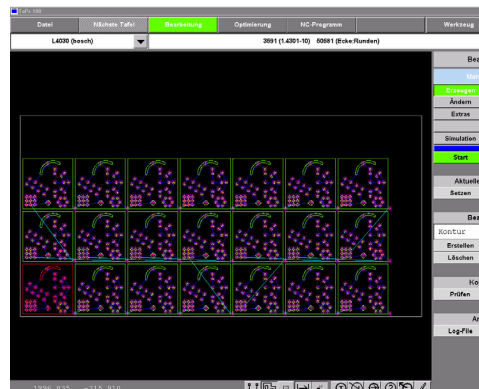
The TruTops Laser Programming Course is designed to provide students with the essential knowledge and skills to successfully create part programs for production. Students will obtain a working knowledge of this programming software by learning how to accurately import and export drawing files, accurately program single parts, and nest parts to maximize material utilization and machining processes. Upon completion of this course, students will be able to draw parts using the TruTops CAD application, work with various macros, nest with TruTops manual and automatic nesters, apply appropriate cutting technologies and logical processing, and generate NC codes suitable for production.

TARGET AUDIENCE

Personnel with programming responsibility

PREREQUISITES

Basic PC skills are a must. Basic blueprint-reading skills are recommended. Fundamental drawing skills using a CAD package and NC programming knowledge are a plus.



COURSE DURATION

4.5 days

LEARNING OBJECTIVES

- Discuss laser cutting concepts and processes
- Discuss various types of laser cutting and machine parameters
- Identify TruTops Laser interface components and their functions
- Utilize databases related to the programming systems and machine
- Create drawing files (.geo .vlg) in the CAD application
- Create part layout on sheets in the Nesting application
- Create single part and sheet NC code in the laser application
- Discuss the tool path and interaction
- Apply proper databases (technology tables) part programs
- Apply logic (rule) of contour approaches and withdrawals

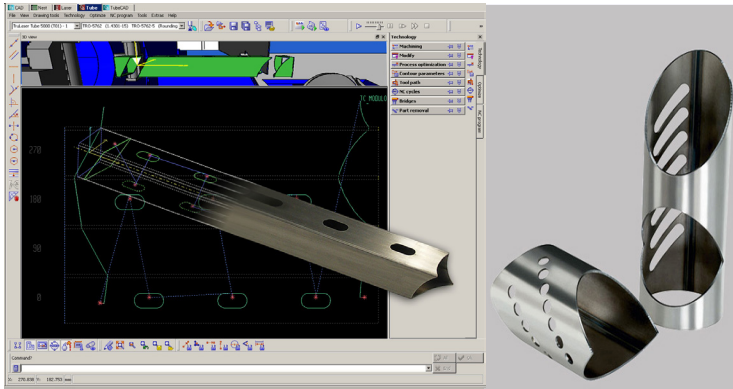
COURSE AGENDA

- Overview of laser cutting principles and processes
- Overview of types of laser cutting and machine parameters
- Overview of TruTops Laser programming software:
 - components in the user interface
 - file formats
- CAD Application:
 - load and import DXF files and batch DXF conversions
 - create and edit part drawing .geo .vlg
 - create and edit standard patterns
 - save drawing files
- Nesting Application:
 - define a new sheet
 - create a nesting job (*.JOB)
 - create an enlarged rectangle sheet layout (*.TAF)
 - create free GEOMETRY sheet layout (*.TAF)
 - create skeleton for re-nesting (*.TRG)
 - create common-line cut nests
 - create a mini nest (*.MTL)
- Laser Application:
 - automatic generation of processing
 - modify processing options: corner, piercing method
 - change the approach paths
 - modify contour sizes
 - create processing with path correction
 - avoid collision due to workpiece tilting
- Data Application:
 - set/modify machine options
 - create rules, customer rules
 - select Tech Tables
 - activate PierceLine and/or SprintLine
 - activate MicroWeld, MicroJoints
- Generate NC code for single parts and sheets



For the self-paced online class:

- Available in Fall, 2018



TruTops Tube and TubeDesign

Programming

COURSE DESCRIPTION

The TruTops Tube and TubeDesign Programming Course is designed to provide students with the essential knowledge and skills to successfully create part programs for TruLaser Tube machines. Students will obtain a working knowledge of TruTops Tube programming software by learning how to accurately create, import, export part drawings, program round, square, and rectangular tube parts. Upon completion of this course, students will possess the required skills to use the TruTops Tube drawing package, process a part by applying technology and logic, and create NC code for TruLaser Tube machines, and successfully produce tube parts.

TARGET AUDIENCE

Personnel with programming responsibility

PREREQUISITES

Basic PC skills are a must. Basic blueprint-reading skills are recommended. Fundamental drawing skills using a CAD package and NC programming knowledge are a plus.

COURSE DURATION

4.5 days

LEARNING OBJECTIVES

- Discuss laser cutting principles and processes
- Identify TruTops Tube interface components and their functions
- Create drawings for round, square, rectangular tubes
- Create tube profiles and draw standard intersections
- Import .TEO from TubeDesign
- Modify contour approaches, MicroJoints, and tool path
- Apply finished part support and part removal
- Identify TubeDesign interface components and their functions
- Create planes and add dimensions to sketches
- Create extrusions and cuts
- Generate patterns and mirrored patterns
- Create tube face extensions
- Create and add blocks
- Apply plane processing techniques to special cuts
- Create NC code

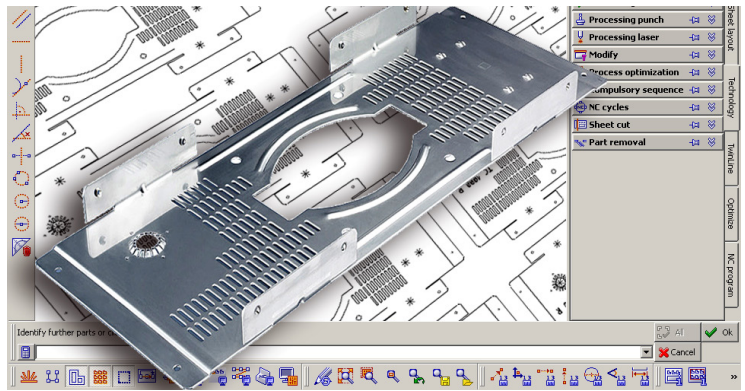
COURSE AGENDA

- W ■ Overview of laser cutting principles and processes
 - Discuss TruTops Tube software interface, applications, components and their functions, and sequence
 - Review of importing and exporting files
 - Overview of {Drawing} Application
 - create round, square, rectangular tubes drawings and use 3D viewer to review drawings
 - Discuss file management: manage and save drawings (files)
 - Demonstrate and practice how to create and edit tube profiles
 - Demonstrate and practice how to draw standard intersections
 - Demonstrate and practice how to create GEO, ROT, RPF, VLG, RMT, and LST
 - Overview of {Technology} applications:
 - processing strategies, processing extras
 - Discuss how to create and modify tool path
 - Demonstrate and practice how to modify contour approaches and MicroJoints
- Discuss how to apply finished part support and part removal
- Overview of TubeDesign software interface, applications, components and their functions
- Demonstrate procedures for creating round, square, and rectangular tubes
- Discuss how to create planes and add dimensions to sketches
- Demonstrate and practice how to create extrusions and cuts
- Demonstrate and practice how to create patterns and mirrored patterns
- Discuss tube face extending techniques
- Discuss plane processing techniques for special cuts and geometries
- Review how to create multiple tube designs with corners, intersections, and inserts
- Demonstrate how to import .TEO from TubeDesign
- Discuss how to generate and transfer NC Code



TruTops Punch

Programming



COURSE DESCRIPTION

The TruTops Punch Programming Course is designed to provide students with the essential knowledge and skills to successfully create part programs for production. Students will obtain a working knowledge of this program by learning how to import and export drawing files, how to accurately program single parts, and nest parts to maximize material utilization and machining processes. Upon completion of this course, students will be able to draw parts using the TruTops CAD application, work with various macros, nest with TruTops manual and automatic nesters, apply appropriate cutting technologies and logical processing, and generate NC codes suitable for production.

TARGET AUDIENCE

Personnel with programming responsibility

PREREQUISITES

Basic PC skills are a must. Basic blueprint-reading skills are recommended. Fundamental drawing skills using a CAD package and NC programming knowledge are a plus.

COURSE DURATION

4.5 days

LEARNING OBJECTIVES

- Discuss punching concepts and processes
- Identify different types of punching tools and their characteristics
- Identify different file formats: DXF, GEO, GMT, etc
- Identify TruTops Punch interface components and their functions
- Program with the Drawing Application
- Program with the Nesting Application
- Modify tool path and interaction
- Apply proper technology tables/parameters to drawn parts
- Create and apply "macros"
- Create "processing samples"
- Generate setup plan, NC code, production plan

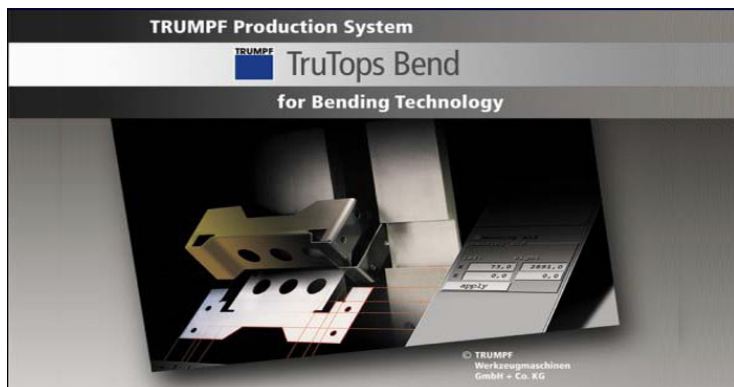
COURSE AGENDA

- Overview of punching concepts and theories:
 - cut-to-break ratio
 - machine tonnage and punching force
- Introduction to tooling:
 - standard tools, special tools
- Overview of TruTops Punch:
 - system requirements/specification
 - tool bars, menus, buttons, navigation
- Overview of different file formats:
 - DXF, GEO, GMT, TMT, LST
 - import/load, export, convert different files
- Overview of the Drawing Application
 - buttons and keys
 - import and prepare DXFs
- Overview of the Nesting Application:
 - sheet layout strategies: free geometry vs. rectangular nesting
 - create sheet layouts
- Overview of tool path:
 - optimize tooling path
 - modify tooling path
- Application of "Macros"
- Application of "Processing Samples"
- Application of "Repositioning"
- Application of "Part Removal" techniques
- Overview of processing blanks:
 - slitting, skeleton-free processing possibilities
- Overview of setup plan, NC code, production plan
- Overview of machine options customization:
 - create standard tools, multi-tools, special/forming tools
 - modify machine parameters



For the self-paced online class:

- Off-line/asynchronous online learning
- Indefinite course completion time



TruTops Bend

Programming

COURSE DESCRIPTION

The TruTops Bend Programming Course is designed to provide students with the knowledge and skills necessary for successful programming with the TruTops Bend software.

TARGET AUDIENCE

Personnel with programming responsibility

PREREQUISITES

Basic PC skills are a must. Basic blueprint-reading skills are recommended. Fundamental drawing skills using a CAD package and NC programming knowledge are a plus. Students should also have a basic understanding of the development of a 3D part from a flat layout.

COURSE DURATION

4.5 days

LEARNING OBJECTIVES

- Identify TRUMPF TruBend machines components: controls and axes
- Discuss bend theory and tooling applications
- Discuss ACB theory and applications
- Perform TruTops Bend data structure setup
- Create a functionally accurate GEO drawing
- Create a functionally accurate unfolded layout
- Create a functionally accurate setup plan
- Correctly manipulate tooling selection, bend sequences, back-gauge positions, and part loading in the bending application
- Create a functionally accurate NC program
- Perform customization of TruTops Bend software databases, settings, configurations, and data menus
- Manage tool inventory
- Create custom tool list
- Create custom tools

COURSE AGENDA

- Overview of TRUMPF TruBend machine nomenclature
- Overview of bending theory
- Overview of tooling
- Introduction to ACB
- Introduction to TruTops CAD:
 - working with the flat blank
- Introduction to TruTops Unfold:
 - unfolding directly from a 3D model
- Introduction to TRUMPF TruTops Bend software:
 - GEO part creation/drawing
- Demonstrate working with TruTops Bend (Part 1):
 - adapt unfolding
 - unfolding application
 - set-up plan application
 - bending application
 - NC program application
- Demonstrate working with TruTops Bend (Part 2):
 - TruTops Bend programming software settings
 - databases
 - configuration
 - processing data
- Demonstrate creating bending sample parts at the machine



For the virtual/synchronous online class:

- Available in summer, 2018



TruTops Boost Laser

Programming



COURSE DESCRIPTION

The TruTops Boost Laser Programming Course is designed to provide students with the essential knowledge and skills to successfully create part programs for production. Students will obtain a working knowledge of this programming software by learning how to accurately import and export drawing files, nest parts to maximize material utilization and machining processes. Upon completion of this course, students will be able to create nesting profiles, apply manual and/or automatic nesters, apply appropriate cutting technologies and logical processing, and generate NC codes suitable for production.

TARGET AUDIENCE

Personnel with programming responsibility

PREREQUISITES

TruTops Boost HomeZone

COURSE DURATION

4 days

LEARNING OBJECTIVES

- Discuss laser cutting concepts and processes
- Discuss various types of laser cutting and machine parameters
- Identify TruTops Boost Laser interface components and their functions
- Configure a machine in TruTops Boost Laser
- Import various file formats
- Utilize the Boost button feature
- Create nested sheets with auto-nesting and/or free-geometry functionality
- Preset automatic Boost parameters
- Apply various processing options
- Modify approaches and contour sizes
- Apply the common line cutting technique
- Create and apply various rules
- Apply the MicroWeld and MicroJoint functions
- Maximize sheet utilization
- Create and manage raw sheets
- Create a production plan

COURSE AGENDA

- Overview of laser cutting concepts and processes
- Overview various types of laser cutting and machine parameters
- Overview of TruTops Boost Laser interface components:
 - tool bars, menus, buttons, navigation
- Discuss various file formats:
 - DXF, GEO, SCDOC, SLDPRD
 - import/load, export, convert different file formats
- Discuss how to configure a machine
- Demonstrate and practice how to utilize automatic Boost button feature
- Overview of nesting functions:
 - create a nesting job
 - apply free geometry layout
- Review of creating processings:
 - for single and sectional sheet layout
- Discuss how to preset automatic boost parameters
- Demonstrate different ways to apply processing options
- Discuss how to modify contour sizes
- Demonstrate and practice how to apply common line cutting technique
- Overview of tech tables: select and modify
- Overview of working with rules: create and select various rules
- Demonstrate how to activate the MicroWeld and MicroJoint function
- Demonstrate how to utilize scraps/remainder of the sheet/workpiece
- Discuss material management: create a raw material sheet and size
- Demonstrate and practice how to create a production plan



TruTops Boost Punch

Programming

COURSE DESCRIPTION

The TruTops Punch Programming Course is designed to provide students with the essential knowledge and skills to successfully create part programs for production. Students will obtain a working knowledge of this program by learning how to import and export drawing files, how to accurately program single parts, and nest parts to maximize material utilization and machining processes. Upon completion of this course, students will be able to work with various macros, nest with TruTops manual and automatic nesters, apply appropriate cutting technologies and logical processing, and generate NC codes suitable for production.

TARGET AUDIENCE

Personnel with programming responsibility

PREREQUISITES

TruTops Boost HomeZone

COURSE DURATION

4 days

LEARNING OBJECTIVES

- Discuss punching concepts and processes
- Identify different types of punching tools and their characteristics
- Identify TruTops Boost Punch interface components and their functions
- Import different file formats
- Modify material and sheet thickness
- Apply the Nesting function
- Apply manual and automatic processings
- Modify tool paths and interactions
- Program oversized sheets with "Repositioning"
- Apply proper technology parameters to drawn parts
- Create and apply "Processing samples"
- Apply and modify "Macros"
- Apply program options such as tapping and roller tools
- Create part orders and apply the automatic "BOOST" function
- Generate setup plan, NC code, production plan and release programs

COURSE AGENDA

- Overview of punching concepts and theories:
 - cut-to-break ratio
 - machine tonnage and punching force
- Discuss tooling:
 - standard tools, special tools
- Overview of TruTops Boost Punch interface:
 - tool bars, menus, buttons, navigation
- Overview of various file formats:
 - DXF, GEO, SCDOC, SLDPRT
 - import/load, export, convert different file formats
- Discuss how to configure a machine
- Demonstrate and practice how to utilize the automatic Boost button feature
- Overview of nesting functions:
 - create sheet layout
 - apply compulsory sequences
- Discuss different techniques for working with tool path:
 - optimize tool path
 - modify tool path
- Overview of "macros": apply and modify "macros"
- Demonstrate and practice working with "processing samples"
- Demonstrate and practice how to apply common line cutting technique
- Demonstrate and practice working with "repositioning"
- Discuss different "part removal" options
- Overview of processing blanks:
 - slitting, skeleton-free processing possibilities
- Discuss various program results:
 - create setup plans, generate NC code, create production plan
- Overview of machine options customization:
 - create standard tools, multi-tools, special/forming tools
 - modify machine parameters



TruTops Boost Bend

Programming



COURSE DESCRIPTION

The TruTops Boost Bend Programming Course is designed for all TRUMPF TruBend machines. This course provides programmers with the knowledge and skills to successfully create part programs for production. Students will obtain a working knowledge of this software by learning how to import and export files, accurately program bending parts, and generate NC codes suitable for production.

TARGET AUDIENCE

Personnel with programming responsibility

PREREQUISITES

TruTops Boost HomeZone

COURSE DURATION

4 days

LEARNING OBJECTIVES

- Discuss bend theory and methodologies
- Discuss tooling specifications, functionalities, and applications
- Identify TRUMPF TruBend machines components: controls and axes
- Import various file formats
- Apply automatic processings
- Modify bend sequence, tooling setup plan, and bending process manually
- Discuss ACB theory and applications
- Customize settings, configurations, and data menus
- Manage tool inventory
- Create custom tool list
- Create custom tools
- Create a functionally accurate NC program
- Create a functionally accurate setup plan

COURSE AGENDA

- Overview of bending concepts, theory, and methods
- Overview of tooling specifications and applications
- Overview of machine axes:
 - all machine axes and backgauge axes
 - individual axis processing capabilities
- Overview of TruTops Boost Bend interface:
 - tool bars, menus, buttons, navigation
- Discuss various file formats:
 - DXF, GEO, SCDOC, SLDPRT
 - import/load, export, convert different file formats
- Demonstrate and practice how to apply automatic processings
- Demonstrate and practice how to apply manual modifications:
 - bend sequence
 - tooling setup plan
 - bending process
- Overview of machine parameters and pre-settings
- Discuss how to generate a customized tool list
- Demonstrate and practice how to create a custom tool:
 - produce segmented tools to use as a default tool
- Overview of ACB:
 - characteristics and function of the ACB
 - apply ACB to automatically correct bend angles
- Discuss various program results:
 - create setup plans
 - generate NC code
 - create a production plan



TruTops Boost Design

Programming

COURSE DESCRIPTION

The TruTops Boost Design Online Programming Course is designed for customers who wish to learn Boost Design without having to travel to TRUMPF. The goal of the course is to provide students with the core knowledge and skills to successfully draw 2D or 3D parts. Students will learn a variety of drawing techniques such as “shell” or “pull,” how to generate and modify sheet drawings, and how to troubleshoot corrupt drawing files. The students will be given several projects that will allow them to practice various techniques they have just learned.

TARGET AUDIENCE

Personnel with programming responsibility

PREREQUISITES

TruTops Boost TechZone (one of the Boost Laser, Punch, or Bend classes) and a valid TruTops Boost license. Dual-monitor workstation is highly recommended.

COURSE DURATION

12 hours (4 hours per day, Tuesday through Thursday) plus extra hours each day for projects and homework assignments

LEARNING OBJECTIVES

- Identify icons and buttons on the Boost Design user interface
- Navigate through different menus
- Use mouse gestures for various operations
- Draw 2D (flat) parts with various techniques
- Draw 3D parts with various techniques
- Knowledge of bending concept, options, and bend deductions
- Edit/modfiy designs
- Create sheet drawings
- Identify and dissolve sheet assemblies
- Troubleshoot corrupt drawing files with various repair techniques

COURSE AGENDA

- Overview of Boost Design interface:
 - icons, elements, and menus
- Discuss 2D design concepts and essentials
- Overview of 2D drawing techniques:
 - draw E-plate with “rectangle” and “line” techniques
 - draw L-plate with “pull” technique
 - draw sickle plate with “sweep arc” technique
 - draw rotational geometrical parts with “mirror” technique
 - draw parts with “pattern” technique
- Demonstrate and practice how to edit/modify 2D drawings:
 - modify 2D parts with “pull” and “move” techniques
- Discuss 3D design concepts and essentials
- Overview of 3D drawing techniques:
 - draw 3D parts with “pull” and “shell” techniques
 - draw 3D parts with “bend” technique
- Demonstrate and practice how to create sheet drawings:
 - add a new sheet drawing to a design
 - add, remove, and edit part views
 - add dimensions, notes, barcodes and other info
- Discuss how to manage assemblies in the HomeZone:
 - import the assembly (HomeZone)
 - identify assembly components as sheet metal parts
 - dissolve assemblies and exit TechZone Design
- Demonstrate and practice how to troubleshoot corrupted geometries:
 - discuss functions under the “Repair” and “Prepare” tabs
 - delete unnecessary solids and create new solids
 - split drawings with “split body” and then combine/merge solids



For the virtual/synchronous online class:

- 1-hr virtual classroom (with an instructor) per day
- Self-paced, hands-on practices/assignments

Additional



Smart Glasses



COURSE DESCRIPTION

The Smart Glasses training course is designed to teach the customers to make the most of the wearable technology. Customers will quickly learn the components of the Smart Glasses, how to enable connections via wi-fi or blue tooth, and how to set up communications with TRUMPF. Customers will also learn how to work with a TRUMPF Service Technician after properly setting up the Smart Glasses, and follow the guidance from the Service Technician to effectively to repair and restore the machine.

TARGET AUDIENCE

Personnel with operation and/or maintenance responsibility

PREREQUISITES

No prior training is required

COURSE DURATION

0.5 day

LEARNING OBJECTIVES

- Introduction to Smart Glasses components and their functions
- Switch on the Smart Glasses
- Discuss the main menu and interfaces
- Discuss main controls
- Introduction to the Track Pad
- Demonstrate how to use the Reticle Speed Mouse
- Demonstrate how to set up bluetooth connection
- Demonstrate how to set up wi-fi connection
- Demonstrate how to start a service session
- Demonstrate how to power off the Smart Glasses

COURSE AGENDA

- Identify various accessories in the Smart Glasses boxes
- Identify the interfaces/components on the Smart Glasses:
 - charging port adapter
 - LED charging indicator
 - earbuds and magnetic ports
- Demonstrate how to use the Track Pad:
 - sweep motion vs. pressing motion to control the main menu
- Demonstrate how to turn on the Smart Glasses
- Demonstrate how to use the Reticle Speed Mouse:
 - discuss components and their functions on the Reticle Speed Mouse
- Demonstrate how to set up blue tooth connection:
 - locate the system settings
 - locate the bluetooth option
 - locate the ODG speed mouse
- Demonstrate how to set up wi-fi connection:
 - locate the system settings
 - locate the wi-fi option
 - how to use on-screen keyboard for entering password, if needed
 - locate the enter icon
- Demonstrate how to start the service session:
 - locate the Eye Sight icon
 - take and send pictures and videos
 - save and send pictures and videos
 - receive annotations
 - live video transfer
 - live chat with TRUMPF Service Technician
 - practice trouble-shooting scenarios
- Demonstrate how to turn off the Smart Glasses



SheetMetal Design

COURSE DESCRIPTION

The Sheet Metal Design Course is intended for engineers, designers, and programmers involved in the designing and/or machining process of their sheet metal parts who would like to rethink the entire design process. In this course, students will learn how to streamline the design process and make full use of sheet metal knowledge to design better parts and replace and/or make improvements on current manufacturing processes in a faster and cost-efficient manner.

TARGET AUDIENCE

Engineers, designers, and programmers

PREREQUISITES

An interest in learning the latest sheet metal design methodologies and techniques to streamline the design processes. Basic knowledge of CAD/CAM systems. Past design experience is a plus.

COURSE DURATION

3 days

LEARNING OBJECTIVES

- Overview of traditional design methodologies and explore new design options
- Discuss various techniques, methodologies, options, and considerations when designing sheet metal parts
- Identify ways to avoid design mistakes or design flaws
- Discuss techniques and possible solutions for a successful design of a flat pattern
- Demonstrate step-by-step design process from an idea to a finished product
- Overview of the design process chain
- Discuss methods to streamline the design process
- Practice designing various sheet metal parts by applying appropriate techniques and ideas
- Discuss latest manufacturing technologies

COURSE AGENDA

- Overview of old design methodologies and common design issues
- Discuss different ways to avoid design mistakes or flaws
- Overview of ideas, techniques, and solutions for designing better sheet metal parts:
 - avoid stress points
 - determine force path
 - increase stiffness and stability
 - reduce parts in weldment
 - reduce distortion
 - determine appropriate welding seam positions
 - reduce grinding
 - use positioning aids: pins, tabs, markings, etc.
 - integrate multiple parts
 - prepare radius and corners
 - create bendable profiles
- Overview of techniques to create a flat pattern
- Demonstration of step-by-step design process from an idea to a finished product
- Hands-on workshop practice:
 - apply newly learned design knowledge and techniques to optimize the designs of various parts
- Review of latest manufacturing technologies:
 - TRUMPF laser cutting technology
 - TRUMPF punching technology
 - TRUMPF bending technology
- Overview of the design process chain:
 - discuss methods to streamline the design process
- Discuss options to optimize sheet metal process:
 - cost considerations
 - time
 - weight optimization
 - production optimization
 - reduce or eliminate fixturing
 - functionality
 - design considerations for sheet metal parts
- Customer parts are welcome as class examples to be re-designed

