

MARCRRAFT

RENEWABLE ENERGY, ENERGY EFFICIENCY & MORE



**HANDS-ON TRAINING FOR
TOMORROW'S WORKFORCE!**

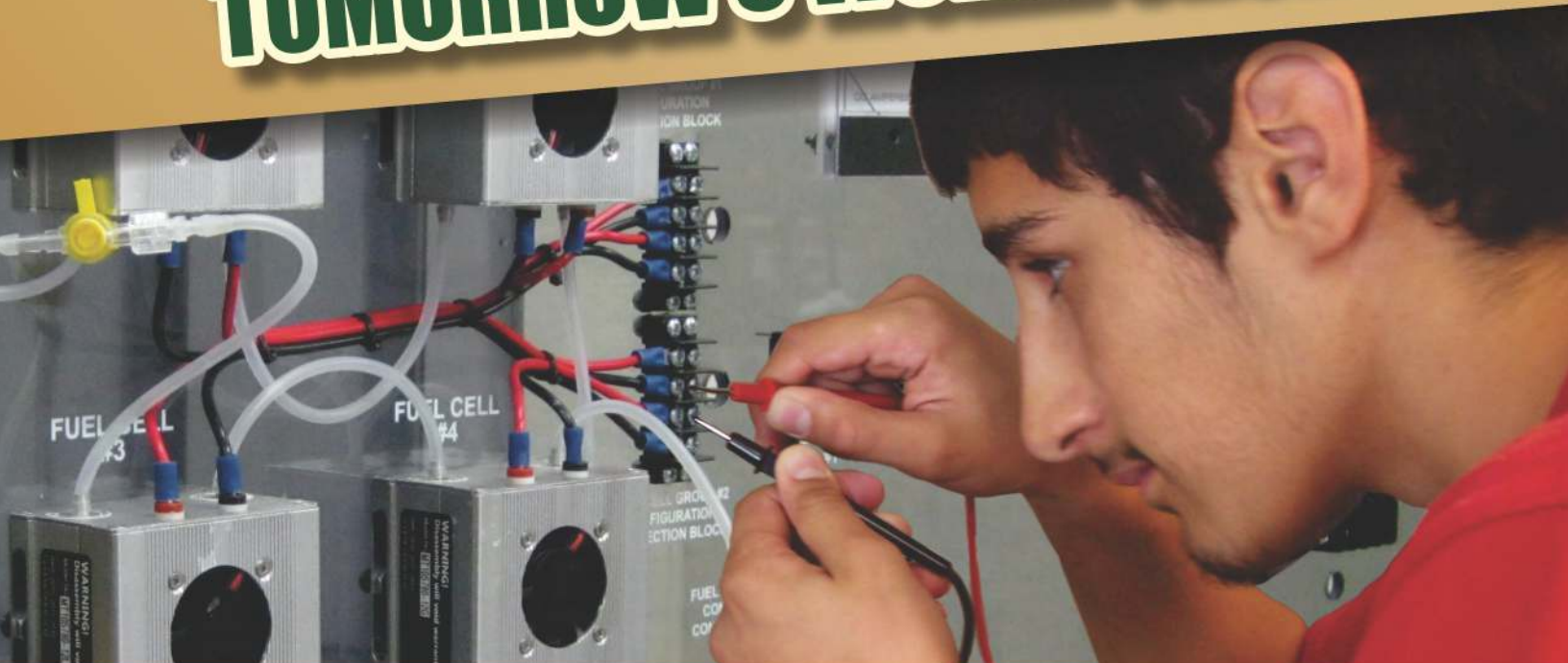


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*Due to upgrades, actual product may differ from what is shown.

OUR COMMITMENT TO QUALITY EDUCATION

Marcraft's mission is to develop products and curriculum of exceptional quality for use in effectively teaching and training individuals in careers such as Cybersecurity & IT, Green Technologies, Smart Homes, Connectivity and more. These programs are tailored toward today's high-demand skill sets. Marcraft stands above the rest as the premier technical training provider specializing in hands-on, real-world inspired labs and practicums. Marcraft's approach to these subjects focuses on providing a comprehensive and integrated program tailored toward achieving the skills, knowledge, and certification necessary to begin and/or advance the career of choice.



WHY CHOOSE MARCRAFT?

Marcraft has been providing technical training solutions for more than 40 years. Today, we focus on Green Technology, Connectivity, and Security System training programs that excel in either a classroom or professional training environment. We engineer and design the training hardware, training software and courseware materials necessary for success in your school classroom, career/technical education facility, or professional training environments around the globe. Marcraft serves customers in all 50 states, the Canadian provinces and in more than 30 countries around the world.

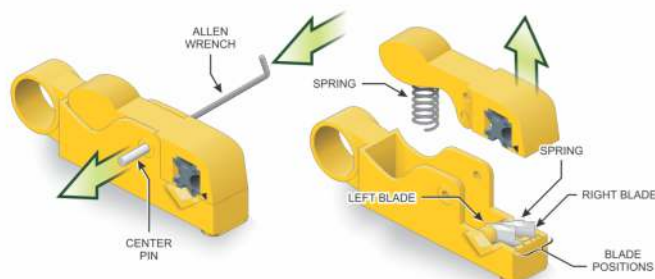
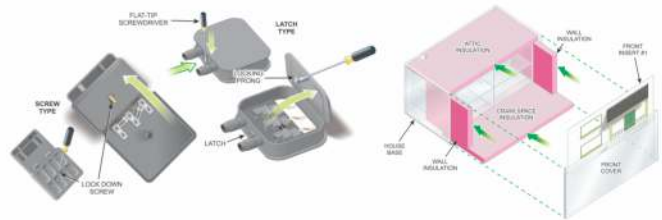


FOR THE STUDENT

Providing just a textbook or online learning to teach different skills is an incomplete approach. Learning should be both cognitive and physical. Our programs consist of instruction for both theory and hands-on procedures using real equipment and software students will encounter in the field. All books are fully illustrated, and authored by experienced professionals in each discipline.

Nowhere else will students will receive this level experience and interaction in their chosen field.

- Hands-on, Industry-Inspired Lab Exercises
- Comprehensive and Illustrated Curriculum
- Test Prep for Industry Certification Exams
- Extensive Online Content
- Real-World Experience Used to Create Step-by-Step Paths to Certification



Marcraft is a proud supporter & contributor at the National SkillsUSA Competition!



WHY CHOOSE MARCRAFT?

FOR THE INSTRUCTOR

Marcraft programs include everything an instructor needs to successfully prepare students for careers in their chosen skill. These all-inclusive programs are customizable to each different learning environment. Each program includes outstanding instructor support and training, industry standard hardware and our elite curriculum to ensure student success rates stay high.

All of Marcraft's turn-key programs come with access to an instructor specific Online Learning Management System (LMS) complete with the proper curriculum, test banks, PowerPoints and gradebook features needed to teach the material to each select group of students.

Instructors can use the materials provided to assist students with their industry certification test preparations. Utilizing the LMS portal, instructors have access to study guides, reference material and even test banks which can be used to create customized practice tests specific to your students' needs.

- On-Site Instructor Training
- Online Classroom Management (LMS)
- 1-800 Tech Support
- Industry Certification Test Prep
- Industry Standard Hardware



Instructor Training at Lompoc, California

“So the benefits of having the labs built into the workbooks, is that it's unique. Not a lot of programs do that. I have a lot of trainers, not a lot of them come with a curriculum, not a lot of them will come with a team that will come out and train you and make you feel more confident. Not a lot of them come with the workbook pages, plus the student version, the teacher resources, it a whole wide array that makes it doable. I can access it, I understand it. I'm able to go and dive in and learn things with the students.”

ALISSA WALLEN
COBB INNOVATION AND TECHNOLOGY ACADEMY
COBB COUNTY, GEORGIA



Charles Brooks (second from left) performing instructor training at Sarawak Skills Development Centre Kuching, Malaysia



Universidad Politecnica Salesiana Instructor Training in Ecuador

WHY CHOOSE MARCRAFT?

FOR THE EMPLOYER

All Marcraft programs are created and built using industry standard hardware and software to ensure all hands-on activities match with real world expectations. This genuine training experience prepares students for potential career paths in their chosen skill by preparing them for both their industry standard certifications exams as well as their first day in the field.

“CTE is an investment in the future of our economy, our workforce and our country.”

REPRESENTATIVE JAMES LANGEVIN

Desirable career certifications are at the heart of what Marcraft represents. With leading experts from both the educational and industrial communities, we have created instructional materials and certification practice exams in an effort to exhaustively prepare students for their future. In pursuit of the desired certification, students will gain not only the knowledge of theory that they will need to succeed, but also all of the hands-on skills that employers demand.

**Hands-on Skills
Employers Demand!**



What is Career and Technical Education?

CTE is delivered at comprehensive and dedicated high schools, area technical centers, community colleges, technical colleges, and some 4-year universities. Students can earn industry certifications and licenses along with other degrees.

CTE is the answer to the nation's projected deficit of 6.5 million skilled workers in various fields.

“Students in postsecondary CTE programs are more likely to be employed within five years than those in an academic field of study.”

CTEworks



INDUSTRY CERTIFICATIONS

MARcraft PROGRAMS PREPARE STUDENTS FOR THESE CERTIFICATIONS:



GREEN TECHNOLOGIES

1. NABCEP PV Installer, Entry Level
Marcraft Course: Solar/PV Installer Certification Program
2. Electronic Technicians Association (ETA) Solar/PV Installer
Marcraft Course: Solar/PV Installer Certification Program
3. Electronic Technicians Association (ETA) Small Wind Installer
Marcraft Course: Wind Turbine Technician Training Guide
4. RESNET Rater
Marcraft Course: Energy Auditing



SMART HOME

1. Electronic Technicians Association (ETA) Basic Smart Technology Systems (STS)
Marcraft Course: STS Basic Certification Program
2. Electronic Technicians Association (ETA) STS Audio-Video Endorsement
Marcraft Course: STS Audio-Video Endorsement
3. Electronic Technicians Association (ETA) STS Security-Surveillance Endorsement
Marcraft Course: STS Security-Surveillance Endorsement
4. Electronic Technicians Association (ETA) STS Computer Networking Endorsement
Marcraft Course: STS Computer Networking Endorsement
5. Electronics Technicians Association (ETA) STS Environmental Controls Endorsement
Marcraft Course: STS Environmental Controls Endorsement



SPECIALTY PROGRAMS

1. Electronic Technicians Association (ETA): Certified Alarm Security Technician
Marcraft Course: Security & Surveillance Certification Program
2. Electronic Technicians Association (ETA): Fiber Optic Installer
Marcraft Course: Fiber Optic Installer Certification Program
3. Electronic Technicians Association (ETA) Data Cabling Installer
Marcraft Course: Low Voltage Wiring Certification Program

Please note, we provide programs that help prepare students for these certification examinations, not the certifications themselves.

WHY GET CERTIFIED?

THE ADVANTAGES OF INDUSTRY CERTIFICATION

#1 Demonstrates Proficiency

An industry certification verifies an individual possesses the knowledge and skills needed to thrive in the workforce. The standards assessed in a certification exam are established by industry leaders and are based on industry needs. Employers can be assured the individual has mastered the industry standards tested in the certification exam and are highly-qualified and well-trained employees.

#2 Leads to More Employment Opportunities

An industry certification can open doors when it comes to employment opportunities. Studies show individuals who earn industry certifications are more likely to be employed one year after earning a certification. Because those who earn industry certifications have a verified set of knowledge and skills, employers are more willing to hire them compared to someone without an industry certification. Comparatively, earning a certification can be a valuable asset to individuals who are looking to advance their career through promotions.

#3 Increases Earning Potential

Because industry certification earners are more proficient and effective in their positions, they are more likely to earn higher salaries and pay increases than those without industry certifications.

#4 Offers Professional Development Opportunities

Some businesses and industries encourage employees to expand their knowledge and skills by offering professional development opportunities or requiring continuing education credits. Earning an industry certification is a way for a student or employee to strengthen their resume while becoming a more valuable asset to their company.

#5 Provides Job Security

While not all careers require a 4-year college degree, more than half of all jobs descriptions in the U.S. call for some form of post-secondary education. 53 percent of jobs are considered middle-skills positions. These positions require education beyond a high school diploma but less than a college degree. However, only 43 percent of individuals possess the necessary requirements to fill middle-skills positions. One way to meet the necessary educational and training requirements of a middle-skill position is by earning an industry certification. Researchers estimate by 2024, 48 percent of all job openings will be middle-skill positions.

#6 Offers Professional Credibility

Not only does an industry certification boost an individual's credibility with employers, it can also be a signal to coworkers and other professionals in the industry the certification earner is highly-qualified and possesses the necessary knowledge and skills needed to be an asset to the company. Individuals who possess professional credibility are more likely to be effective in their positions, find more enjoyment in their work and experience camaraderie with their coworkers and supervisors.

#7 Shows Commitment to Industry

An individual who earns an industry certification demonstrates his or her passion commitment to the industry. Earning an industry certification requires a significant investment of time and effort and indicates the individual is willing to put forth the necessary requirements to achieve success.

#8 Keeps Current with Industry Changes

Earning an industry certification guarantees the individual is up-to-date with current industry standards and practices, especially if the individual has been in the field in for a significant portion of their career. Remaining current is particularly important in industries where the technologies and methods change quickly.

#9 Increases Employee Value

Regardless of an individual's career stage, listing an industry certification on a resume is a signal to potential employers the applicant has the necessary knowledge and skills needed to be an effective employee. On average, employers spend \$1,252 and invest 33.5 hours to training a new employee. However, this investment does not ensure an employee will be fully productive after the 33.5 hours, and it takes an average of eight months for an employee to be fully, independently productive. Individuals who have earned an industry certification require less on-the-job training and become fully productive at a faster rate. When an employer hires an industry certification earner, they save their company valuable time and resources by employing an individual who already possesses the necessary qualifications and training.

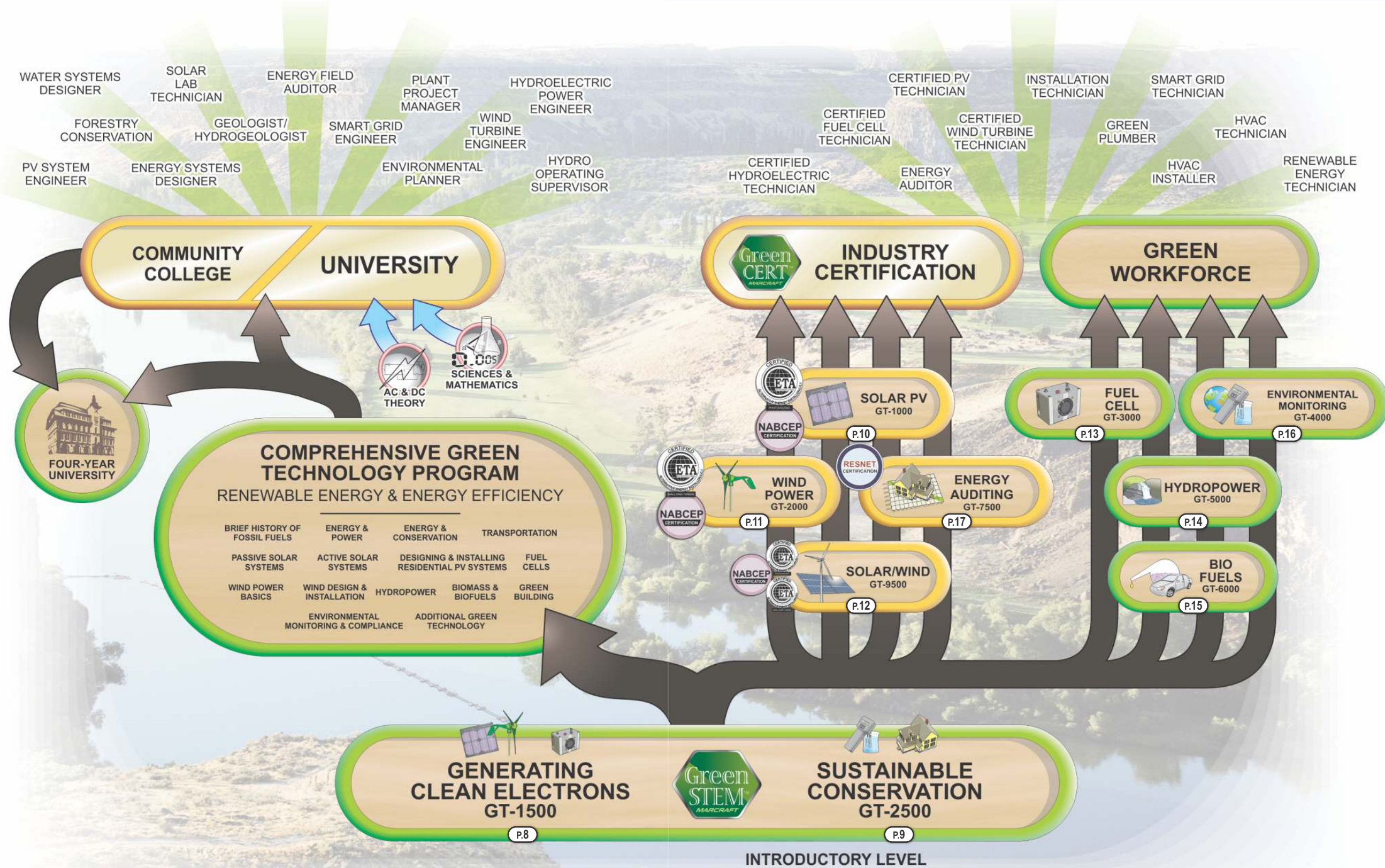
#10 Expands Professional Network

When an individual earns a certification from a recognized industry leader, he or she is automatically connected to the certifying organization. Not only does this allow the individual to associate themselves with the certifying organization, but they also join the ranks of others who have earned the industry certification. This expands their professional network, connecting them to thousands of individuals who share their knowledge, skills and passion for the industry.

NOTE: Industry certifications have much more validity and value when they are created and accepted by potential employers as "industry-standard". For example, if you conduct an Internet search on Indeed.com or other job search web sites with the certification name (ie. CompTIA Security+, Cisco CCNA, or ASE), you will find employers specifically asking for them.

Other certifications or certificates, many times proprietary in nature ("for us by us"), have been created by testing companies or curriculum companies as a way to sell tests or books. These do not provide much benefit to the student in terms of their marketability to an employer.

GREEN TECHNOLOGY CAREER PATHS





GENERATING CLEAN ELECTRONS GT-1500

The GT-1500 Clean Electron Generation course provides students an introductory, hands-on, interactive experience with the three leading sources of alternative energy generation technologies: Wind Power, Solar Power, and Fuel Cells. Upon completion, students will confidently be able to identify the individual components of each power generation approach and articulate their function and contribution to the overall process. Will prepare students for full-scale programs ahead.



Real World Hands-on Labs!

Not Just a Simulation! Hands-on Labs Use the Following Equipment:

- Photovoltaic Panels
- Wind Turbines
- Diversion Load Controllers
- Battery Storage System
- Electrolyzers
- Fuel Cells
- Inverters
- Control Panel Meters, Switches, & Fuses
- Multimeters

The Marcraft Generating Clean Electrons Course covers these topics:

Wind Power

- Installing and Testing a Wind Turbine
- Configuring and Testing Off-Grid Installations
- Design and Create a Wind Turbine Power System

Solar Power

- Installing, Combining, and Testing Solar Panels
- Configuring and Testing Off-Grid Installations
- Design and Create a Solar Charging System for Portable Hand-Held Devices

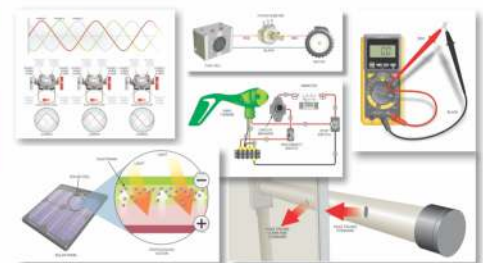
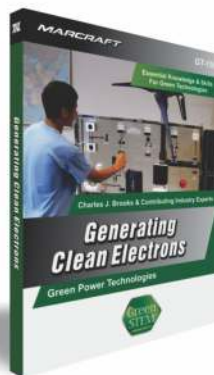
Fuel Cells

- Connecting a Fuel Cell for Electrical Generation
- Configuring and Testing Off-grid Installations
- Combining Wind and Solar Power Systems
- Configuring and Testing Combined Alternative Energy Systems for Off-Grid Operations

AND MUCH MORE!

INCLUDES:

- GT-1500 Clean Electron Generation Panel
- GT-150IG Instructor's Guide with PowerPoint Presentation Media (1 Per Classroom)



ACCESSORIES:

- GT-150 Generating Clean Electrons Text/Lab Guide
- GT-15T GREENSTEM Toolkit for the GT-1500
- GT-15C GREENSTEM Consumable Kit for the GT-1500
- GT-150SC SCADA Package



SUSTAINABLE CONSERVATION GT-2500

The GT-2500 Sustainable Conservation Technology Panel provides students an introductory hands-on interactive experience with multiple energy design, monitoring and auditing processes and technologies. As important as generating power and energy can be, it is equally important to understand how we can conserve and improve upon our current processes. With identification and analysis techniques learned throughout the course, students will understand how new techniques such as LEED design are improving the efficiency of our energy usage.



Not Just a Simulation! Hands-on Labs Use the Following Equipment:

- Passive Solar Water Heaters
- Data Loggers
- Temperature Sensors
- Wind Speed Sensors
- Sound Sensors
- Light Sensors
- Humidity Sensors
- Ph Sensors
- Dissolved Oxygen Sensors
- Computer Aided Drafting & Design Software

The Marcraft Sustainable Conservation Course covers these topics:

Energy Auditing

- Measuring Electrical Consumption of Devices
- Calculating Electrical Loads
- Implementing Power Saving Options
- Evaluating Insulation Values

Environmental Monitoring

- Gathering Data with Portable Datalogger
- Evaluating Soil and Water as Insulation
- Charting Temperature Changes Throughout a Structure with Different Insulation and Heating Conditions

Sustainable Architecture

- Structural Building Components' Affect on Energy Consumption
- Planning Sustainable Buildings
- Passive Solar Lighting and Heating Techniques
- LEEDS Standards

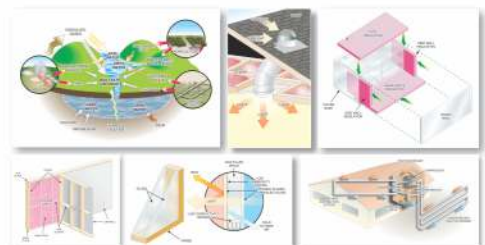
AND MUCH MORE!



Real World Hands-on Labs!

INCLUDES:

- GT-2500 Sustainable Conservation Technology Panel (Requires PC Workstation Computers)
- GT-250IG Instructor's Guide with PowerPoint Presentation Media (1 Per Classroom)



ACCESSORIES:

- GT-250 Sustainable Conservation Text/Lab Guide
- GT-250SC SCADA Package



SOLAR PHOTOVOLTAIC INSTALLER CERTIFICATION PROGRAM GT-1000

42 GW of new renewable power-generating capacity was added to the US grid, primarily driven by robust solar additions. Renewable energy use also set new highs: 8.8% of total US energy demand and 23% of electricity demand per Bloomberg, Feb. 28, 2024.

The Bureau of Labor Statistics projects that employment for solar photovoltaic installers will grow 22% from 2024 to 2034, which is much faster than the average for all occupations.

The Solar PV Technology Training Panel allows instructors to teach every aspect of solar power to their students. From installation, to configuration, to AC and DC conversion, students can learn how each of the features of solar power work together. Using the NABCEP and ETA certifications as guiding principles, students will gain valuable knowledge and experience in topics such as solar resources and principles; selection identification; proper installation sequence, performance characteristics and troubleshooting methods; permitting best safety practices; and economic impact.

CERTIFICATIONS:



ETA Photovoltaic Installer Level 1

NABCEP Exam

Not Just a Simulation! Hands-on Labs Use the Following Equipment:

- Photovoltaic Panels
- Load Diverters
- Inverters
- Battery Storage System
- Control Panel Meters, Switches, & Fuses
- Multimeters

The Marcraft Solar Photovoltaic Installer Certification Course covers these topics:

- Energy and Power
- Passive Solar Systems
- Active Solar Systems
- Troubleshooting PV Systems
- Building Codes and Compliance
- Understanding Blueprints
- Design & Installation of Residential Scale Photovoltaic Systems
- AND MUCH MORE!**

Real World Hands-on Labs!



INCLUDES:

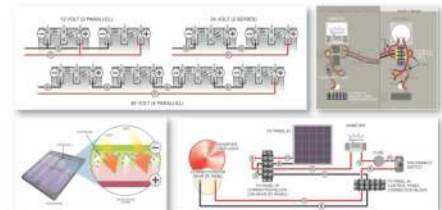
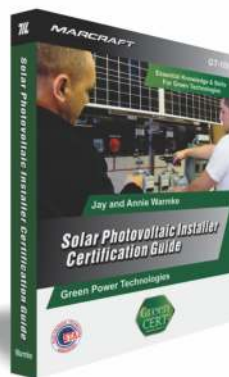
- GT-1000 Solar PV Technology Panel
- GT-100IG Instructor's Guide with PowerPoint Presentation Media (1 Per Classroom)

Not Just a Simulation! Hands-on Labs Use the Following Equipment:

- Photovoltaic Panels
- Load Diverters
- Inverters
- Battery Storage System
- Control Panel Meters, Switches, & Fuses
- Multimeters

The Marcraft Solar Photovoltaic Installer Certification Course covers these topics:

- Energy and Power
- Passive Solar Systems
- Active Solar Systems
- Troubleshooting PV Systems
- Building Codes and Compliance
- Understanding Blueprints
- Design & Installation of Residential Scale Photovoltaic Systems
- AND MUCH MORE!**



ACCESSORIES:

- GT-100 Solar PV Text/Lab Guide
- GT-10T Solar Panel Tool Kit
- GT-10C Solar Panel Consumable Set
- GT-100SC SCADA Package



WIND TURBINE INSTALLER CERTIFICATION PROGRAM GT-2000

Wind turbines, whether large or small, are increasingly popular for energy generation, especially in off-grid environments. As a result, manufacturers are constantly increasing development efforts to develop the next generation of smaller wind turbines. Marcraft's Wind Turbine training panel will prepare students on topics such as the theory of wind energy and electrical generation; site evaluation; design and selection of wind systems; proper installation, components, and troubleshooting methods; safety; finance; and environmental assessment and management.

CERTIFICATIONS:



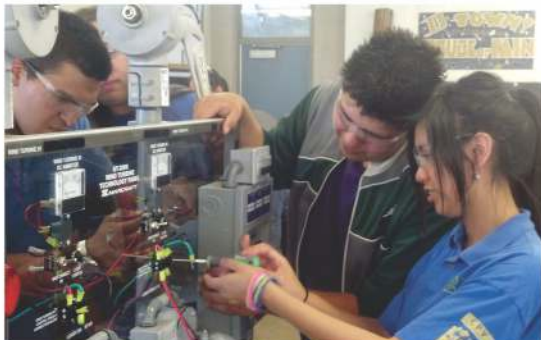
ETA Small Wind Turbine Installer Level 1

Not Just a Simulation! Hands-on Labs Use the Following Equipment:

- Wind Turbines
- Diversion Load Controllers
- Battery Storage System
- Inverters
- Control Panel Meters, Switches, & Fuses
- Multimeters

The Marcraft Wind Turbine Installer Certification Course covers these topics:

- Energy and Power
- Wind Power Technology
- Wind Turbine Design
- Troubleshooting Wind Turbine Systems
- Building Codes and Compliance
- Understanding Blueprints
- Design & Installation of Residential Scale Wind Turbine Systems
- AND MUCH MORE!**



Real World Hands-on Labs!

INCLUDES:

- GT-2000 Wind Turbine Technology Panel
- GT-200IG Instructor's Guide with PowerPoint Presentation Media (1 Per Classroom)



ACCESSORIES:

- GT-200 Wind Turbine Text/Lab Guide
- GT-20T Wind Panel Tool Kit
- GT-20C Wind Panel Consumable Set
- GT-2000AC Advanced Controls Hardware
- GT-200SC SCADA Package



SOLAR/WIND ENERGY CERTIFICATION PROGRAM GT-9500

Best of Two Worlds! Combine solar and wind technology into one comprehensive learning environment focusing on the best in new green technologies. The best of the GT-1000 and GT-2000 in one panel and one curriculum.

CERTIFICATIONS:



ETA Photovoltaic Installer - Level 1



ETA Small Wind Turbine Installer - Level 1

NABCEP Exam

Not Just a Simulation! Hands-on Labs Use the Following Equipment:

- Solar Photovoltaic Panels
- Wind Turbines
- Diversion Load Controllers
- Battery Storage System
- Inverters
- Control Panel Meters, Switches, & Fuses
- Multimeters

The Marcraft Solar/Wind Installer Certification Course covers these topics:

- Energy and Power
 - Passive Solar Systems
 - Active Solar Systems
 - Troubleshooting PV Systems
 - Wind Power Technology
 - Wind Turbine Design
 - Troubleshooting Wind Turbine Systems
 - Building Codes and Compliance
 - Understanding Blueprints
 - Design & Installation of Residential Scale Photovoltaic Systems
 - Design & Installation of Residential Scale Wind Turbine Systems
- AND MUCH MORE!**



INCLUDES:

- GT-9500 Solar/Wind Energy Training System
- GT-100IG Solar PV Installer Instructor's Guide with PowerPoint Presentation Media (1 Per Classroom)
- GT-200IG Wind Turbine Installer Instructor's Guide with PowerPoint Presentation Media (1 Per Classroom)



ACCESSORIES:

- GT-100 Solar PV Text/Lab Guide
- GT-200 Wind Turbine Text/Lab Guide
- GT-10T Solar Panel Tool Kit
- GT-10C Solar Panel Consumable Set
- GT-20T Wind Panel Tool Kit
- GT-20C Wind Panel Consumable Set
- GT-2000AC Advanced Controls Hardware
- GT-950SC SCADA Package



FUEL CELL TRAINING PROGRAM GT-3000

The Marcraft Fuel Cell Technology training program is designed to provide students with a comprehensive understanding of fuel cell technology. The program covers the fundamentals of fuel cell systems, including their construction, operation, and maintenance. Students will gain experience working with data acquisition software, graphing and scientific calculators, mechanical drawings and digital multimeters. A Fuel Cell Technician may work in transportation or portable and stationary applications.



Not Just a Simulation! Hands-on Labs Use the Following Equipment:

- Photovoltaic Panels
- Electrolyzers
- Fuel Cells
- Inverters
- Control Panel Meters, Switches, & Fuses
- Multimeters

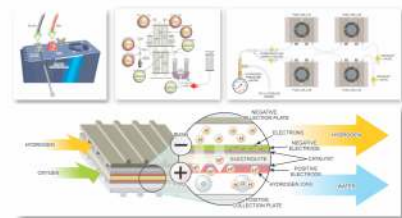
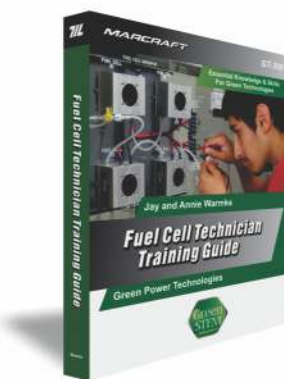
The Marcraft Fuel Cell Training Course covers these topics:

- History of Fossil Fuels
- Environmental Concerns
- Electric Grid
- Alternative Energy Sources
- Types of Energy
- Potential and Kinetic Energy
- Voltage and Current
- Electrical Loads
- Electrical Power Consumption
- Power Math
- Making Electrical Connections
- History of Fuel Cells
- Hydrogen Production, Storage and Transportation
- Types of Fuel Cells
- How Fuel Cells Work
- Fuel Cell Systems
- Future of Fuel Cells
- AND MUCH MORE!**



INCLUDES:

- GT-3000 Fuel Cell Technology Panel
- GT-300IG Instructor's Guide with PowerPoint Presentation Media (1 Per Classroom)



ACCESSORIES:

- GT-300 Fuel Cells Text/Lab Guide
- GT-30T Fuel Cell Panel Tool Kit
- GT-30C Fuel Cell Panel Consumable Set
- GT-300SC SCADA Package



HYDROPOWER TRAINING PROGRAM GT-5000

Marcraft's Hydropower training panel will ensure individuals are trained in all aspects of the operation and maintenance of a hydro generation plant, as well as flow control of the river system and tributaries. They will confidently be able to monitor equipment conditions and performance, accomplish preventive and minor maintenance routines, and conduct process control and failure analyses. Students will operate plant equipment such as turbines, pumps, valves, gates, fans, electric control boards, and battery banks.



Not Just a Simulation! Hands-on Labs Use the Following Equipment:

- Multimeters
- Motors and Gears
- Water Wheels
- Control Panel Meters, Switches, & Fuses
- Flow Meters

The Marcraft Hydropower Training Course covers these topics:

- Types of Energy
- Potential and Kinetic Energy
- Voltage and Current
- Electrical Loads
- Electrical Power Consumption
- Power Math
- Making Electrical Connections
- History of Hydropower
- Hydropower Terms
- Measuring Head and Flow
- Microhydropower Systems
- Turbines
- Maintenance
- Economics of Microhydropower
- AND MUCH MORE!**

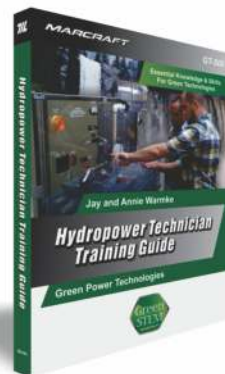


Real World Hands-on Labs!



INCLUDES:

- GT-5000 Hydropower Technology Panel
- GT-500IG Instructor's Guide with PowerPoint Presentation Media (1 Per Classroom)



ACCESSORIES:

- GT-500 Hydropower Text/Lab Guide
- GT-500SC SCADA Package



BIOFUELS TRAINING PROGRAM GT-6000

Marcraft Biofuels Training Program is designed to provide students with a comprehensive understanding of biofuel technology. Within the GT-6000 training panel, students will understand the various ways of making biofuels including chemical reactions, fermentation, and heat to break down the starches, sugars, and other molecules in plants. The resulting products are then refined to produce a fuel that cars or other vehicles can utilize for power. In this program, students will work with and understand a variety of fuel sources including corn, sugarcane, soybeans and other plants that are used to produce biofuels.



Not Just a Simulation! Hands-on Labs Use the Following Equipment:

- Stills
- Hydrometers
- Biodiesel Production Equipment
- Biofuel-Powered Radio Controlled Truck

The Marcraft Biofuels Training Course covers these topics:

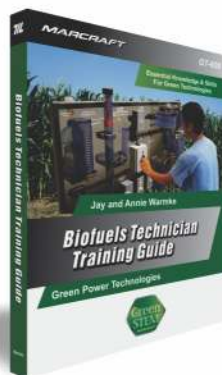
- Types of Energy
- Potential and Kinetic Energy
- Power Math
- Transportation Fuels
- Biomass and Biofuels Basics
- Types of Energy Produced
- Pyrolysis
- Gasification
- Anaerobic Digestion
- Ethanol, Biodiesel & Green Diesel
- Limitations to Overcome
- Wood Gas Generators
- Backyard Ethanol
- Backyard Biodiesel
- Safety and Quality Control
- By-product Management
- AND MUCH MORE!**



Real World Hands-on Labs!

INCLUDES:

- GT-6000 Biofuel Technology Panel
- GT-6080 Biofuels-Powered Radio Controlled Truck
- GT-600IG Instructor's Guide with PowerPoint Presentation Media (1 Per Classroom)



ACCESSORIES:

- GT-600 Bio-Fuels Text/Lab Guide
- GT-60C Bio-Fuels Consumable Set
- GT-600SC SCADA Package



ENVIRONMENTAL MONITORING GT-4000

The Environmental Monitoring (EM) Training Program enables students to study the human effect on our environment. Hands-on labs introduce students to data loggers, sensors, and lab equipment to perform the necessary tests on air and water to establish quality, identify heavy metals, eliminate noise pollution, and filter out light and UV radiation, to name a few. EM technicians provide critical data for environmental scientists and specialists.



Not Just a Simulation! Hands-on Labs Use the Following Equipment:

- Data Loggers
- Temperature Sensors
- Wind Speed Sensors
- Sound Sensors
- Light Sensors
- Humidity Sensors
- pH Sensors
- Dissolved Oxygen Sensors
- Carbon Dioxide Sensors

The Marcraft Environmental Monitoring Course covers these topics:

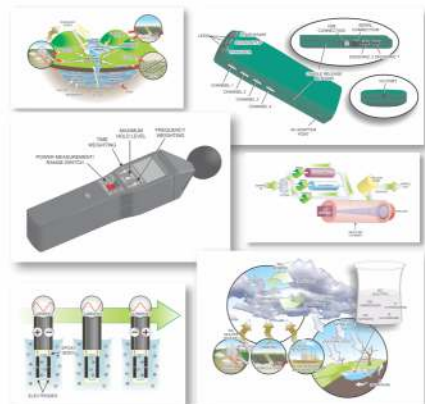
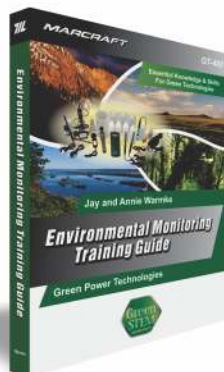
- Monitoring Air Quality
- Radon Gas
- Carbon Monoxide and Combustible Gases
- Carbon dioxide
- Volatile Organic Compounds
- Airborne Lead
- Asbestos
- Monitoring Water Quality
- Radon in Water
- Heavy Metals
- Pesticides
- Environmental pH Water Assessments
- Sound and Noise Pollution
- Light and UV Radiation
- Environmental pH Soil Sampling
- Lead Pollution in Soil
- AND MUCH MORE!**

Real World Hands-on Labs!



INCLUDES:

- GT-4000 Environmental Monitoring Technology Module (Requires PC Workstation Computers)
- GT-400IG Instructor's Guide with PowerPoint Presentation Media (1 Per Classroom)



ACCESSORIES:

- GT-400 Environmental Monitoring Text/Lab Guide
- GT-40C Environmental Monitoring Consumable Set



ENERGY AUDITING CERTIFICATION GT-7500

Establish working knowledge of standard energy auditing practices and LEED certification standards. Be able to calculate the energy efficiencies of lighting as well as evaluate the climate control capabilities of structural designs and insulation materials. Effectively use current technologies available including infrared cameras for evaluation of both residential and commercial buildings.

CERTIFICATIONS:



RESNET Home Energy Rater Certification

Not Just a Simulation! Hands-on Labs Use the Following Equipment:

- Model House with Heating System
- Infrared Camera
- Passive Heating System
- Different Insulation
- Different Types of Light Bulbs

The Marcraft Energy Auditing Certification Course covers these topics:

- Sustainable Architecture
- Residential and Commercial Structures
- Energy and Power
- Energy Audits
- Insulation, Windows, and Ventilation
- Lighting
- Hot Water Heaters
- Passive Solar Systems
- Green Design Considerations
- Building Codes and Compliance
- Understanding Blueprints

AND MUCH MORE!

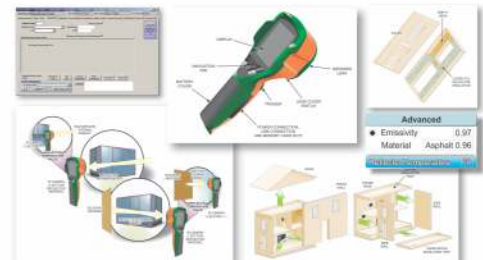
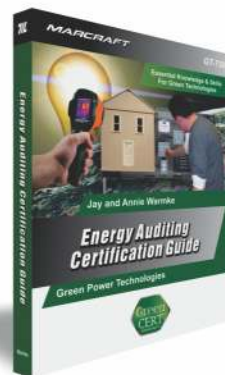


Real World Hands-on Labs!



INCLUDES:

- GT-7500 Energy Auditing Technology Panel (Requires PC Workstation Computers)
- GT-7510 IR Camera
- GT-750IG Instructor's Guide with PowerPoint Presentation Media (1 Per Classroom)



ACCESSORIES:

- GT-750 Energy Auditing Text/Lab Guide
- GT-750SC SCADA Package



GREEN TECHNOLOGY CONCEPTS AND PRACTICES

GT-900T

This Marcraft GreenSTEM Textbook sets the stage introducing the principles that led us to the quest for rapid expansion of green technologies - the worldwide energy crisis, global warming, rapidly expanding middle classes around the world, diminishing worldwide resources, and global power economics. In subsequent chapters, basic electrical principles are covered along with the theory of each major green technology, which is covered in detail. In each case, you will learn the underlying science of the technology, the application of the science to these technologies, math principles associated with the technology as well as engineering and design principles required to implement and scale the technology.



The Marcraft Green Technology Concepts and Practices Text Book covers these topics:

- Solar (Photovoltaic) Power (Design and Installation)
 - Solar Thermal (Solar Hot Water)
 - Small Wind Power (Design and Installation)
 - Fuel Cell Technology
 - Biofuels (Ethanol and Biodiesel) and Biomass
 - Micro-Hydro Power Systems
 - Energy Conservation Techniques
 - Energy Auditing
 - Green Building Concepts
 - Transportation Issues
 - Environmental Compliance and Monitoring
 - Ocean Energy, Geothermal Energy, and Nuclear Energy
- AND MUCH MORE!**

INCLUDES:

GT-900T Green Technology Concepts & Practices Text Book

SCADA

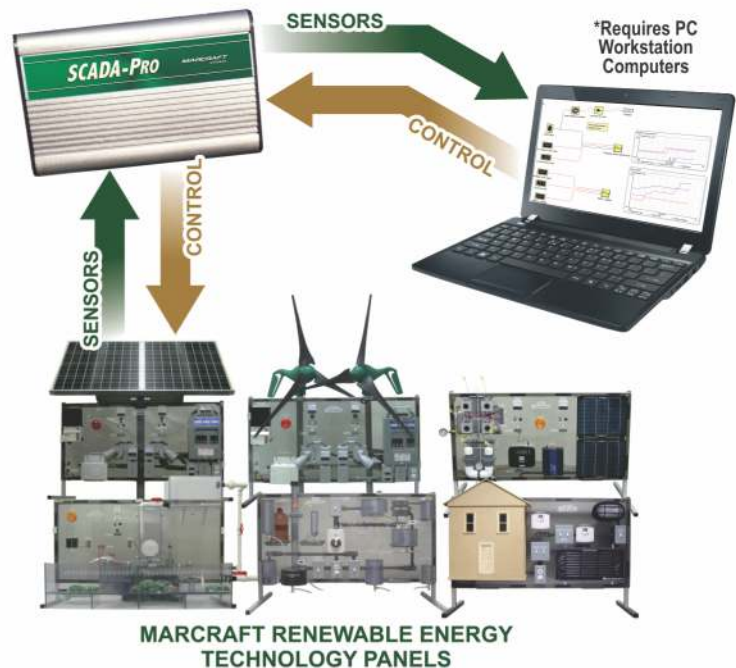
SCADA (Supervisory Controls And Data Acquisition) systems are comprised of both hardware and software used to control processes as well as acquire all necessary data needed for future analysis, from one location. This functionality can be added to all Marcraft Green Technologies Panels and/or Programs with the exception of the GT-4000 program. By attaching the SCADA-Pro interface and sensors to the back of the panel, a computer can then be connected to the SCADA-Pro interface. Using the provided software, students can monitor multiple measurements in real time.

Sensor Types:

- DC Current
- DC Voltage
- AC Current
- AC Voltage
- Temperature
- Pressure
- RPM
- Flow Rate

Data Acquisition & Control Buildable Systems:

- On/Off
- Digital Logic
- Proportional
- Derivatives
- Integral Controls
- Combinations



*Requires PC Workstation Computers

AVAILABLE ADD-ONS FOR THESE PANELS:

GT-100SC	GT-1000 SCADA Add-on	GT-300SC	GT-3000 SCADA Add-on
GT-150SC	GT-1500 SCADA Add-on	GT-500SC	GT-5000 SCADA Add-on
GT-200SC	GT-2000 SCADA Add-on	GT-750SC	GT-7500 SCADA Add-on
GT-250SC	GT-2500 SCADA Add-on	GT-950SC	GT-9500 SCADA Add-on

PANELS BUILT FOR SCADA

GT-600SC Biofuels SCADA Panel



STS BASIC CERTIFICATION PROGRAM STS-1000

Teach students to install and interconnect residential electronic communications, computer, control and entertainment equipment. These expert training systems are the perfect addition to existing construction or electronics program.

Smart Technology Systems (STS) is a professional certification for those who design and oversee the installation and integration of electronics systems in residences and light commercial buildings. In a modern integrated environment, these system are associated with the facility's SOHO networks – both wired and wireless.

CERTIFICATIONS:



ETA Basic Smart Technology Systems



Real World Hands-on Labs!

Not Just a Simulation! Hands-on Labs Use the Following Equipment:

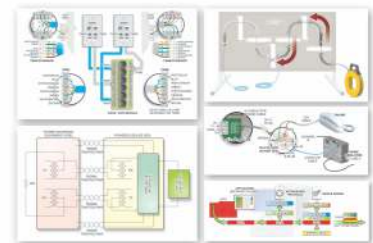
- Integration Controllers
 - Distribution Boards
 - Power Injectors & IR Repeaters
 - Phone Line Simulators
 - Coaxial Splitters
 - 110-Type & 66-Type Connection Blocks
 - Cable Testers
 - Home Routers
- AND MUCH MORE!**

The Marcraft STS Basic Certification Course covers these topics:

- Protective Gear & Protection
 - Safe Tool and Equipment Use
 - OSHA Regulations
 - Basic First Aid & CPR
 - Meters, Circuit Breakers & Branch Circuits
 - NEC Wire Standards
 - Wiring Load Calculations
 - Light Fixtures & Light Controls
 - Grounding & Bonding
 - Basic Hand Tools & Specialized Test Tools
 - Cable Pulling
 - Labeling and Documentation
 - Structured Wiring Standards
 - Wires, Connectors & Terminations
 - Category Wiring Standards
 - Introduction to Blueprints
 - New Construction Rough-in Techniques
 - Retrofit Installation Applications
 - Customer Service Skills
 - Troubleshooting Essentials
- AND MUCH MORE!**

INCLUDES:

- RS-500 Test Wall & Peripherals
- RS-200 Low Voltage Wiring Lab Panel
- RS-8000 Residential Networking Station (Requires Two PC Workstations)
- RS-4000 Home Integration Panel
- RS-100IG Instructor's Guide with PowerPoint Presentation Media (1 Per Classroom)



ACCESSORIES & ENDORSEMENT PACKAGES:

- RS-100SET STS BASIC Text and Lab Guide
 - RS-400 Consumables Kit
 - RS-450 STS Tool Kit
 - RS-6000 STS Audio/Video Endorsement (AV) Package
 - RS-8000 STS Computer Networking (CN) Endorsement Package
 - RS-3000 STS Environmental Controls (EC) Endorsement Package
 - RS-9000 STS Security & Surveillance (SS) Endorsement Package
- (More Endorsement Info on Next Pages)*

STS ENDORSEMENT PACKAGE

In addition to the BASIC STS Certification, it is possible to obtain additional endorsements for more specialized areas of home electronics integration.

NOTE: Requires the RS-1000

CERTIFICATIONS:



- ETA Smart Technology Systems Audio-Video Endorsement (AV)
- ETA Smart Technology Systems Computer Networking Endorsement (CN)
- ETA Smart Technology Systems Environmental Controls Endorsement (EC)
- ETA Smart Technology Systems Security-Surveillance Endorsement (SS)



Real World Hands-on Labs!

INCLUDES:

- RS-6000 Audio-Video System Lab Panel
- RS-8000 Residential Networking Equipment Package (Requires 2 PC Workstation Computers)
- RS-3000 Multi-Zone HVAC System Panel
- RS-7000 Residential Power & Control System Panel
- RS-9000 Security Installer Panel (Requires a PC Workstation Computer)
- RS-100EIG STS Endorsements Instructor's Guide with PowerPoint Presentation Media (1 Per Classroom)

ACCESSORIES:

- RS-600E STS AV Text/Lab Guide
- RS-800E STS CN Text/Lab Guide
- RS-300E STS EC Text/Lab Guide
- RS-900E STS SS Text/Lab Guide

STS AUDIO/VIDEO ENDORSEMENT RS-6000

STS professionals that possess the Audio/Video (AV) Endorsement know about monitors, speakers, amplifiers, distribution systems and antennas. They also understand acoustics and the electrical signals used by these devices.

NOTE: Requires the RS-1000

CERTIFICATIONS:



- ETA Smart Technology Systems Audio-Video Endorsement (AV)

INCLUDES:

- RS-6000 Audio-Video System Lab Panel
- RS-100EIG STS Endorsements Instructor's Guide with PowerPoint Presentation Media (1 Per Classroom)



ACCESSORIES:

- RS-600E STS AV Text/Lab Guide



STS COMPUTER NETWORKING ENDORSEMENT

RS-8000

With the Computer Networking (CN) Endorsement, STS professionals demonstrate advanced knowledge of computer networks, networking hardware, and communication wiring. They should also know how to configure networks and devices.

NOTE: Requires the RS-1000

CERTIFICATIONS:



ETA Smart Technology Systems
Computer Networking Endorsement (CN)

INCLUDES:

- RS-8000 Residential Networking Equipment Package (Requires 2 PC Workstation Computers)
- RS-100EIG STS Endorsements Instructor's Guide with PowerPoint Presentation Media (1 Per Classroom)



ACCESSORIES:

- RS-800E STS CN Text/Lab Guide

STS ENVIRONMENTAL CONTROLS ENDORSEMENT

RS-8500

The Environmental Controls (EC) Endorsement show that an STS professional has studied lighting and HVAC controls, along with controls for other features such as remote door entry, energy, curtains, aquariums, pools, ponds, water fountains and water sprinklers.

NOTE: Requires the RS-1000

CERTIFICATIONS:



ETA Smart Technology Systems
Environmental Controls Endorsement (EC)

INCLUDES:

- RS-3000 Multi-Zone HVAC System Panel
- RS-7000 Residential Power & Control System Panel
- RS-100EIG STS Endorsements Instructor's Guide with PowerPoint Presentation Media (1 Per Classroom)



ACCESSORIES:

- RS-300E STS EC Text/Lab Guide

STS SECURITY & SURVEILLANCE ENDORSEMENT

RS-9000

By obtaining the STS Security & Surveillance (SS) Endorsement, STS professionals show proficiency installing, configuring, and troubleshooting security, fire, and surveillance systems.

NOTE: Requires the RS-1000

CERTIFICATIONS:



ETA Smart Technology Systems
Security-Surveillance Endorsement (SS)

INCLUDES:

- RS-9000 Security Installer Panel (Requires a PC Workstation Computer)
- RS-100EIG STS Endorsements Instructor's Guide with PowerPoint Presentation Media (1 Per Classroom)



ACCESSORIES:

- RS-900E STS SS Text/Lab Guide



FIBER OPTICS INSTALLER CERTIFICATION COURSE DC-6000

The Complete Fiber Optic Installers Certification Course from Marcraft prepares technicians to answer the growing demand for qualified cable installers who can understand and implement fiber-optic technologies. The text/lab book covers the theory and hands-on skills needed to prepare students for fiber-optic entry-level certification.

CERTIFICATIONS:



ETA Fiber Optics Installer Certification

Not Just a Simulation! Hands-on Labs Use the Following Equipment:

- Wire Cutters & Strippers
- Fiber Optical Connectors & Plugs
- Fiber Optical Patch Panel
- Fiber Optical Splice Case
- Optical Time Domain Reflectometer
- Fusion Splicer

The Marcraft Fiber Optic Installers Certification Course covers these topics:

- Fiber Tools and Safety Considerations
- Basic Concepts of Fiber Optics
- Optic Fundamentals for Fiber Optics
- Optical Devices
- Fiber Connections
- Fiber Optics Network System
- Documentation and Troubleshooting
- Understanding Blueprints
- AND MUCH MORE!**



Real World Hands-on Labs!

INCLUDES:

- DC-6000 Fiber Cabling Lab Workstation
- DC-60T Fiber Cabling Tool Set
- DC-60C Fiber Cabling Consumable Supplies Set
- DC-600IG Instructor's Guide with PowerPoint Presentation Media (1 Per Classroom)



DC-695
Fusion Splicer



DC-690
Optical Time-Domain
Reflectometer

ACCESSORIES:

- DC-600 Fiber Cabling Text/Lab Guide
- DC-60T Fiber Cabling Tool Set
- DC-60C Fiber Cabling Consumable Supplies Set
- DC-690 Optical Time-Domain Reflectometer (OTDR)
- DC-695 Fusion Splicer

COMMERCIAL LOW-VOLTAGE WIRING CERTIFICATION PROGRAM DC-2000

The Complete Data Cabling Installers Certification, from the Electronic Technician Association (ETA), provides the IT industry with a vendor-neutral introduction for skilled personnel installing low voltage cabling.

Marcraft provides students with the knowledge and skills required to pass the ETA Data Cabling Installer Certification (DCIC) exam and to become a certified cable installer. The DCIC is nationally recognized and is the hiring criterion used by major communication companies.

CERTIFICATIONS:



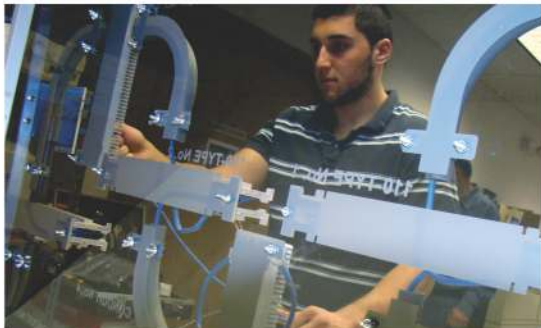
ETA Data Cabling Installer Certification

Not Just a Simulation! Hands-on Labs Use the Following Equipment:

- Fish Tape
- Multimeters
- 110-Type & 66-Type Connection Blocks
- Punch-down Tools
- Cable Strippers & Crimpers
- Ethernet Plugs & Jacks
- Cable Testers

The Marcraft Commercial Low-Voltage Wiring Course covers these topics:

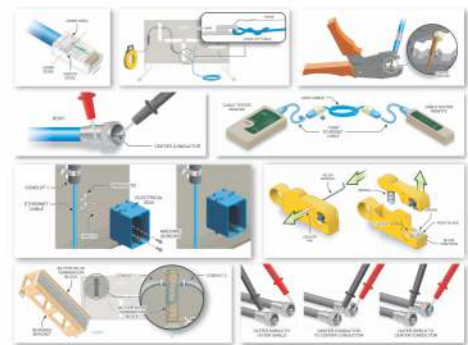
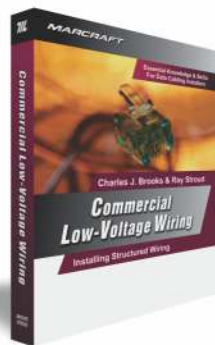
- Basic Standards and Practices
- Facilities Issues
- Cable Ratings and Performance
- Cable Installation and Management
- Testing And Troubleshooting
- Industry Standards
- Pulling Cable
- The Telephone System
- Understanding Blueprints
- AND MUCH MORE!**



Real World Hands-on Labs!

INCLUDES:

- | | |
|----------|---|
| DC-2000 | Structured Low Voltage Wiring Lab Workstation |
| DC-20D | Set of Data Cabling Durable Supplies |
| DC-20T | Set of Data Cabling Tools |
| DC-20C | Set of Data Cabling Consumable Supplies |
| DC-200IG | Instructor's Guide with PowerPoint Presentation Media (1 Per Classroom) |



ACCESSORIES:

- | | |
|--------|--|
| DC-200 | Commercial Low Voltage Wiring Text/Lab Guide |
| DC-20D | Set of Data Cabling Durable Supplies |
| DC-20T | Set of Data Cabling Tools |
| DC-20C | Set of Data Cabling Consumable Supplies |



SECURITY & SURVEILLANCE CERTIFICATION PROGRAM SS-2000

Alarm security technicians protect homes and businesses by installing, testing, and servicing security and surveillance systems. This type of job requires good knowledge of electrical principles. Marcraft provides a practical way to practice these skills with this certification course.

CERTIFICATIONS:



ETA Certified Alarm Security Technician (CAST)

Not Just a Simulation! Hands-on Labs Use the Following Equipment:

- Security Controllers
- Motion and Magnetic Switch Sensors
- Magnetic Door Locks
- Proximity Card Readers
- Push-to-Open Buttons
- Smoke Detectors and Fire Alarms
- Sirens & Strobes
- Security Controller Network Interfaces
- Relays
- Security Cameras
- Network DVRs
- Security Controller Software

The Marcraft Security & Surveillance Certification Course covers these topics:

- History & Evolution of Electronic Alarm Systems
- Basic Annunciation Configurations
- Alarm Electronic Systems
- Control Stations and Certificate Services
- Testing of Electronic Alarm System Circuits
- Creating and Development of First Central Station
- EMI and RFI Electrical Interference on Circuits
- Sensors and Input Devices
- Control Panels
- Keypad and Remote Programming
- Glass Protection, Motion and Shock Sensing
- Power Supplies and Power Backup
- Touch Screen, Computers and Telephone Input
- Fire Alarms Basics and Fundamentals
- Residential and Commercial Installations
- Wireless and Electrical Monitoring Supervision
- Wired and Wireless Alarm Systems
- Fire, Heat and Smoke Detection Devices
- Video Surveillance and Recording
- Internet Access to Security Systems
- Security Cameras
- Network Digital Video Recorders
- AND MUCH MORE!**

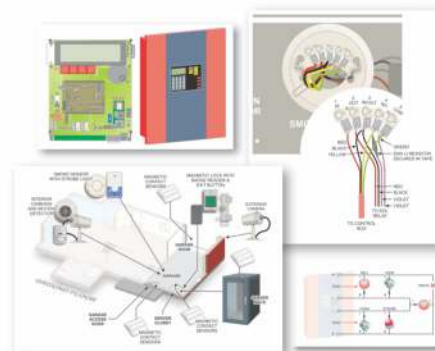


Real World Hands-on Labs!



INCLUDES:

- SS-2000 Security System Installer Panel
- SS-200IG Instructor's Guide with PowerPoint Presentation Media (1 Per Classroom)



ACCESSORIES:

- SS-200 Security System Installer Theory/Lab Guide
- SS-20D Security System Installer Durable Supplies Set
- SS-20T Security System Installer Tool Kit
- SS-20C Security System Installer Consumable Supplies Set

States use a variety of federal, state and local funds to pay for CTE programs, and research supports the need for more funding. High school students who complete at least two course credits in courses designated as “pathways” led to about a 95% graduation rate, and this is according to federal data. This translates to a 10% increase when compared to the national average. A 2019 University of Nevada study found that students who completed a CTE pathway scored significantly higher on the ACT composite math, science, English, reading and writing assessments than those who did not.

CTE associate degrees can pay **\$10,000** more per year than associate degrees in other fields – and can even pay more than bachelor’s degrees – while limiting student debt.

Georgetown University Center on Education and the Workforce, 2020

“Investing in high-quality training programs is key to addressing labor shortages for skilled jobs”, says Anthony Carnevale, director of Georgetown University’s Center on Education and the Workforce. “Unlike many European countries, the U.S. doesn’t have federally backed training programs, but the time may have come”, he says.

CTE is delivered at comprehensive and CTE-dedicated high schools, magnet schools, area technical centers, community and technical colleges and some four-year universities.



WHY CTE? CAREER TECHNICAL EDUCATION

CTE students earn industry certifications and licenses, postsecondary certificates, associate degrees, bachelor’s degrees and higher.

The Bureau of Labor Statistics defines green jobs as those that address either adaptation to or mitigation of climate change. Specifically, these jobs do at least one of the following: produce goods and services that benefit the environment; preserve natural resources; serve to make business processes more environmentally friendly; or reduce natural resource use.

92% of high school students and **69%** of college and adult students are engaged in CTE, learning skills in the classroom and on the job.

National Center for Education Statistics

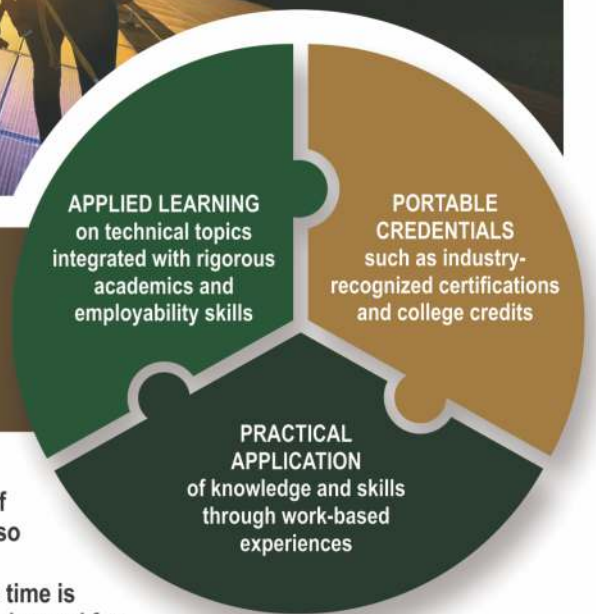
The demand for sustainability has created two parallel workforce phenomena — the development of new careers in the green industry, such as solar panel installers and wind turbine technicians, and the “greening” of all other jobs. Sustainability issues are growing very important in a number of careers. CTE offers early exposure to students regarding sustainable energy career options through curriculum integration and provides the “cutting edge” training necessary to ensure future employees meet workforce pipeline needs.

ACTE Issue Brief – Energy Sustainability

The rapid acceleration of job growth in so many “green” sectors at one time is creating huge demand for skilled workers. Without a corresponding system of education and training for these jobs, the clean energy and sustainability transition could be hampered. For example, according to the U.S. Department of Energy, in 2022, more than half of energy employers in many states reported difficulty finding qualified workers.

While it is unclear exactly how many new climate jobs will be created, projections up to 9 million this decade are realistic, many of which will be in contracting and construction. As stated directly from the article, “...many of these jobs will come from the federal expansion of apprenticeship programs as well as jobs in the skilled trades that do not always require a four-year degree”.

Career and Technical Education (CTE)
for Climate Jobs – MDRC July 2023



CTE is the answer to the nation’s projected deficit of **6.5 million** skilled workers, including infrastructure, health care and manufacturing workforce shortages.

Construction Industry Resources, 2021

All training units are built right here in our plant
in Western New York State.



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