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Programs, Professional, Promotion, Profile, Property, Products, Projects, Process, Profit, Proposal, Procedures, Proxy, Prototype, Protocol, Provision, Progress, Prosperity, Providers

training for technicians
training for engineers
seminars for managers
standardization
conferences
consulting for investors

Provided by prof. Dr.
Provided by experts
Held abroad
Held in Egypt
Held at your company

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ABD offers special trainings for a wide range of topics in Plastic Technology.
Optional in our company or on site – Egypt or Arabic countries.

ABD can communicate with its trainees via live chat

On line training, on sight training, on hands training, regular training, Newsletter, Blog

A few of our contents of training programs are as following:

- Types and properties of polymers and their potentials
- Components of PVC-recipes
- Mixing process with heating/cooling mixers
- Handling and transport of PVC dry-blend
- Operating Skills for Extrusion lines
- Maintenance skills for extrusion lines
- Electromechanical works
- Hydraulic diagrams and components
- Pneumatic diagrams and components
- Electronic circuits and programs
- Basics of twin screw design
- Twin screw process conditions
- Foaming of plastics, especially PVC

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- Co-extrusion for material and property optimization
- Wear protection of twin screws
- Pipe tooling
- Profile tooling
- International extrusion standards
- Extrusion of plastics filled with natural fiber
- International extrusion experiences
- Security aspects for extrusion of PVC and polyethylene
- Quality control topics according to international standards

On-site Training Contens:

- [Control Systems](#)
- [Engineering Drawing](#)
- [Computer Fundamentals](#)
- [Ind. & Molding Hydraulics](#)
- [Polymers](#)
- [Rotational Molding](#)
- [Blow Molding](#)
- [Plastics Process Control](#)
- [XY Mechanical Movement](#)
- [Intro to Pumps/Vacuum Systems](#)
- [Intro to Engineering Drawing](#)
- [Measuring and](#)
- [Metric Measurements](#)
- [Statistical Process Control](#)
- [Introduction to Injection Molding](#)
- [Mold Design/Maint. Diagnostics](#)
- [Elastomers](#)
- [Preventive/Predictive Maintenance](#)
- [Extrusion](#)
- [Thermoforming](#)
- [Machine Control Module](#)
- [Shop Math](#)
- [Basic Fluid Power](#)

Gauging

Control Systems (40 hour module)

This module consists of classroom and laboratory experiences. The material addresses overviews, basic understandings, principles and concepts, terminology, etc. laboratory practise supports the concepts discussed in the classroom. Students/employees receive training and hands on application of the concepts learned by machine-specific tasks. Using simulators, students look at analyzing problems, visual and audible cues, diagnostic tools and required responses.

Topic areas include:

- Safety (Ohm's Law, lockout tagout importance, machine guarding schemes).
- IO devices (operations, identification, advantages and disadvantages, purposes of encoders and resolvers)
- PLC's (basic components, analog and digital domains, basic ladder logic instruction)
- HMI (password protection, HMI functions and purpose)
- Electronic Cam Switch Bank (function review)
- Control Systems Evolution (definition, examples)
- Troubleshooting and Diagnostics (mechanical and non-mechanical problems, determination of probable problem cause, mechanic's and operator's responsibilities)
- Servo systems (concepts and purpose, type motors and variations, explanations and applications of direct, gearbox and screw motor-to-load coupling, motor and encoder shaft alignments, servo system concepts, servo tuning, servo profiles)

Engineering Drawing (20-hour module)

Instruction will include lecture and practical hands-on activities both in constructing drawings and interpreting completed drawings. Course module emphasizes the development and interpretation of typical engineering drawings used in a manufacturing environment.

Areas covered are:

- Sketching
- Print reading and interpretation
- Standard notation and symbols
- Assembly and part drawings
- Surface finishes specifications
- Basic machining processes and expected outcomes
- Screw threads and fasteners
- Basic shop technology

Computer Fundamentals (12-hour module)

This module is in lecture format with hands-on computer applications. Access to computer lab is required.

The module provides a basic knowledge of computers and databases including the following areas:

- Overview of computer systems
- Windows 95: help screens, mouse, pull down menus, icon, passwords, menu bars, etc
- Introduction to database management and databases
- Part One: Navigating through databases
- Part Two: Interpreting screens produced by databases - Interpreting data base results - Databases
- Part Three: Communicating with remote site

Industrial and Molding Hydraulics (20-hour module)

Lecture format with hands-on demonstration and exercises

The field of fluid power includes both hydraulics and pneumatics.

This module covers the fundamentals of both areas in detail with the following topics:

- **Standards, basic fluid power law and terminology**
- **Ansi/ISO circuit symbols, print interpretation**
- **Circuit elements and their functions**
- **Mechanical descriptions**
- **Control concepts**
- **Examples of molding circuits and automation circuits**

Polymers (20-hour module)

The module is a lecture format with hands-on lab demonstrations and student exercises.

The module is designed to give an overview of the different plastics materials, processing methods and applications. Specific materials such as commodity resins, engineering thermoplastics, and thermosets are used to show their physical properties and processability are a direct result of their size and chemical structure. Individual examples are used to show why plastics are a natural choice for applications requiring lightweight, tough, easy-to-process materials, often leading to lower cost final products.

Topic areas include:

- **Markets for plastics**
- **Commercial production of plastics**
- **Physical properties of plastics**
- **Fabrication of plastics**

- Applications

Rotational Molding (16-hour module)

The module is a lecture format with hands-on lab demonstrations and student exercises.

This plastics-specific module covers:

- Molds
- Equipment
- Process parameters
- Materials
- Design guidelines
- Secondary finishing
- Troubleshooting

Blow Molding (16-hour module)

The module is a lecture format with hands-on lab demonstrations and student exercises.

This plastics-specific module covers:

- Blow molding processes
- Materials
- Primary equipment
- Mold design
- Process controls
- Auxilliary equipment
- Troubleshooting
- Testing
- New Developments

Plastics Process Control (20-hour module)

The module is a lecture format with hands-on lab demonstrations and student exercises.

This plastics-specific module covers:

- Principles of process control
- Instrumentation
- Data acquisition/monitoring
- Servo control for injection molding
- Control of extrusion processes
- Blow molding/parison control
- SPC/SQC
- Integrated manufacturing
- New developments

XY Mechanical Movements (40-hour module)

The module is a lecture format with hands-on lab demonstrations and student exercises.

This manufacturing technology-specific module covers

- X, Y and Z coordinates, cartesian and polar
- Safety considerations
- Absolute and relative motions
- Accuracy, resolution, and repeatability
- Motors: DC, AC, Servo DC, Servo AC
- Motor controllers (Types: across-line starters, DC, AC, Servo)
- Basic servo operation
- Types of servo motor systems
- Motor-to-load coupling
- Motor/encoder shaft alignment

- Homing and home offset
- Velocity curve mode
- Position control using video systems, tooling and fiducials
- Alignment and alignment tests
- Optical and vision systems
- Reference signals
- Use of Z axis when appropriate
- Machine performance at high and low speeds
- Tool and part changeover
- Job set-up vs. run operations

Introduction to Pumps & Vacuum Systems (20-hour module)

The module is a lecture format with hands-on lab demonstrations and student exercises.

This manufacturing technology-specific module covers:

- Identify various types of pumps
- Understand the applications of various types of pumps
- Understand the function of mechanical seals and mechanical packing
- Understand the advantages and disadvantages of packing vs. seals
- Understand the basics of fluid flow in pipes
- Interpret pump curves
- Understand the basics of various types of compressors
- Understand the basics of various types of valves
- Understand the applications of various valves

Introduction to Engineering Drawing (20-hour module)

The module is a lecture format with hands-on lab demonstrations and student exercises.

This manufacturing technology-specific module covers:

- Sketching
- Print reading and interpretation
- Standard notation and symbols
- Assembly and part drawings
- Surface finishes
- Basic machining processes and expected outcomes
- Screw threads and fasteners
- Basic shop terminology

Measuring and Gauging (16-hour module)

The module is a lecture format with hands-on lab demonstrations and student exercises.

This manufacturing technology-specific module covers:

- Measurement: the language of precision
- Measuring with basic graduated instruments
- Angle measuring instruments
- Common comparison instruments and fixed size gauges
- Surface plates, accessories and gauges
- Mechanical comparators and indicating gauges

Metric Measurement (12-hour module)

Lecture format with hands-on lab demonstrations and exercises includes:

Topic areas include:

- Linear Measurement (micrometers, dial calipers, surface plates, optical comparators, scientific rotation)
- Temperature (thermometers, thermocouples, RTDS)
- Hardness/Friction/Gloss/Color
- Calibration
- Measurement and inspection re: quality control

- Overview of sizes (pins, holes, identification of sizes)
- Pressure (strain gauges, piezoelectric transducers, Bourdon gauges)

Statistical Process Control (20-hour module)

This module demonstrates how Statistical Process Control (SPC) can aid production workers and quality personnel in improving processes and product quality. After establishing a foundation of some fundamental mathematical skill, the seminar develops the concepts of a target value and process variations. The construction of SPC charts is illustrated. These charts are used to show how the processes are monitored and when action should be taken to correct out-of-control conditions. The seminar also shows how SPC can be used to identify causes of process variation.

Topics:

- Fundamental mathematical skills
- Target values and variances
- Process variability
- Processes that are out of control
- Use of SPC to improve the process

Introduction to Injection Molding (16-hour module)

This module is lecture format with hands-on lab activities using molding machine, molds, and auxiliary equipment.

Injection molding is the most common plastic manufacturing process for making 3D objects.

Module content includes:

- What is injection molding?
- Plasticating systems

- Clamping systems
- The electrical system
- The injection mold
- The molding process
- Process conditions
- Auxiliary equipment
- Resins-processing
- Troubleshooting
- Batch Mixing
- Profile extrusions

Mold Design and Maintenance for Diagnostics (20-hour module)

The module is a lecture format with hands-on lab demonstration and student exercises.

The module covers:

- Design considerations
- Mold Design Basics
- Cavity and core construction
- Heat transfer considerations
- Cold runner molds
- Hot runner molds
- Freeing mechanisms/part ejection
- Mold maintenance

Elastomers (16-hour module)

The module is a lecture format with hands-on lab demonstrations and student exercises

This module consists of classroom and laboratory experiences. The material addresses overviews, basic understandings, principles and concepts, terminology, etc. laboratory practise supports the concepts

This is a plastics-specific module covering rubber compounding, processing and testing and includes the following specific topics:

- General classes of elastomers
- Compounding and the rubber recipe
- Vulcanization and vulcanizing agents
- Fillers
- Processing and processability testing
- Physical testing

As a basic review of thermoplastics elastomers (TPE) technology, the module covers physical and chemical nature of the various class of TPE's with specific emphasis on how these relate to the processing and properties of the final product including:

- Appropriate materials for a given application
- How different TPE's process
- The principle processing changes required when switching from traditional thermoplastics
- Processing of TPE's via injection molding, extrusion, blow molding and liquid castings (urethanes, etc.)

Preventive/Predictive Maintenance (20-hour module)

The module is a lecture format with hands-on lab demonstrations and student exercises.

This plastics-specific module covers:

- Injection molding plasticating unit
- Heating units
- Injection molding hydraulic maintenance
- Care and maintenance of electrical components

- Safety inspection and procedures
- Storage maintenance of molds

Extrusion (20-hour module)

The module is a lecture format with hands-on lab demonstrations and student exercises.

This plastics-specific module covers:

- Principles of extrusion
- Description of single screw extruder
- Smooth bore and grooved-feed extruders
- Blown film process
- Cast film process
- Extrusion coating
- Profile extrusion
- Auxiliary equipment
- Die design principles
- Process Control
- Troubleshooting
- New developments

Thermoforming (20-hour module)

The module is a lecture format with hands-on lab demonstrations and student exercises.

This plastics-specific module covers:

- Basic process/variations
- Processing conditions
- Materials
- Mold design

- **Product design**
- **Secondary operations**
- **Twin sheet forming**
- **Decorating**
- **Trimming/Recycling**

Machine Control Module (16-hour module)

The module is a lecture format with hands-on lab demonstrations and student exercises

This manufacturing technology-specific module covers:

- **General control theory: command signals, feedback, servo systems, error measurement**
- **Positioning issues, Cartesian and polar coordinates, rotary vs. linear motion**
- **Machine quality, calibration, accuracy, precision**
- **Electronic manufacturing machines, including sequencing issues, motors, actuators, drive mechanisms, safety and emergency procedures**
- **Sensors and control elements: such as switches, solenoids, actuators, etc.**
- **Problem analysis and troubleshooting**

Shop Math (16-hour module)

The module is a lecture format with hands-on lab demonstrations and student exercises.

This manufacturing technology-specific module covers

- **Fundamental mathematical skills**
- **Equivalents**

- Conversion factors
- Applications in the shop
- Problem solving

Basic Fluid Power (20-hour module)

The module is a lecture format with hands-on lab demonstrations and student exercises

This manufacturing technology-specific module covers:

- Basic fluid power laws and terminology
- Pressure and vacuum - Bar, kPa, in, hg, suction cups
- Circuit elements and their functions; pumps, compressors, single/double acting cylinders, valves, accumulators, boosters, etc.
- Mechanical descriptions/details of various circuit components
- Print reading - circuit standards in ANSI and ISO format
- Control concepts; open vs. closed loop
- Cylinder action/sequence controlled with electrical signals - relays, ladder diagrams
- Typical circuit examples in sequential motion (clamp and work) using mechanical sequence valves and sequential motion using relay ladder logic
- Study of some plant-specific machine prints

Instructors:

The module instructors are drawn from the faculty of the University , Departments of Plastics Engineering, Mechanical engineering, and the Department of Manufacturing, and industry experts., in addition to our experienced training staff.



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Costs:

Charges to the customer company include a fee for customization, a fee for module delivery, administrative charges and EGY300 (estimates) book and materials charge per employee per module.

Should the module instructor be required to travel out of Egypt, the customer company will pay travel and living expenses.

If you are interested in a training program, please don't hesitate to contact us.