Dürr
Training

Training program USA

The key to success is well trained personnel

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Application technology

Paint and/or sealer

Robot operator course

ROA-2   **BASIC**   **2 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is for personnel responsible for operating the Dürr robot zones. The intended audience is those responsible for console operation, equipment start-up and shutdown, zone status monitoring, process data entry, and troubleshooting.

ADMISSION REQUIREMENTS

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COURSE STRUCTURE

Topics include: graphical user interface, theory of rotational atomization (and/or sealer application), start-up, shutdown, and fault recovery procedures. The course includes a combination of classroom discussions and hands-on activities. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - General safety procedures
- System overview
  - Component ID and location
  - Atomizers/applicators/3D gun
  - Fluid regulator/mastic regulator
  - Color changers/helper gun
  - Pumps/dual shot meter
  - Heat exchanger
- Graphic user interface
  - Function and operation
  - Review of screens
  - Brief on data entry
- Control console
  - Operation
  - System start-up and shutdown
- Manual operation
  - Material flow
  - Operating time programs
  - Depressurize system
  - Remove and attach atomizer
  - Jog robots/fixed positions
- Troubleshooting
  - Fault review

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Paint and/or sealer

Robot electrical maintenance

 # REMA-4   **ADVANCED**   **4 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER**

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is for personnel responsible for electrical maintenance of the RP and/or RS robots and the RPC robot controller.

ADMISSION REQUIREMENTS

Prerequisites for this class are: Dürr system overview, Dürr operations training, and Windows OS understanding. High voltage operations are included in this course (RP robots).

COURSE STRUCTURE

The course will introduce participants to basic robot operation, safety precautions, and using the hand-held teach pendant. The robot and robot controller electrical components are identified with discussions about configuration and diagnostic procedures. Controller software maintenance, interpretation of error codes, and robot mastering are also covered. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - Robot safety/general safety procedures
- Overview
- Networks
- Robot jogging and teach pendant operation
- RPC robot
  - RPC controller
  - Servo drives
- Robot electrical troubleshooting
- Robot electrical repair
  - Robot arm cabling
  - Servo motors (axes 1-2-3) replacement
  - Servo motors (axes 4-5-6) replacement
- Mastering procedure
- Equipment control valve layout and components
  - Overview
  - Robot arm
  - Pneumatic panel
  - High voltage, HV discharger (RP only)
- Software maintenance
  - System start-up and shutdown
  - Modifying special positions
  - Making controller backups
  - Making drive backups

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Paint and/or sealer

Robot electrical maintenance w/ operator

 # REMA-5   **ADVANCED**   **5 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER**

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is for personnel responsible for electrical maintenance of the RP and/or RS robots and the RPC robot controller.

ADMISSION REQUIREMENTS

Prerequisites for this class are: Dürr system overview, Dürr operations training, and Windows OS understanding. High voltage operations are included in this course (RP robots).

COURSE STRUCTURE

The course will introduce participants to basic robot operation, safety precautions, and using the hand-held teach pendant. The robot and robot controller electrical components are identified with discussions about configuration and diagnostic procedures. Controller software maintenance, interpretation of error codes, robot mastering, console operation, equipment start-up and shutdown and zone status monitoring are also covered. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - Robot safety/general safety procedures
- Overview
- Networks
- Control console
- Robot jogging and teach pendant operation
- RPC robot
  - RPC controller
  - Servo drives
- Robot electrical troubleshooting
- Robot electrical repair
  - Robot arm cabling
  - Servo motors (axes 1-2-3) replacement
  - Servo motors (axes 4-5-6) replacement
- Mastering procedure
- Equipment control valve layout and components
  - Overview
  - Robot arm
  - Pneumatic panel
  - High voltage, HV discharger (RP only)
- Software maintenance
  - System start-up and shutdown
  - Modifying special positions
  - Making controller backups
  - Making drive backups

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Paint and/or sealer

Robot path programming RP/RS

RPP-3   **ADVANCED**   **3 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is for personnel responsible for robot process and path maintenance of the RP (RP6, RP7, RPE, RPF, RPL) and RS series robot and application equipment.

ADMISSION REQUIREMENTS

Prerequisites for this class are: Dürr system overview, Dürr operations training, and Windows OS understanding. The course is dealing with basic programming concepts and teach pendant program entry and modification.

COURSE STRUCTURE

The course will introduce participants to robot components, teach pendant operation, safety precautions, jogging, mastering and program entry. Detailed discussions are provided concerning coordinate systems, path entry and smoothing and object tracking within the coordinate systems. Theoretical concepts are reinforced with actual application practice.

COURSE CONTENT

- Introduction
  - Course goal/outline
- Safety
  - General safety procedures
- Overview
  - Robot physical axes overview
  - Teach pendant overview
- Teach pendant operation
  - Jog frames
  - Coordinate systems
  - Robot motion and singularity
  - Mastering procedures
  - Basic program entry
  - Troubleshooting
- Lab exercises
- Programming concepts and creation
  - Program naming conventions
  - Create/edit projects/programs with the teach pendant
  - Required program commands
  - Using program templates
  - Using the MACRO menu
  - PTP point creation
- Advanced concepts/path creation and smoothing
- Tool and object creation
- Paint path smoothing
  - VEL (velocity) and ACC (acceleration) commands
  - OVERLAP command
  - Effects of velocity on the OVERLAP command
  - Other commands

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Paint and/or sealer

3D-OnSite advanced programming

3DOA-2   **ADVANCED**   **2 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is intended for personnel responsible for **Eco**Paint robot path programming.

ADMISSION REQUIREMENTS

Prerequisites for this class are: Dürr system overview, Dürr operations training, and Windows OS understanding.

COURSE STRUCTURE

EcoScreen 3D-OnSite is the visualization and programming software developed by Dürr Systems, Inc. for generating and editing robot programs in 3D graphics and entering process data parameters. Participants are introduced to basic CAD robot path programming and coordinate systems. The setup of 3D-OnSite for the customer's application and modifications to existing paths will be covered. Participants will also gain experience in CAD robot path programming and coordinate systems and use 3D-OnSite for the automatic generation of robot paths with different overlaps and other path patterns. Both the programming syntax and the instruction set of the **Eco**Talk programming language will be covered.

COURSE CONTENT

- Introduction
  - Course goal/outline
- Safety
  - Robot safety
  - General safety procedures
- 3D-OnSite menu structure
- Loading robot graphics
  - Display of robot kinematics and characteristics on the graphics
  - Robot coordinate systems and their display in the graphics
  - Load car body
- 3D graphics editor
- Modify existing brush tables
- Modify paths
- Creating paths
- Adding points
- Modifying global variables
- Extras (if allotted time permits)

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Paint and/or sealer

3D-OnSite programming with tracking

| # 3DOA-3 | ADVANCED | 3 DAYS | 4-6 PERSONS | DÜRR TRAINING CENTER OR CUSTOMER PLANT |

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is intended for personnel responsible for **Eco**Paint robot path programming.

ADMISSION REQUIREMENTS

Prerequisites for this class are: Dürr system overview, Dürr operations training, and Windows OS understanding.

COURSE STRUCTURE

EcoScreen 3D-OnSite is the visualization and programming software developed by Dürr Systems, Inc. for generating and editing robot programs in 3D graphics and entering process data parameters. Participants are introduced to basic CAD robot path programming and coordinate systems. The setup of 3D-OnSite for the customer's application and modifications to existing paths will be covered. Participants will also gain experience in CAD robot path programming and coordinate systems and use 3D-OnSite for the automatic generation of robot paths with different overlaps and other path patterns. Both the programming syntax and the instruction set of the **Eco**Talk programming language will be covered.

COURSE CONTENT

- Introduction
  - Course goal/outline
- Safety
  - Robot safety
  - General safety procedures
- 3D-OnSite menu structure
- Loading robot graphics
  - Display of robot kinematics and characteristics on the graphics
  - Robot coordinate systems and their display in the graphics
  - Load car body
- 3D graphics editor
- Modify existing brush tables
- Modify paths
- Creating paths
- Adding points
- Object tracking/line tracking
- Modifying global variables
- Extras (if allotted time permits)

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Paint and/or sealer

Robot path programming advanced

RPP-5   **ADVANCED**   **5 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is for personnel responsible for robot process and path maintenance of the RP (RP6, RP7, RPE, RPF, RPL) series painting robot, RS series sealing robot and application equipment. This course is a combination of the RPP-3 and 3DOA-2 courses.

ADMISSION REQUIREMENTS

Prerequisites for this class are: Dürr system overview, Dürr operations training, and Windows OS understanding.

COURSE STRUCTURE

The course will introduce participants to robot components, teach pendant operation, safety precautions, jogging, mastering and program entry. Detailed discussions are provided concerning coordinate systems, path entry and smoothing and object tracking within the coordinate systems. Theoretical concepts are reinforced with actual application practice. The course is divided into two sections, the first dealing with basic programming concepts and teach pendant program entry and modification, the second dealing with the application of these concepts to the off-line programming software, 3D-OnSite.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - RP series orientation
- Overview
  - General safety procedures
  - Robot physical axes overview
- Teach pendant operation
- Lab exercises
- Programming concepts and creation
- Advanced concepts/path creation and smoothing
- Tool and object creation
- Paint path smoothing
- Fundamentals of 3D-OnSite
  - 3D-OnSite menu structure
  - Loading robot graphics
  - 3D graphics editor
  - Modify existing brush tables
  - Modify paths
- Advanced 3D-OnSite functionality
  - Creating paths
  - Adding points
  - Modifying variables
  - Simulation of programmed paths

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Paint and/or sealer
Robot path programming RP/RS – teach pendant

| # RPP-1 | BASIC | 1 DAY | 4-6 PERSONS | DÜRR TRAINING CENTER OR CUSTOMER PLANT |

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is for personnel responsible for robot process and path maintenance of the RP (RP6, RP7, RPE, RPF, RPL) and RS series painting robot and application equipment.

ADMISSION REQUIREMENTS

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COURSE STRUCTURE

The course will introduce participants to robot components, teach pendant operation, safety precautions, jogging, mastering and program entry. This course is intended as a refresher course to teach pendant operations or a course for basic teach pendant operations for someone that may use the teach pendant less frequently.

COURSE CONTENT
- Introduction
  - Course goal/outline
  - RP/RS series orientation
- Overview
  - General safety procedures
  - Robot physical axes overview
  - Teach pendant overview
- Teach pendant operation
  - Jog frames
  - Coordinate systems
  - Robot motion and singularity
  - Mastering procedures
  - Basic program entry
  - Troubleshooting

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Paint and/or sealer

Body setup advanced programming

BSA-3   **EXPERT**   **3 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is intended for personnel responsible for robot path programming. Setup of a new body requires the use of **Eco**Screen 3D-OnSite.

ADMISSION REQUIREMENTS

Prerequisites for this class are: Dürr system overview, Dürr operations training, and Windows OS understanding. Also required for this course are: robot station, car body, exact car body CAD data, robot measuring tool tip, control of the booth conveyor for the entire course duration and the ability to return the car body to the start position as needed.

COURSE STRUCTURE

EcoScreen 3D-OnSite is the visualization and programming software developed by Dürr Systems, Inc. for generating and editing robot programs in 3D graphics. Participants will gain experience in the steps required to bring a body into the booth for the first time.

COURSE CONTENT

- Introduction
  - Course goal/outline
- Safety
  - Robot safety
  - General safety procedures
- 3D-OnSite menu review
  - Overview of functions
  - Connecting a station and adding robot flash cards
  - Loading robot graphics
  - Loading car body
  - Robot coordinate systems and their display in the graphics
  - Explanation of editing functions of the 3D graphics editor
  - Creating projects and programs
- Positioning of car body
  - Using the measuring tool tip
  - Features of the car body
  - Programming a local data set
  - Marking the car body
- Teach pendant review
  - Jog frames
  - Coordinate systems
  - Programming a world data set
- Calibration
  - Calculation of new project data
  - Selecting points
  - Transformation process
  - Global variables
  - Verifying the results
- Additional Info
  - Style setup info for 3D-OnSite
  - Tool transformation

Please note: course does not include complete new model path teaching.

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Paint and/or sealer

Time and fixed position programming

 # 3DOTPFP-2   **ADVANCED**   **2 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is intended for personnel responsible for robot path programming. Understanding and setup of time programs and robot fixed positions requires the use of **Eco**Screen 3D-OnSite.

ADMISSION REQUIREMENTS

Prerequisites for this class are: Dürr system overview, Dürr operations training, and Windows OS understanding. Also required for this course are: robot station for the testing of the robot fixed positions as needed.

COURSE STRUCTURE

EcoScreen 3D-OnSite is the visualization and programming software developed by Dürr Systems, Inc. for generating and editing robot programs in 3D graphics. Participants will gain experience in the steps required to make new time programs and new fixed positions.

COURSE CONTENT
- Introduction
  - Course goal/outline
- Safety
  - Robot safety
  - General safety procedures
- 3D-OnSite menu review
  - Overview of functions
- Time program editor
  - Selecting time programs
  - Configuring time programs
  - Defining the programs for use
  - Creating and modify time programs
- Fixed positions
  - Jog frames
  - Coordinate systems
  - Modify fixed positions
  - Defining new fixed positions
- Time programs with fixed positions
  - Identifying fixed position controls inside of time programs
  - Adding fixed position controls to time programs
  - Testing with robot station (if available)

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Paint and/or sealer

Robot paint and sealer fluid control

RPSFC-5　　**ADVANCED**　　**5 DAYS**　　**4-6 PERSONS**　　**DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is for personnel responsible for fluid maintenance of the **Eco**RP and/or RS robot. This course is a combination of RPFC-3 and RSFC-2.

ADMISSION REQUIREMENTS

There are no prerequisites for this class; however, prior knowledge of robotic technology is helpful.

COURSE STRUCTURE

The course will introduce participants to basic robot operation, safety precautions, and using the hand-held teach pendant. The robot and robot fluid controlled components are identified with discussions and diagnostic procedures. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - Robot safety/general safety procedures
- Overview
  - Robot overview
  - System overview
  - Panel layouts/**Eco**Docu
  - Dürr numbering
- **Eco**Bell3 operation
  - Bell overview
  - Operation of **Eco**Bell3
  - Special torques
  - Paint line hose connections
  - Special tools
- RP fluid components
  - **Eco**Bell3 atomizer rebuild
  - Paint regulator
  - **Eco**Pump 9
  - Mcc3 color changer
  - MVS panel
  - Pneumatics and fiber optics
- RS fluid components
  - 3D gun
  - 1D gun
  - Shot meter
  - Mastic regulator
  - Temperature controller
  - Assembly and disassembly of all fluid components discussed

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Paint and/or sealer

Robot paint/sealer mechanical maintenance

RPSMMA-5   **ADVANCED**   **5 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER**

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

The course is an overview of the **Eco**Paint robot painting system and demonstrates how to perform mechanical maintenance of the **Eco**RP and **Eco**RS robots and the **Eco**Rail robot rail. This course is a combination of RPMMA-4 and RSMMA-3.

ADMISSION REQUIREMENTS

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COURSE STRUCTURE

The course will introduce participants to basic robot operation, safety precautions, and using the hand-held teach pendant. The robot mechanical components are identified with discussions about troubleshooting, component removal, and replacement procedures. Class participants may dismantle the robot, reassemble it, and master the robot axes. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - Robot safety
  - General safety procedures
- Overview painter
  - **Eco**Paint robot overview
- Equipment testing and motion controls
- Robot jogging and pendant screens
- Robot mechanical repair
  - Robot arm cabling
  - Maintenance and greasing
  - Review of disassembly/assembly of all axes
  - Axis (major axis 2-3) replacement
  - Axis (hand axis 4-5-6) replacement
- Mastering procedure
- Overview sealer
  - **Eco**RS robot overview
- Robot jogging and teach pendant operation
- Robot mechanical repair
  - Robot arm cabling
  - Maintenance and greasing
  - Review of disassembly/assembly of all axes
  - Axis (major axis 1-2-3) replacement
  - Axis (hand axis 4-5-6) replacement
- Mastering procedure

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Paint and/or sealer

PLC processor training

PLCSP-4   **EXPERT**   **4 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course instructs the participant in the setup, structure and programming of the programmable logic controller (PLC) used in the Dürr robot system.

ADMISSION REQUIREMENTS

Prerequisites for this class are: manufacturer PLC programming experience, Dürr system overview, Dürr operations training, and Windows OS understanding.

COURSE STRUCTURE

Topics include: use of the programming software, data types, and program troubleshooting techniques. Note: this course is not substitute for programming courses provided by the PLC manufacturer.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - General safety procedures
- Equipment overview
- Networks (I/O, communication)
- PLC structure
- Details of data tables and assignments
- Details of ladder files and function blocks
  - RPC
  - Conveyor/job data
  - Reports
  - Safety program
  - Conveyor interface
  - **Eco**Screen
  - Handler operations
  - Collision releases
- Troubleshooting with PLC
  - Alarm logic (main and RPC)
  - Ring buffer
  - Vision interface (optional: sealer systems)
  - Line master (optional)
  - Alarm database (RPC) and alarm fault file (PLC)
  - Conveyor controls
  - PLC (job data, conveyor control, estops)
- Misc.
  - Editing alarm messages for PLC
  - Editing alarm messages for RPC
- Software maintenance
  - Modifying special positions
  - Making backups

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Paint and/or sealer

Dürr robot troubleshooting training

RT-2   **EXPERT**   **2 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is for personnel responsible for maintenance of the RPC robot controller.

ADMISSION REQUIREMENTS

Personnel attending this course should have general knowledge of robot operations and industrial control systems. Prerequisites for this class are: Dürr system overview, Dürr operations training, and Windows OS understanding.

COURSE STRUCTURE

This course will introduce participants to day-to-day operation, diagnostics, and maintenance of the robot controller. The course includes a combination of classroom discussions and hands-on activities. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - Robot safety/general safety procedures
- Motion components
  - Hardware
  - Software
  - Communications
- Motion controls
  - Theory, concepts and principles
  - Interaction between components
  - Motion controller setup, initialization and programming
- Servo drives
- Robot interrogation
- Troubleshooting
  - Creating faults and analyzing the status files for responses (disabling hardware and causing faults is not performed on production equipment)
- RPC backups and recovery
  - Backup concepts and files
  - RPC replacement
  - RPC recovery

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Paint and/or sealer

Dürr robot troubleshooting training

RT-4   **≡** EXPERT   **🕐** 4 DAYS   **👥** 4-6 PERSONS   **📍** DÜRR TRAINING CENTER OR CUSTOMER PLANT

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is for personnel responsible for maintenance of the RPC2 robot controller.

ADMISSION REQUIREMENTS

Personnel attending this course should have general knowledge of robot operations and industrial control systems. Prerequisites for this class are: Dürr system overview, Dürr operations training, and Windows OS understanding.

COURSE STRUCTURE

This course will introduce participants to day-to-day operation, diagnostics, and maintenance of the robot controller. The course includes a combination of classroom discussions and hands-on activities. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - Robot safety/general safety procedures
- Motion components
  - Hardware
  - Software
  - Communications
- Motion controls
  - Theory, concepts and principles
  - Interaction between components
  - Motion controller setup, initialization and programming
- Communications
  - Hardware (KebaDrive EtherCat)
  - Software
  - Communications (SERCOS 3)
  - Encoder box
- Robot interrogation
  - Remote connection to RPC
  - Understanding the robot protocols
- Troubleshooting
  - Creating faults and analyzing the status files for responses (disabling hardware and causing faults is not performed on production equipment)
- RPC backups and recovery
  - Backup concepts and files
  - RPC replacement
  - RPC recovery

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Paint and/or sealer

Robot electrical mechanical troubleshooting

REM-3   INTERMEDIATE   3 DAYS   4-6 PERSONS   DÜRR TRAINING CENTER OR CUSTOMER PLANT

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is for personnel responsible for electrical and mechanical maintenance of the RP robots and the RPC robot controller.

ADMISSION REQUIREMENTS

Prerequisites for this class are: Dürr system overview, Dürr operations training, and Windows OS understanding.

COURSE STRUCTURE

This course will introduce participants to basic robot safety precautions using the hand-held teach pendant and electrical/mechanical troubleshooting. The robot and robot controller electrical components are identified with discussions about configuration and diagnostic procedures. Controller software maintenance, interpretation of error codes, and robot mastering are also covered. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - Robot safety/general safety procedures
- Review of:
  - Robot overview
  - System overview
  - Panel layouts/**Eco**Docu, also power distribution, PSMP
  - Dürr numbering
  - Networks
  - Graphics Ethernet
  - Safety PLC Ethernet IP
  - Sercos3 with CTEI
  - Robot jogging and teach pendant operation
  - Coordinate systems
  - RPC robot
  - Mastering procedure
  - Software maintenance
- Additional topics (if allotted time permits)

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Paint and/or sealer
Robot basic electrical mechanical fluid

RBEMF-4   **BASIC**   **4 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is for personnel responsible for basic electrical, mechanical and fluid maintenance of the RP robots and the RPC robot controller.

ADMISSION REQUIREMENTS

Prerequisites for this class are: Dürr system overview, Dürr operations training, and Windows OS understanding.

COURSE STRUCTURE

This course will introduce participants to basic robot safety precautions, and electrical/mechanical troubleshooting. The robot electrical, mechanical and fluid components are identified with discussions about configuration and diagnostic procedures. Using the hand-held teach pendant, interpretation of error codes, and robot mastering are also covered. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - Robot safety/general safety procedures
- Review of:
  - **Eco**Docu documentation
  - System overview
  - Robot overview
  - Panel layouts, power distribution, PSMP
  - Dürr numbering
  - Networks
  - Console operations
  - Robot jogging and teach pendant operation
  - Coordinate systems
  - RPC controller
  - Mastering procedure
  - **Eco**Bell3 atomizer and fluid delivery
- Additional topics (if allotted time permits)

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Paint and/or sealer

Robot advanced electrical mechanical fluid

RAEMF-5   **ADVANCED**   **5 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER**

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is for personnel responsible for advanced electrical, mechanical and fluid maintenance of the RP robots and the RPC robot controller.

ADMISSION REQUIREMENTS

Prerequisites for this class are: Dürr system overview, Dürr operations training, and Windows OS understanding.

COURSE STRUCTURE

This course will introduce participants to basic robot safety precautions, and electrical/mechanical troubleshooting. The robot and robot controller electrical components are identified with discussions about configuration and diagnostic procedures. Using the hand-held teach pendant, controller software maintenance, interpretation of error codes, and axis replacement are also covered. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

• Introduction
  • Course goal/outline
  • Equipment overview
• Safety
  • Robot safety/general safety procedures
• Review of:
  • Robot overview
  • System overview
  • Graphics Ethernet/Safety PLC Ethernet IP
  • Sercos3 with CTEI
  • High voltage, HV discharger
  • Robot jogging and teach pendant operation
  • Coordinate systems
  • Software maintenance
  • RPC and PLC error codes
  • RPC robot controller replacement
  • Drive replacement
  • **Eco**Bell3 atomizer and fluid delivery component rebuild
  • Axis motor and gearbox replacement
• Additional topics (if allotted time permits)

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Paint and/or sealer

Robot electrical and robot troubleshooting

RERT-5   **ADVANCED**   **5 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER**

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is for personnel responsible for electrical maintenance of the RP and/or RS robots and the RPC robot controller.

ADMISSION REQUIREMENTS

Prerequisites for this class are: Dürr system overview, Dürr operations training, and Windows OS understanding.

COURSE STRUCTURE

This course will introduce participants to basic robot operation, safety precautions, and using the hand-held teach pendant. The robot and robot controller electrical components are identified with discussions about configuration and diagnostic procedures. Controller software maintenance, interpretation of error codes, and robot mastering are also covered. Robot troubleshooting includes day-to-day operation, diagnostics and maintenance of the robot controller. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - Robot safety/general safety procedures
- Overview
  - Robot overview
  - System overview
  - Panel layouts/**Eco**Docu, also power distribution, PSMP
  - Dürr numbering
- Networks
- Equipment control valve layout and components
  - Overview
  - Robot arm
  - Pneumatic panel
  - High voltage, HV discharger (RP only)
- Robot jogging and teach pendant operation
- RPC robot
- Mastering procedure
- Software maintenance
  - System start-up and shutdown
  - Modifying special positions
  - Making controller backups
  - Making drive backups
- Robot interrogation
- Troubleshooting
  - Creating faults and analyzing the status files for responses. (Disabling hardware and causing faults is not performed on production equipment.)

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Paint and/or sealer

Virtual wall training

VWT-2　　**≡** EXPERT　　**⏱** 2 DAYS　　**👥** 4-6 PERSONS　　**📍** DÜRR TRAINING CENTER OR CUSTOMER PLANT

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course instructs the participants on basic robot safety used in the Dürr robot system.

ADMISSION REQUIREMENTS

Suggested prerequisite for this class is the RPP-5 robot path programming course so that participants are familiar with how to jog the robot with the teach pendant and understand standard robot functionality.

COURSE STRUCTURE

Upon completion of this course, participants will be able to switch the robot's different operating modes, know which mode is used for what purpose, and know the basics of booth safety. This course is presented as a PowerPoint presentation. Participants should take notes and ask questions because basic understanding of robot safety functions impacts their own safety, as well as the safety of others.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - General safety procedures
  - Equipment overview
- Awareness
  - Various operating modes, as well as the corresponding safety levels and safety rules
  - System functions
  - Maintenance and cleaning modes
  - Automatic mode and manual mode
  - Identification, purpose and location of the various booth safety monitoring systems
  - Returning the robot to the defined operating space with both teach pendant styles
- Maintenance
  - Workspace monitoring and what might cause an operating space (workspace) boundary violation and how to solve the violation
  - Review sample error messages
  - Backup and recovery of files for the robot controller
  - Restarting the robot controller with the Ketop T50 teach pendant and the HT601A-EX-20 teach pendant
  - Checking/testing the robot workspace

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Paint and/or sealer

Gen3 robot encoder box

G3EB-1　　**BASIC**　　**1 DAY**　　**4-6 PERSONS**　　**DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is a review of the 3rd generation Dürr robot encoder box. The intended audiences are individuals responsible for maintaining the Dürr Gen3 robot.

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

The course is in presentation form. The course is a review of features and use of the robot encoder box. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Encoder box overview
- Safety
  - General safety procedures
- What's new
  - MS2E motor/connections
  - Feedback and brake connections
  - Encoder box details
  - Encoder box address
  - Cables
  - Replacement
  - Referencing and synchronizing
  - EtherCat network

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Paint only

Introduction to paint/Dürr robot

IP-1   **BASIC**   **1 DAY**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is an introduction to automotive painting. The intended audiences are individuals who are new to the paint shop and those responsible for operating the Dürr robot zones.

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

Upon completion of this course, participants will have an understanding of automotive coatings and processes, including: pretreatments, coating materials, application methods, and complete systems, including equipment and coating delivery systems. The course includes a look into the Dürr documentation system.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
  - Dürr **Eco**Docu
- Safety
  - General safety procedures
- Overview
  - Process layout
  - Coating types: pretreatments, e-coat, solvent based, waterborne
  - Equipment
  - Graphical interface
- Atomizers
  - Types: bells, guns
  - Description and use
  - Atomization
  - Effects of changing parameters
- Closed loop operation and controls
  - Color changer: function and operation
  - Fluid regulator: function and operation
  - Gen 9 pump/motor: function and operation
  - Color change cycle
- Fluid delivery/mix room/paint circulation
  - Pumps
  - Valves
  - Description and use
- Dürr paint robot types
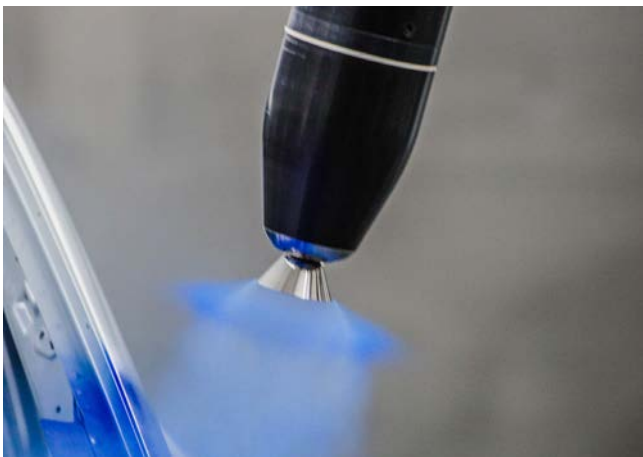
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Paint only

Introduction to Gen3 Dürr robot

 # IG3-1   **BASIC**   **1 DAY**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is an introduction to what's new with the 3rd generation Dürr robot. The intended audiences are individuals who are familiar with the generation 2 (RPL/RPE) robots and would like to have a preview of the changes.

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

The introduction is in presentation form and is not with the actual robot. The course is a brief overview of many improvements and features.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Robot video
- Safety
  - General safety procedures
- What's new
  - Quick release covers, other covers
  - Cooling of axes 4, 5 and 6
  - No need for structural cross member
  - New motor connectors
  - New arm 1 safety brackets
  - Motor 1 and 2 arrangement
  - Axis 1 removal
  - New gears (cyclic & planetary): axes 2-3
  - Axis 2.1
  - Encoder box
  - New diaphragm valve on gen 9 pump
  - New mastering, referencing, synchronizing
  - Air heater
  - New CFAST card (compact flash)
  - RPC V3.3
  - RPC2
  - CPX module
  - New drives
  - EtherCAT communications
  - New purge controller
  - New field terminations in RCMP2 panel
  - Safe edit
  - **Eco**Screen RPC2
  - New fuse blocks
  - New brake release box
  - Maintenance report
  - Each robot has its own controller
  - New magnetic LED panel lighting

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Paint only

Robot paint fluid control

RPFC-3　　**ADVANCED**　　**3 DAYS**　　**4-6 PERSONS**　　**DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is for personnel responsible for fluid maintenance of the RP robot.

ADMISSION REQUIREMENTS

Prerequisites for this class are: Dürr system overview and Dürr operations training.

COURSE STRUCTURE

This course will introduce participants to basic robot operation, safety precautions, and the maintenance and rebuild of the paint fluid delivery system components. The robot and robot fluid controlled components are identified with discussions and diagnostic procedures. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - Robot safety/general safety procedures
- Overview
  - Robot overview
  - System overview
  - Panel layouts/**Eco**Docu
  - Dürr numbering
- **Eco**Bell3 operation
  - Bell overview
  - Operation of **Eco**Bell3
  - Special torques
  - Paint line hose connections
  - Special tools
  - Paint stop valve
- RP fluid components
  - **Eco**Bell3 atomizer rebuild
  - Paint regulator
  - **Eco**Pump 9
  - Mcc3 color changer
  - MVS panel
  - Pneumatics and fiber optics
  - Assembly and disassembly of all RP components discussed
  - **Eco**Bell test panel operation (when available)
  - Lessons on the atomizer that cause service type calls

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Paint only

Robot paint fluid control (bell and gun)

RPFC-2   **ADVANCED**   **2 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is for personnel responsible for fluid maintenance of the RP robot. Atomizer rebuild is the focus of this course.
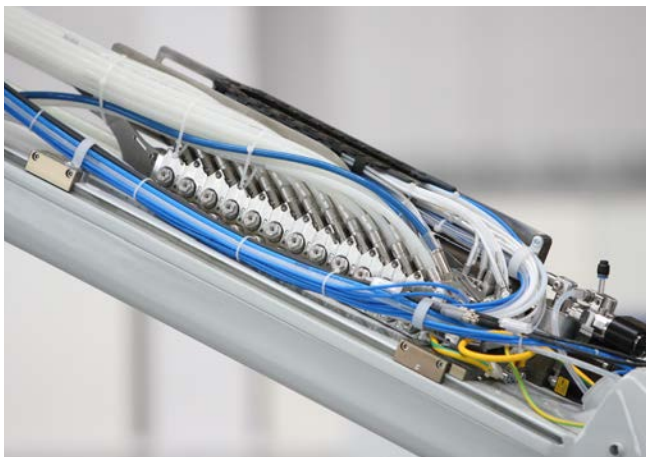
ADMISSION REQUIREMENTS

Prerequisites for this class are: Dürr system overview and Dürr operations training.

COURSE STRUCTURE

This course will introduce participants to the **Eco**Bell3 and the **Eco**Gun2 atomizers, and the maintenance and rebuild of the paint fluid delivery system components. The **Eco**Bell, **Eco**Gun and robot fluid controlled components are identified with discussions and diagnostic procedures. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - Robot safety/general safety procedures
- Overview
  - Robot overview
  - **Eco**Docu
  - Dürr numbering
- **Eco**Bell3 operation
  - Bell overview
  - Operation of **Eco**Bell3
  - Special torques
  - Special tools
  - Paint stop valve
- **Eco**Gun2 operation
  - Operation of **Eco**Gun2
  - Special torques
  - Special tools
- RP fluid components
  - **Eco**Bell3 atomizer rebuild
  - **Eco**Gun2 atomizer rebuild
  - Paint regulator
  - **Eco**Pump 9
  - Mcc3 color changer
  - MVS panel
  - **Eco**Bell test panel operation (when available)

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Paint only

Paint jet fluid control

PJFC-3   **ADVANCED**   **3 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is for personnel responsible for fluid maintenance of the **Eco**PaintJet Pro robot.

ADMISSION REQUIREMENTS

Prerequisites for this class are: Dürr system overview and Dürr operations training.

COURSE STRUCTURE

This course will introduce participants to basic robot operation, safety precautions, and the maintenance and rebuild of the paint fluid delivery system components. The robot and fluid control components are identified with discussions and diagnostic procedures. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - Robot safety/general safety procedures
- Overview
  - Robot overview
  - System overview
  - Dürr numbering
- **Eco**PaintJet Pro operation
  - Applicator overview
  - Operation of **Eco**PaintJet Pro
- RP fluid components
  - Paint regulator
  - Pressure control
  - MVS panel
  - Filter insert
  - Assembly and disassembly of RP fluid components
- **Eco**PaintJet cleaner
  - Operation
  - Cleaning
  - Maintenance

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Paint only

EcoBell3 atomizers cleaning and operation training

EB3-1   **ADVANCED**   **1 DAY**   **4-6 PERSONS**   DÜRR TRAINING CENTER OR CUSTOMER PLANT

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This tool-box course is intended for personnel responsible for **Eco**Bell3 cleaning, operation, and maintenance.

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

This course will introduce participants to the mechanical principles of the **Eco**Bell3 and basic cleaning and troubleshooting. Additional topics such as atomization theory, preventive maintenance, and common application problems will be addressed. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - General safety procedures
- **Eco**Bell3
  - Description and use
  - Atomization
  - **Eco**Bell3 process
  - Effects of changing parameters
  - Closed loop operation and controls
  - Assembly and disassembly (partial for cleaning purposes)
  - Special tools
- Troubleshooting
  - Checking paint tube alignment
  - Bell cups
  - Fluid tips
  - Transducers
  - Pumps
  - High voltage components
  - Fault review

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EcoBell3 atomizers cleaning and operation training

EB3-TB50   **BASIC**   **0.5 DAY**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This tool-box course is intended for personnel responsible for **Eco**Bell3 cleaning, operation, and maintenance.

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

This course will introduce participants to the mechanical principles of the **Eco**Bell3 and basic cleaning and troubleshooting. Additional topics such as atomization theory, preventive maintenance, and common application problems will be addressed. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - General safety procedures
- **Eco**Bell3
  - Description and use
  - Atomization
  - **Eco**Bell3 process
  - Effects of changing parameters
  - Closed loop operation and controls
  - Assembly and disassembly (partial for cleaning purposes)
  - Special tools
- Troubleshooting
  - Checking paint tube alignment
  - Bell cups
  - Fluid tips
  - Transducers
  - Pumps
  - High voltage components

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EcoBell2 atomizers cleaning and operation training

EB2-1   **ADVANCED**   **1 DAY**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This tool-box course is intended for personnel responsible for **Eco**Bell2 cleaning, operation, and maintenance.

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

This course will introduce participants to the mechanical principles of the **Eco**Bell2 and basic cleaning and troubleshooting. Additional topics such as atomization theory, preventive maintenance, and common application problems will be addressed. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - General safety procedures
- **Eco**Bell2
  - Description and use
  - Atomization
  - **Eco**Bell2 process
  - Effects of changing parameters
  - Closed loop operation and controls
  - Assembly and disassembly (partial for cleaning purposes)
  - Special tools
- Troubleshooting
  - Checking paint tube alignment
  - Bell cups
  - Fluid tips
  - Transducers
  - Pumps
  - High voltage components
  - Fault review

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EcoBell2 atomizers cleaning and operation training

| # EB2-TB50 | BASIC | 0.5 DAY | 4-6 PERSONS | DÜRR TRAINING CENTER OR CUSTOMER PLANT |

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This tool-box course is intended for personnel responsible for **Eco**Bell2 cleaning, operation, and maintenance.

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

This course will introduce participants to the mechanical principles of the **Eco**Bell2 and basic cleaning and troubleshooting. Additional topics such as atomization theory, preventive maintenance, and common application problems will be addressed. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - General safety procedures
- **Eco**Bell2
  - Description and use
  - Atomization
  - **Eco**Bell2 process
  - Effects of changing parameters
  - Closed loop operation and controls
  - Assembly and disassembly (partial for cleaning purposes)
  - Special tools
- Troubleshooting
  - Checking paint tube alignment
  - Bell cups
  - Fluid tips
  - Transducers
  - Pumps
  - High voltage components

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Paint only

EcoGun2 rebuild training

EG2-TB50   **BASIC**   **0.5 DAY**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This tool-box course is intended for personnel responsible for **Eco**Gun2 cleaning, operation, and maintenance.

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

This course will introduce participants to the mechanical principles of the **Eco**Gun2 and basic cleaning and troubleshooting. Additional topics such as atomization theory, preventive maintenance, and common application problems will be addressed. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - General safety procedures
- **Eco**Gun2
  - Description and use
  - Atomization
  - **Eco**Gun2 process
  - Effects of changing parameters
  - Closed loop operation and controls
  - Assembly and disassembly (partial for cleaning purposes)
  - Special tools
  - Troubleshooting
  - Air caps
  - Fluid tips
  - Transducers
  - Pumps
  - High voltage components

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Paint only

EcoBell2 and EcoBell3 maintenance training

EB2/EB3-2   **INTERMEDIATE**   **2 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This maintenance course is intended for personnel responsible for **Eco**Bell2 and **Eco**Bell3 cleaning, operation, and maintenance.

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

This course will introduce participants to the mechanical principles of the **Eco**Bell2/**Eco**Bell3 and basic cleaning and troubleshooting. Additional topics such as atomization theory, preventive maintenance, and common application problems will be addressed. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- **Eco**Bell2/**Eco**Bell3 operation
  - Description and use
  - Bell overview
  - Operation of **Eco**Bell3
  - Paint stop valve
  - Atomization
- **Eco**Bell2/**Eco**Bell3 maintenance
  - **Eco**Bell2/**Eco**Bell3 process
  - Effects of changing parameters
  - Closed loop operation and controls
- **Eco**Bell2 maintenance
  - Assembly and disassembly
  - Special tools
  - Special torques
- **Eco**Bell3 maintenance
  - Assembly and disassembly
  - Special tools
  - Special torques
- Troubleshooting
  - Checking paint tube alignment
  - Bell cups
  - Fluid tips
  - Transducers
  - Pumps
  - High voltage components
  - Fault review

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Paint only

EcoBell test stand training

EBTS-TB50   **BASIC**   **0.5 DAY**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This tool-box course is intended for personnel responsible for the **Eco**Bell test stand operation and maintenance.
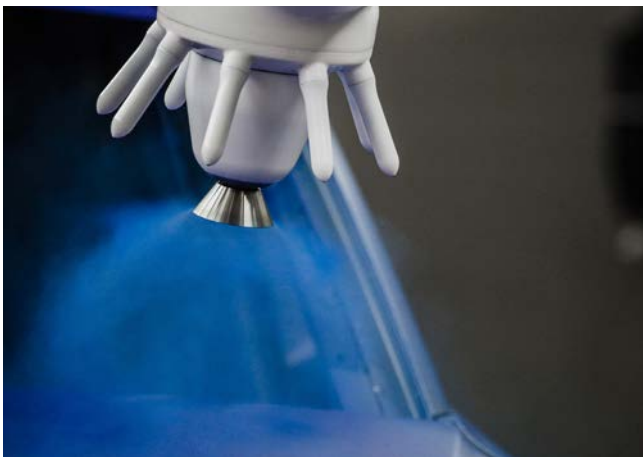
ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

This course will introduce participants to the mechanical principles of the **Eco**Bell test stand and basic cleaning and troubleshooting of the **Eco**Bell. Additional topics such as atomization theory, preventive maintenance, and common application problems will be addressed.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - General safety procedures
- Test stand
  - Description and use
  - **Eco**Bell process
  - Assembly and disassembly (partial for cleaning purposes)
  - Special tools

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Paint only

Robot paint mechanical maintenance

RPMMA-4   **⊟** ADVANCED   **🕐** 4 DAYS   **👥** 4-6 PERSONS   **📍** DÜRR TRAINING CENTER

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

The course is an overview of the **Eco**Paint robot painting system and demonstrates how to perform mechanical maintenance of the RP robot.

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

The course will introduce participants to basic robot operation, safety precautions, and using the hand-held teach pendant. The robot mechanical components are identified with discussions about troubleshooting, component removal, and replacement procedures. Class participants may dismantle the robot, reassemble it, and master the robot axes. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Course introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - Robot safety
  - General safety procedures
- Overview painter
  - Robot overview
- Equipment testing and motion controls
  - System start-up and shutdown
  - Special positions
  - System fault recovery
- Robot jogging and pendant screens
  - Coordinate systems
  - Pendant overview
  - Project menu
  - Manual menu
  - Service menu
  - Error/status menu
  - Jogging the robot
- Robot mechanical repair
  - Robot arm cabling
  - Maintenance and greasing
  - Review of disassembly/assembly of all axes
  - Axis (major axis 2-3) replacement
  - Axis (hand axis 4-5-6) replacement
- Mastering procedure

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Paint only

Robot paint mechanical maintenance w/ operator

 # RPMMA-5   **ADVANCED**   **5 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER**

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

The course is an overview of the **Eco**Paint robot painting system and demonstrates how to perform mechanical maintenance of the RP robot.

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

The course will introduce participants to basic robot operation, safety precautions, and using the hand-held teach pendant. The robot mechanical components are identified with discussions about troubleshooting, component removal, and replacement procedures. Class participants may dismantle the robot, reassemble it, and master the robot axes. Console operation, equipment start-up and shutdown, and zone status monitoring are also covered. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Course introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - Robot safety
  - General safety procedures
- Overview painter
  - Robot overview
- Control console
  - Operation
  - System start-up and shutdown
- Equipment testing and motion controls
  - Special positions
  - System fault recovery
- Robot jogging and pendant screens
  - Coordinate systems
  - Pendant overview
  - Project menu
  - Manual menu
  - Service menu
  - Error/status menu
  - Jogging the robot
- Robot mechanical repair
  - Maintenance and greasing
  - Review of disassembly
  - Disassembly of all axes
  - Review of assembly
  - Assembly of all axes
- Mastering procedure

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Paint only

Paint process training

 # PPT-3 | **EXPERT** | **3 DAYS** | **4-6 PERSONS** | **DÜRR TRAINING CENTER**

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is intended for personnel interested in the automotive painting process and the relationship of the range of variables that determine the behavior of the paint application.

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

The quality of the paint finish and the application efficiency are the most significant challenges for automotive painting. The process of optimizing paint application involves a close look at the cause and effect relationship between operating parameters and application equipment. The Dürr panel booth robot and test panels are used for practical exercises.

COURSE CONTENT

- Course goal/outline
  - Equipment overview
  - Theory of rotary atomizer paint application
- Safety
  - General safety procedures
- Atomizers types
- Spray patterns
- Paint defects/troubleshooting
- Appearance values
  - Turbine speed
  - High voltage
  - Film build
  - Robot profile
  - Paint formulation
  - Viscosity
  - Booth conditions
  - Sequence of painting
  - Quality of BIW
- Paint and solvent reduction/savings
- Other/misc.
  - Air heater and condensation
  - Time program configuration
- Panel robot labs/testing
  - Parameter testing and evaluation of (15) SB50 panels
  - Use resulting data from SB50 testing to spray indexed panels to check results (film build)
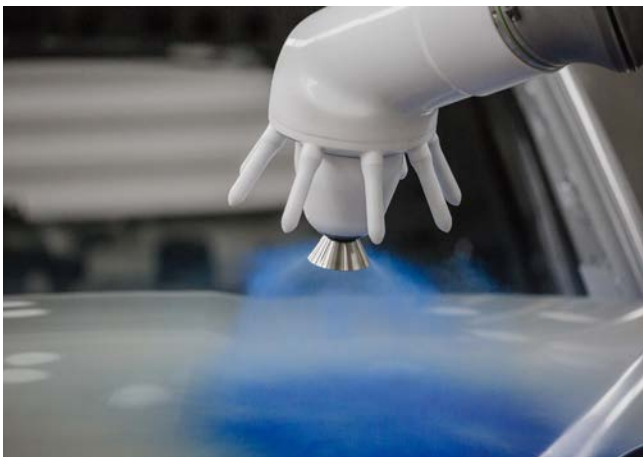
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Paint only

Robot air purge controller training

RAPC-1 | 🖥 BASIC | 🕐 1 DAY | 👥 4-6 PERSONS | 📍 DÜRR TRAINING CENTER OR CUSTOMER PLANT

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is intended for all personnel associated with the operation and maintenance of the Dürr robot air purge controller.

ADMISSION REQUIREMENTS

Personnel attending should have an understanding of mechanical and electrical equipment associated with paint processes and have an understanding of basic troubleshooting including electrical and power systems.

COURSE STRUCTURE

Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - Robot safety/general safety procedures
- Design and functional principles
  - Basics of the purge controller
- Components
  - Hardware
  - Software
- Maintenance
  - Checks: daily, weekly, monthly
  - Air regulator settings/checks
- Troubleshooting
  - Keypad operations
  - Viewing operational data
  - Bypass operation

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Paint only

EcoBell2 and EcoDose piston dosing maintenance

EB2ED-2   **INTERMEDIATE**   **2 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This maintenance course is intended for personnel responsible for the **Eco**Bell2 and **Eco**Dose piston dosing operation, maintenance, and cleaning.

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

This course will introduce participants to the mechanical principles of the **Eco**Bell2/**Eco**Dose and basic cleaning and troubleshooting. Additional topics such as graphic interface, preventive maintenance, and common application problems will be addressed. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- **Eco**Bell2/**Eco**Dose operation
  - Description and use
  - Operation of **Eco**Bell2
  - Operation of **Eco**Dose piston dosing
- **Eco**Bell2 maintenance
  - Assembly and disassembly
  - Special tools
  - Special torques
- **Eco**Dose piston dosing maintenance
  - Assembly and disassembly
  - Special tools
  - Special torques
- Maintenance
  - Paint tube alignment
  - Bell cups
  - Replacing servo motor
  - Piston dispenser
  - Valve units
  - Lubrication
  - Fault review
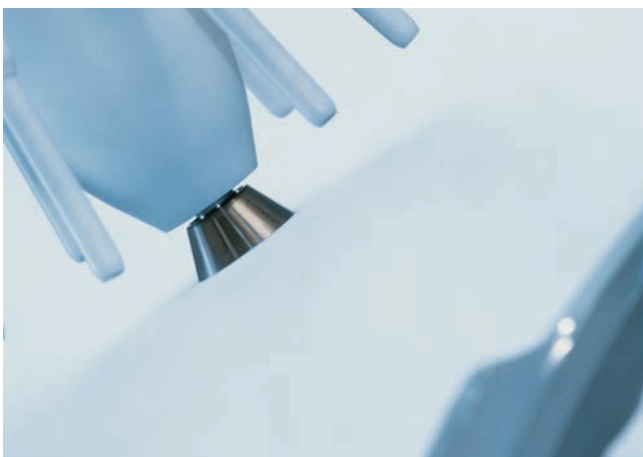
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Paint only

Vision training (ISRA) maintenance

VTI-3   **ADVANCED**   **3 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course covers the global and local concepts, applications, set up, day-to-day operation, diagnostics and maintenance of the vision system for the **Eco**PaintJet Pro fluid flow check.

ADMISSION REQUIREMENTS

Personnel attending this course should have general knowledge of body sealer operations, and its industrial electrical and control systems. Prerequisites for this class are: Dürr system overview and Dürr operations training.

COURSE STRUCTURE

The course includes a combination of classroom discussions and hands-on activities.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - General safety procedures
- Course contents
  - General system overview
  - Components of the system
  - Sensors and mounting
  - Adding new styles into the vision system
  - Camera calibration
  - Camera replacement
  - Communication between HMI and vision system
  - System navigation/runtime screen
  - Fault-tracing and treatment
  - System maintenance/troubleshooting

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Vision training (ZEISS) maintenance

VTZ-3   **ADVANCED**   **3 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course covers the global and local concepts, applications, set up, day-to-day operation, diagnostics and maintenance of the vision system for the **Eco**PaintJet Pro end effector camera system.

ADMISSION REQUIREMENTS

Personnel attending this course should have general knowledge of body paint operations, and its industrial electrical and control systems. Prerequisites for this class are: Dürr system overview and Dürr operations training.

COURSE STRUCTURE

The course includes a combination of classroom discussions and hands-on activities.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - General safety procedures
- Course contents
  - General system overview
  - Components of the system
  - Sensors and mounting
  - Adding new styles into the vision system
  - Camera calibration
  - Camera replacement
  - Communication between HMI and vision system
  - System navigation/runtime screen
  - Fault-tracing and treatment
  - System maintenance/troubleshooting

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Paint only

Quality inspection

 # QI-3 **ADVANCED** **3 DAYS** **4-6 PERSONS** **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course covers the inspection concepts, applications, set up, day-to-day operation, diagnostics and maintenance of the inspection system.

ADMISSION REQUIREMENTS

Personnel attending this course should have general knowledge of body paint operations, and its industrial electrical and control systems. Prerequisites for this class are: Dürr system overview and Dürr operations training.

COURSE STRUCTURE

The course includes a combination of classroom discussions and hands-on activities.

COURSE CONTENT
- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - General safety procedures
- Course contents
  - General system overview
  - Components of the system
  - Sensors and mounting
  - Adding new styles into the vision system
  - Communication between HMI and inspection system
  - System navigation/runtime screen
  - Fault-tracing and treatment
  - System maintenance/troubleshooting
- PELT sensor
- BYK wave-scan sensor
- Summary and evaluation

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Sealer only

Introduction to sealing/Dürr robot

IS-1 **BASIC** **1 DAY** **4-6 PERSONS** **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is an introduction to automotive sealing. The intended audiences are individuals who are new to the sealing processes and those responsible for operating the Dürr robot zones.

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

Upon completion of this course, participants will have an understanding of automotive sealing and processes, including: seam sealing, cosmetic sealing, liquid applied sound deadening, and antichip, including equipment and delivery systems. The course includes a look into the Dürr documentation system.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
  - Dürr **Eco**Docu
- Safety
  - General safety procedures
- Overview
  - Process layout
  - Sealing types: seam sealing, cosmetic sealing, LASD, rocker panel
  - Equipment
  - Graphical interface
- Applicator types
- Fluid delivery/circulation
  - Mastic regulator
  - Shot meter
  - Pumps
  - Valves
  - Description and use
- Dürr sealer robot types

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Sealer only

Robot sealer fluid control

RSFC-2   **⊞** ADVANCED   **🕐** 2 DAYS   **👥** 4-6 PERSONS   **📍** DÜRR TRAINING CENTER OR CUSTOMER PLANT

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is an introduction to automotive sealing. The intended audiences are individuals who are new to the sealing processes and those responsible for operating the Dürr robot zones.

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

Upon completion of this course, participants will have an understanding of automotive sealing and processes, including: seam sealing, cosmetic sealing, liquid applied sound deadening, and antichip, including equipment and delivery systems. The course includes a look into the Dürr documentation system. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - Robot safety/general safety procedures
- Overview
  - Robot overview
  - System overview
  - Panel layouts/**Eco**Docu
  - Dürr numbering
- **Eco**Gun 3D operation
  - Overview
  - Operation of **Eco**Gun 3D
  - Special torques
  - Hose connections
  - Special tools
- RS fluid components
  - 3D gun
  - 1D gun
  - Shot meter
  - Mastic regulator
  - Temperature controller
  - Assembly and disassembly of all RS components discussed
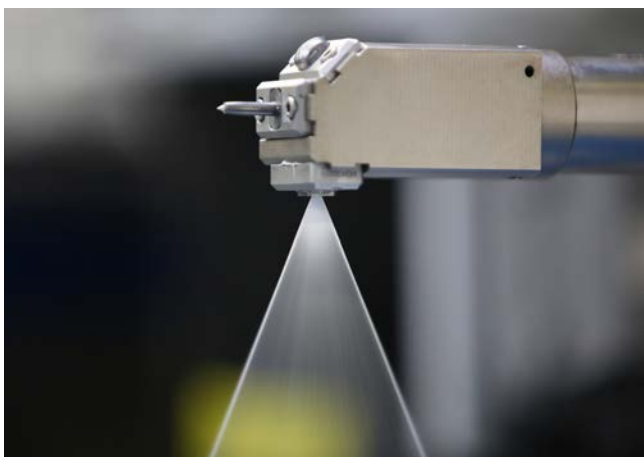
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Sealer only

EcoGun 3D rebuild training

# EG3D-TB50	BASIC	0.5 DAY	4-6 PERSONS	DÜRR TRAINING CENTER OR CUSTOMER PLANT

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is the rebuild of the **Eco**Gun 3D for use on the RS robot.

ADMISSION REQUIREMENTS

Prerequisites for this class are: Dürr system overview and Dürr operations training.

COURSE STRUCTURE

This course will provide participants with hands-on maintenance and rebuild training for the sealer **Eco**Gun 3D. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - Robot safety/general safety procedures
- **Eco**Gun 3D operation
  - Overview
  - Operation of **Eco**Gun 3D
  - Special torques
  - Hose connections
  - Special tools
  - Assembly and disassembly of **Eco**Gun 3D
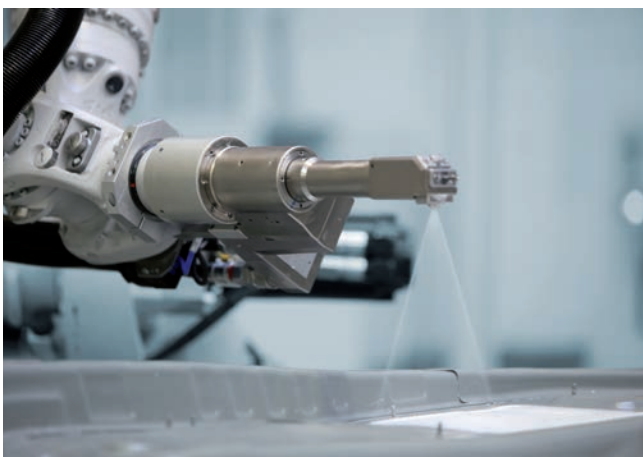
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Sealer only

EcoShot Meter rebuild training

SM-TB50　　**BASIC**　　**0.5 DAY**　　**4-6 PERSONS**　　**DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This tool-box course is intended for personnel responsible for the sealer dual shot meter operation and maintenance.

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

The course will teach participants how to disassemble, rebuild, and troubleshoot Dürr's **Eco**Shot Meter. Additional topics such as preventive maintenance and common application problems will be addressed. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - General safety procedures
- **Eco**Shot Meter double
  - Description and use
  - Operation
  - Effects of changing parameters
  - Assembly and disassembly
  - Special tools
  - Mastering
  - Troubleshooting
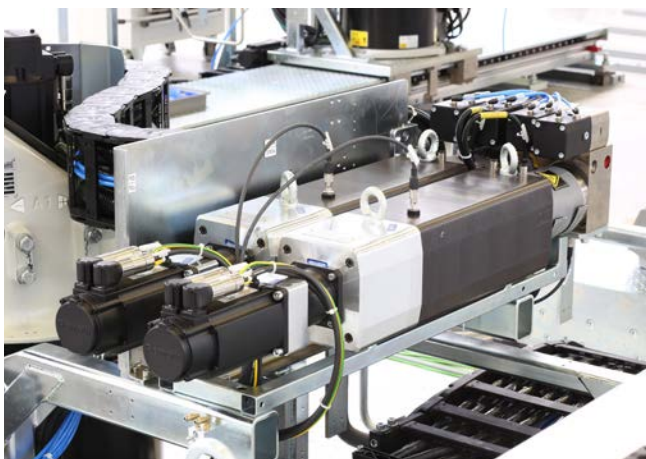
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Sealer only

Robot sealer mechanical maintenance

 # RSMMA-3 **ADVANCED** **3 DAYS** **4-6 PERSONS** **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This maintenance course is intended for personnel responsible for the operation and maintenance of Dürr RS sealer robots using the RPC robot controller.

ADMISSION REQUIREMENTS

Prerequisites for this class are: Dürr system overview and Dürr operations training.

COURSE STRUCTURE

This course will introduce participants to basic robot operation, safety precautions, and using the hand-held teach pendant. The robot mechanical components are identified and configuration and diagnostic procedures are outlined. Interpretation of error codes and robot mastering are also covered. Additionally, participants are instructed in the use of **Eco**Docu, Dürr Systems' comprehensive documentation package. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - Robot safety
  - General safety procedures
- Overview
  - Robot overview
  - System overview
- Robot jogging and teach pendant operation
  - Coordinate systems
  - Pendant jog controls
  - Pendant overview
  - Project menu
  - Manual menu
  - Service menu
  - Error/status menu
  - Jogging the robot
- Robot mechanical repair
  - Robot arm cabling
  - Maintenance and greasing
  - Review of disassembly/assembly of all axes
  - Axis (major axis 1-2-3) replacement
  - Axis (hand axis 4-5-6) replacement
- Mastering procedure

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Sealer only

Vision training (VMT) maintenance

VTV-2   **ADVANCED**   **2 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course covers the global and local concepts, applications, set up, day-to-day operation, diagnostics, and maintenance of the vision system.

ADMISSION REQUIREMENTS

Personnel attending this course should have general knowledge of body sealer operations, and its industrial electrical and control systems. Prerequisites for this class are: Dürr system overview and Dürr operations training.

COURSE STRUCTURE

The course includes a combination of classroom discussions and hands-on activities.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - General safety procedures
- Course contents
  - General system overview
  - Components of the system
  - Sensors and mounting
  - Adding new styles into the vision system
  - Camera calibration
  - Camera replacement
  - Communication between HMI and vision system
  - System navigation/runtime screen
  - Fault-tracing and treatment
  - System maintenance/troubleshooting

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Sealer only

Vision training (VMT) hemflange

VTV-3   **ADVANCED**   **3 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course covers the global and local concepts, applications, set up, day-to-day operation, diagnostics, and maintenance of the vision system for 3D car body position, BK offsets and ToolBox tool tip checks.

ADMISSION REQUIREMENTS

Personnel attending this course should have general knowledge of body sealer operations, and its industrial electrical and control systems. Prerequisites for this class are: Dürr system overview and Dürr operations training.

COURSE STRUCTURE

The course includes a combination of classroom discussions and hands-on activities.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - General safety procedures
- 3D body positioning
  - General system overview
  - Components of the system
  - Sensors and mounting
  - Adding new styles into the vision system
  - Camera calibration
  - Camera replacement
  - Communication between HMI and vision system
  - System navigation/runtime screen
  - Fault-tracing and treatment
  - System maintenance/troubleshooting
- Path adjustments and toolbox
  - General system overview (BK, Toolbox)
  - Components of the system (BK, Toolbox)
  - Sensors and mounting (BK, Toolbox)
  - Reading data in BK interface (BK)
  - Camera calibration (BK, Toolbox)
  - Camera replacement (BK)
  - Communication between HMI and vision system (BK, Toolbox)
  - System navigation/runtime screen (BK, Toolbox)
  - Fault-tracing and treatment (BK, Toolbox)
  - System maintenance/troubleshooting (BK, Toolbox)

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Sealer only

Sealer process training

SPT-3   **EXPERT**   **3 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER**

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is intended for personnel interested in the sealing processes in the paint shop and the relationship of the range of variables that determine the behavior of the sealer application.

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

The process of optimizing the application involves a close look at the cause and effect relationship between operating parameters and application equipment. The Dürr test center sealer robots and test panels are used for practical exercises.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
  - Sealing processes (seam sealing, UBC, LASD, etc.)
- Safety
  - General safety procedures
- Application processes
  - **Eco**Dose PM
  - **Eco**Dose P
  - **Eco**Dose PCL
  - **Eco**Dose SM
  - Components: applicators, fluid tips, transducers, pumps
  - Applicator/flow schematics
- Application patterns
- Defects/troubleshooting
  - Spits
  - Air bubbles
  - Dirt
  - Nozzle wear
  - Troubleshooting procedures at the applicator
- Appearance
  - Cosmetic seams
  - Reaction times
  - Robot profile
  - Viscosity
  - Plant conditions
  - Sequence of painting
  - Quality of BIW
- Temperature control
- Time program configuration
- Lab testing

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Paint mix room

EcoSupply P training

ESP-2   **ADVANCED**   **2 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER**

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is intended for all personnel associated with the operation and maintenance of the **Eco**Supply P piggable paint supply system.

ADMISSION REQUIREMENTS

Personnel attending should have an understanding of mechanical and electrical equipment associated with paint facility processes and of basic industrial troubleshooting, including electrical control and power systems, hardware and software of programmable logic controllers (PLCs) and human machine interfaces (HMIs). Prerequisites for this class are: Dürr system overview and Dürr operations training.

COURSE STRUCTURE

Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - General safety procedures
  - Maintaining equipment for Class 1 Div. 1.
- Components: hardware, software, communications
- **Eco**Supply P types
  - Basic main pass system DN9
  - Main pass system DN12/16
  - Main pass system DN12/16 color loss optimized
  - Single pass system
- Design and functional principles
  - Source modules
  - Target modules
  - Distributors
  - Pig types
- Color change time
  - Determining color change time
  - Color losses
  - Solvent usage
- Paint station
  - Types
  - Pumps
  - Delivery drum
  - Drum seat and scale
  - Cleaning station
  - Control unit
- Visualization
  - Operations and controls

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Paint mix room

EcoSupply P training

ESP-3   **ADVANCED**   **3 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER**

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is intended for all personnel associated with the operation and maintenance of the **Eco**Supply P piggable paint supply system.

ADMISSION REQUIREMENTS

Personnel attending should have an understanding of mechanical and electrical equipment associated with paint facility processes and of basic industrial troubleshooting, including electrical control and power systems, hardware and software of programmable logic controllers (PLCs) and human machine interfaces (HMIs).

COURSE STRUCTURE

Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - Handling of paint materials for ESP
  - Dealing with piping systems under pressure (liquids/air)
- Design and functional principles
  - Basics of the ESP technology
  - **Eco**Supply P types
  - Pig types
  - Analysis of the customer-specific system
  - Operation parameters
  - Evaluate wear
- Components: hardware, software, communications
- Maintenance
  - Checks: daily, weekly, monthly
  - How to replace pigs
  - How to replace hoses
  - Source modules
  - Target modules
  - Distributors (if used)
- Paint station
  - Types
  - Pumps
  - Delivery drum
  - Drum seat and scale
  - Cleaning station
  - Control unit
- Troubleshooting
  - Reasons for incidents
  - First measures
  - Precautionary measures
- Visualization
  - Operations and controls

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Paint mix room

EcoSupply P training (w/ PMR)

ESP-3   **ADVANCED**   **3 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER**

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is intended for all personnel associated with the operation and maintenance of the **Eco**Supply P piggable paint supply system.

ADMISSION REQUIREMENTS

Personnel attending should have an understanding of mechanical and electrical equipment associated with paint facility processes and of basic industrial troubleshooting, including electrical control and power systems, hardware and software of programmable logic controllers (PLCs) and human machine interfaces (HMIs).

COURSE STRUCTURE

Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - Handling of paint materials for ESP
  - Dealing with piping systems under pressure (liquids/air)
- Design and functional principles
  - Basics of the ESP technology
  - **Eco**Supply P types
  - Pig types
  - Analysis of the customer-specific system
  - Operation parameters
  - Evaluate wear
- Components: hardware, software, communications
- Maintenance
  - Checks: daily, weekly, monthly
  - How to replace pigs
  - How to replace hoses
  - Source modules
  - Target modules
  - Distributors (if used)
- Paint station
  - Pumps
  - Delivery drum
  - Drum seat and scale
  - Cleaning station
  - Control unit
- Troubleshooting
- Visualization
  - Operations and controls

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Paint mix room

Paint mix room training

PMR-3   **ADVANCED**   **3 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER**

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is intended for all personnel associated with the operation and maintenance of the paint mix room paint supply system.

ADMISSION REQUIREMENTS

Personnel attending should have an understanding of mechanical and electrical equipment associated with paint facility processes and of basic industrial troubleshooting, including electrical control and power systems, hardware and software of programmable logic controllers (PLCs) and human machine interfaces (HMIs).

COURSE STRUCTURE

Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - Handling of paint materials
  - Dealing with piping systems under pressure (liquids/air)
- Overview
  - Explanation about the drawings and function of system
  - How the equipment is installed and connected
  - Explanation about the main components of the tank groups
  - Explanation about types of pipe rings
- Operation
  - Review of all screens
  - Pump setup according to the number of cycles required
  - Explanation about the pump cycles limits
  - Conditions to raise up the pump cycles
  - Pressure adjustments/settings of the filling line and return line
- Maintenance/troubleshooting
  - Pumps: pump rebuild procedures, preventive and corrective maintenance
  - Filter housing: how to replace and clean the filter cartridge, how important is the presence of the paint supplier during the setup of these parameters
  - Preventative maintenance (PMs)

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Paint mix room

Paint mix room w/ ESP training

PMR-4   **ADVANCED**   **4 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER**

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is intended for all personnel associated with the operation and maintenance of the paint mix room paint supply system.

ADMISSION REQUIREMENTS

Personnel attending should have an understanding of mechanical and electrical equipment associated with paint facility processes and of basic industrial troubleshooting, including electrical control and power systems, hardware and software of programmable logic controllers (PLCs) and human machine interfaces (HMIs). **Eco**Supply P operation and maintenance is also covered.

COURSE STRUCTURE

Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - Handling of paint materials
  - Dealing with piping systems under pressure (liquids/air)
- Overview
  - Explanation about the drawings and function of system
  - How the equipment is installed and connected
  - Explanation about the main components of the tank groups
  - Explanation about types of pipe rings
- Operation
  - Review of all screens
  - Pump setup according to the number of cycles required
  - Explanation about the pump cycles limits
  - Conditions to raise up the pump cycles
  - Pressure adjustments/settings of the filling line and return line
- **Eco**Supply P
  - Review of all screens
  - Operations and controls
- Maintenance/troubleshooting
  - Pumps: pump rebuild procedures, preventive and corrective maintenance
  - Filter housing: how to replace and clean the filter cartridge, how important is the presence of the paint supplier during the setup of these parameters
  - Source modules
  - Target modules
  - Distributors (if used)
  - Pig replacement
  - Pig hose replacement
  - Preventative maintenance (PMs)

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General/miscellaneous

EcoDocu training

ED-TB50   ⊟ BASIC   🕐 0.5 DAY   👥 4-6 PERSONS   📍 DÜRR TRAINING CENTER OR CUSTOMER PLANT

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is intended for all personnel associated with the operation and maintenance of the robot zones.

ADMISSION REQUIREMENTS

Prerequisites for this class are: Dürr system overview and Dürr operations training.

COURSE STRUCTURE

This hands-on course shows how to use **Eco**Docu to explore the interconnectedness of parts, drawings, and hotspots; use hyperlinks from the parts list to access documentation; use the robust search functions; and create an order.

COURSE CONTENT

- Introduction
  - Course goal/outline
- **Eco**Docu environment
  - Nested data
  - Icons
  - Parts list
  - Documentation
  - Create an order
- Exploring **Eco**Docu
  - Parts list
  - Documentation
  - Hot spots
  - Drawings
  - Printing lists and drawings
  - Building an order
  - Searching (many options)
  - Detailed review of how **Eco**Docu is organized
- Examples and hands-on exercises

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General/miscellaneous

Generic course

GEN-2   **▤** INTERMEDIATE   **◷** 2 DAYS   **⚇** 4-6 PERSONS   **◉** DÜRR TRAINING CENTER OR CUSTOMER PLANT

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is for personnel responsible for operating the Dürr robot zones.

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

The content can be a refresher of other courses and is determined by either the customer or instructor. It is intended to allow the participants time for general information with an experienced instructor and is intended to be performed after the participants have spent time working with the Dürr robots/zones. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

Course content is completely customizable.

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Industrial products

General INP product training

INP-N   **INTERMEDIATE**   **TBD**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP
All.

COURSE OBJECTIVE
—

ADMISSION REQUIREMENTS
—

COURSE STRUCTURE
Topics include: all INP products.

COURSE CONTENT
- **Eco**Dose 2K
  - **Eco**AUC
  - **Eco**PUC
  - ready2spray
  - Pumps
  - Atomizers

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Industrial products

EcoAUC pneumatic, electrical and operator course

 # ECOAUC-1 **INTERMEDIATE** **1 DAY** **4-6 PERSONS** **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

End users, operators, and other personnel responsible for the operation of the **Eco**AUC panel.

COURSE OBJECTIVE

This course is for personnel responsible for operating the Dürr **Eco**AUC panel. The intended audience is those responsible for operation, start-up and shutdown, monitoring, data changes, and troubleshooting.

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

Topics include: pneumatic controls, electrical controls, start-up, shutdown, and fault procedures. The course includes a combination of classroom discussions and hands-on activities. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - General safety procedures
- Fluid portion of the equipment related to **Eco**AUC
  - Paint valve stack and individual valves/types
  - Disengaging valve
  - Servo motor
  - Paint pump
  - Static mixer
  - Dump valve if applicable
  - Catalyst supply valves if applicable
  - Disengaging valves on catalyst path
  - Cleaning solvent locations/valves
  - Air supply for cleaning if applicable
- Pneumatic portion of **Eco**AUC cabinet
  - Panel connection points and layout
  - Port sizes
  - Internal hardware layout and function of each component
- Electrical portion of **Eco**AUC cabinet
  - Panel connection points and layout
  - Internal hardware layout and function of each component
  - Customer interface portion within the electrical cabinet and its layout
- **Eco**AUC screen interface introduction
  - Review each screen introducing the purpose, usage and the layout/definition of what each screen item does
  - Brush parameter information
  - Paint recipe information
  - External cabinet features
- **Eco**AUC system interconnection outline
  - Field equipment tubing, wire and cable locations
- **Eco**AUC system for practice/exercises

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Feather duster/blow-off
Machine operator course

 # MOP-1 **BASIC** **1 DAY** **4-6 PERSONS** **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is intended for personnel responsible for operation of the machine "clean wall" style cleaning systems (feather duster/blow-off) and the RPC controller.

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

Participants will be introduced to console operation, safety precautions, and using 3D-OnSite. The components are identified with discussions fault codes. Includes: graphical user interface, start-up, shutdown, and fault recovery procedures.

COURSE CONTENT

- Introduction
  - Instructor introduction
  - Student introductions
  - Course goal/outline
- Safety
  - General safety procedures
- Overview
  - System overview
  - **Eco**Docu
  - Dürr numbering
  - Coordinate systems
  - Component identification
  - **Eco**Screen review
- Troubleshooting
  - Fault review
- 3D-OnSite menu structure
  - Overview of functions
  - Configuration settings
  - Connecting a station and adding robot flash card
  - Modify paths: path points, creating paths, starting new paths
  - Style configuration: view and change data, style page definition/configuration
- Backup services
  - Review of the backup service application and configuration
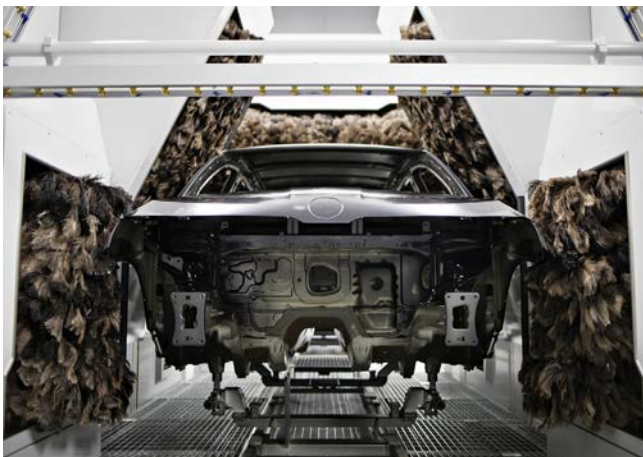
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Feather duster/blow-off

Machine electrical maintenance course

 # MEMA-2 | **INTERMEDIATE** | **2 DAYS** | **4-6 PERSONS** | **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is intended for personnel responsible for electrical maintenance of the machine "clean wall" style cleaning systems (feather duster/blow-off) and the RPC controller.
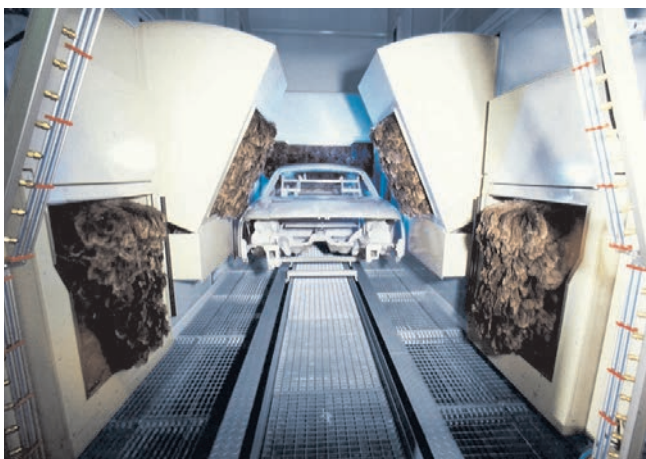
ADMISSION REQUIREMENTS

Prerequisites for this class are: Dürr system overview, Dürr operations training, and Windows OS understanding.

COURSE STRUCTURE

Participants will be introduced to basic RPC controller operation, safety precautions, and using 3D-OnSite. The RPC and controller electrical components are identified with discussions about configuration and diagnostic procedures. Controller software maintenance and interpretation of error codes are also covered. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Instructor introduction
  - Student introductions
  - Course goal/outline
- Overview
  - System overview
  - Panel layouts/**Eco**Docu
  - Dürr numbering
  - Coordinate systems
  - RPC controller overview
- RPC Controller
  - Robot controller
  - Servo drives
- Software maintenance
  - System start-up and shutdown
  - Modifying special positions
  - Computer backup and restore
- Troubleshooting
  - Fault review
- 3D-OnSite menu structure
  - Overview of functions
  - Configuration settings
  - Connecting a station and adding robot flash card
  - Modify paths
  - Style configuration
- Backup services
  - Review of the backup service application and configuration

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Feather duster/blow-off

Machine electrical maintenance with operator course

MEMOP-3 | **⊟** INTERMEDIATE | **🕐** 3 DAYS | **👥** 4-6 PERSONS | **📍** DÜRR TRAINING CENTER OR CUSTOMER PLANT

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is intended for personnel responsible for electrical maintenance of the machine "clean wall" style cleaning systems (feather duster/blow-off) and the RPC controller.

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

Participants will be introduced to basic RPC controller operation, safety precautions, and using 3D-OnSite. The RPC and controller electrical components are identified with discussions about configuration and diagnostic procedures. Controller software maintenance and interpretation of error codes are also covered. The operator portion includes: graphical user interface, start-up, shutdown, and fault recovery procedures. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Instructor introduction
  - Student introductions
  - Course goal/outline
- Safety
  - General safety procedures
- Overview
  - System overview
  - Panel layouts/**Eco**Docu
  - Dürr numbering
  - Coordinate systems
  - RPC controller overview
  - **Eco**Screen review
- RPC Controller
  - Robot controller
  - Servo drives
- Software maintenance
  - System start-up and shutdown
  - Modifying special positions
  - Computer backup and restore
- Troubleshooting
  - Fault review
- 3D-OnSite menu structure
  - Overview of functions
  - Configuration settings
  - Connecting a station and adding robot flash card
  - Modify paths
  - Style configuration
- Backup services
  - Review of the backup service application and configuration

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Feather duster/blow-off

Machine mechanical maintenance course

MMMA-2   **INTERMEDIATE**   **2 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is intended for personnel responsible for mechanical maintenance of the machine "clean wall" style cleaning systems (feather duster/blow-off).

ADMISSION REQUIREMENTS

Prerequisites for this class are: Dürr system overview, Dürr operations training, and Windows OS understanding.

COURSE STRUCTURE

The course includes a combination of classroom discussions and hands-on activities. The mechanical components are identified with discussions about troubleshooting, component removal, and replacement procedures. Class participants may dismantle the axes, reassemble them, and home the machine axes. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - General safety procedures
- System overview
  - Feather duster overview
  - Component ID and location: identify components at the station
  - Components and operation of individual axes
  - Preventive maintenance
- Control console
  - Operation
- Manual operation
  - Jog machine
  - Fixed positions
  - Fault review
- Equipment motion
  - Jogging the machine
  - Homing the machine
- Side machine
  - Y axis components
  - A axis components
  - C axis components
- Roof machine
  - Overhead overview
  - Function and description
  - Components and operation of individual axis

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Feather duster/blow-off

Blow-off electrical mechanical operator course

MEMOP-3   **INTERMEDIATE**   **3 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is for personnel responsible for operating the Dürr blow-off zone. The intended audience is those responsible for console operation, equipment start-up and shutdown, zone status monitoring, process data entry, and troubleshooting.

ADMISSION REQUIREMENTS

Prerequisites for this class are: Dürr system overview, Dürr operations training, and Windows OS understanding.

COURSE STRUCTURE

Topics include: graphical user interface, theory of operation, start-up, shutdown, and fault recovery procedures. The course includes a combination of classroom discussions and hands-on activities. The electrical components are identified with discussions about configuration, diagnostic procedures and interpretation of error codes. The mechanical components are identified with discussions about troubleshooting, component removal and replacement procedures. Class participants may dismantle the axes, reassemble them, and home the machine axes. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - General safety procedures
- System overview
- Graphic user interface
- Control console
  - Operation
  - System start-up and shutdown
- Manual operation
  - Jog machine
  - Fixed positions
  - Fault review
- Data entry
  - 3D-OnSite style selection
  - Adding/modifying bit maps
  - Vertical contours
- Networks
- Electrical troubleshooting
- Electrical repair
- Equipment motion
  - Jogging the machine
  - Homing the machine
- Roof machine
  - Overhead overview
  - Function and description
  - Components and operation of individual axis
  - Mechanical adjustments
- Air control

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Feather duster/blow-off

Feather duster operator electrical mechanical course

FD-5   INTERMEDIATE   5 DAYS   4-6 PERSONS   DÜRR TRAINING CENTER OR CUSTOMER PLANT

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is for personnel responsible for operating the Dürr feather duster zone. The intended audience is those responsible for console operation, equipment start-up and shutdown, zone status monitoring, process data entry, and troubleshooting.

ADMISSION REQUIREMENTS

Prerequisites for this class are: Dürr system overview, Dürr operations training, and Windows OS understanding.

COURSE STRUCTURE

Topics include: graphical user interface, theory of operation, start-up, shutdown, and fault recovery procedures. The course includes a combination of classroom discussions and hands-on activities. The electrical components are identified with discussions about configuration, diagnostic procedures and interpretation of error codes. The mechanical components are identified with discussions about troubleshooting, component removal and replacement procedures. Class participants may dismantle the axes, reassemble them, and home the machine axes. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - General safety procedures
- System overview
- Graphic user interface
  - Review of screens
  - Function and operation
- Control console
  - Operation
  - System start-up and shutdown
- Manual operation
- Data entry
  - 3D-OnSite style selection
  - Adding/modifying bit maps
  - Vertical contours
- Networks
- Electrical troubleshooting
- Electrical repair
- Equipment motion
  - Jogging the machine
  - Homing the machine
- Side machine
  - Y axis components
  - A axis components
  - C axis components
- Roof machine
  - Overhead overview
  - Function and description
  - Components and operation of individual axis

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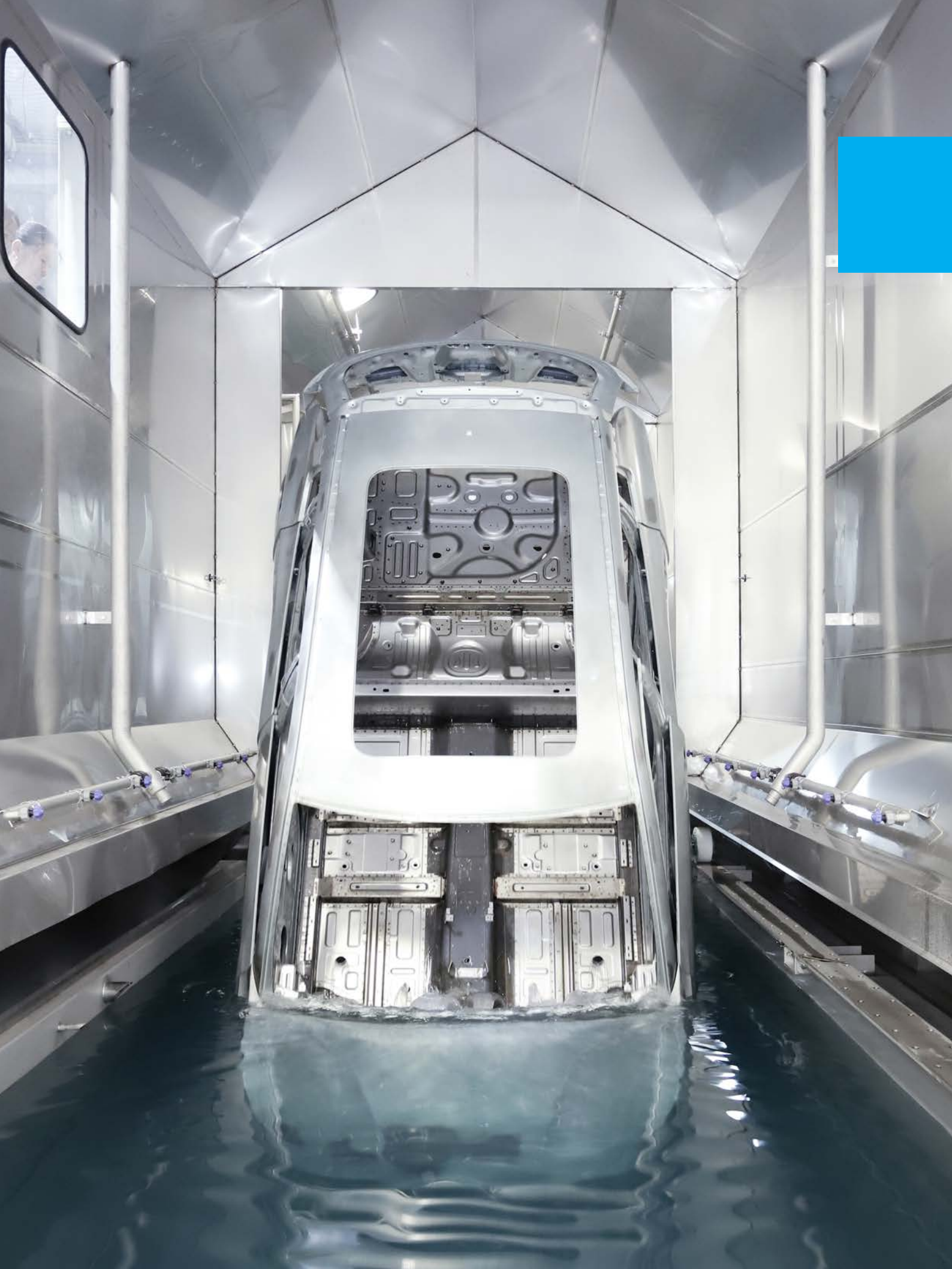
02

Paint and final assemby systems

Pretreatment and electrocoating

PTEC operations/HMI course

PTECOP-2   **INTERMEDIATE**   **2 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is for personnel responsible for operating the Dürr pretreatment & electrocoating (PTEC) equipment. The intended audience is those responsible for operation, equipment start-up and shutdown, zone status monitoring, process data entry, and troubleshooting.

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

Topics include: graphical user interface, start-up, shutdown, and fault recovery procedures. The course includes a combination of classroom discussions and hands-on activities. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - General safety procedures
- System overview
  - Introduction to PTEC
  - Component ID and location
- Graphic user interface
  - Function and operation
  - Review of screens
  - Operation
  - System start-up and shutdown
- Troubleshooting
  - Fault review

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Pretreatment and electrocoating

PTEC electrical maintenance

PTECEM-2   ☰ INTERMEDIATE   🕐 2 DAYS   👥 4-6 PERSONS   📍 DÜRR TRAINING CENTER OR CUSTOMER PLANT

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is for personnel responsible for electrical maintenance of the Dürr pretreatment & electrocoating (PTEC) equipment.

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

The course will introduce participants to basic equipment operation, safety precautions, and review of interlocks between PTEC equipment and conveyor. The PTEC equipment electrical components are identified with discussions about diagnostic procedures. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - General safety procedures
- Overview
  - Introduction to PTEC
  - Component ID and location
  - Dürr numbering
- Operations
  - Interlocks between PT equipment and conveyor
  - Interlocks between EC equipment and conveyor
- Electrical troubleshooting
  - System fault recovery
  - E-stop safety circuits
- Measurements
  - Special tools

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Pretreatment and electrocoating

PTEC mechanical maintenance

PTECMM-2   **INTERMEDIATE**   **2 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

The course is an overview of the Dürr pretreatment & electrocoating (PTEC) equipment and demonstrates how to perform mechanical maintenance of the PTEC equipment.

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

The course will introduce participants to basic PTEC equipment operation, safety precautions, and main maintenance tasks. The PTEC equipment mechanical components are identified with discussions about troubleshooting, component removal, and replacement procedures. Note: exercises that can interfere with production are not performed on production equipment.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - General safety procedures
- Overview
  - Introduction to PTEC
  - Component ID and location
  - Dürr numbering
- Equipment
  - Pretreatment components and functions
  - Electrocoating components and functions
- Maintenance tasks
  - Pretreatment tasks
  - Function elements
  - Pumps
  - Valve and dampers
  - Tanks
  - Filtration
  - Measuring devices
  - Electronics
  - Air supply/exhaust

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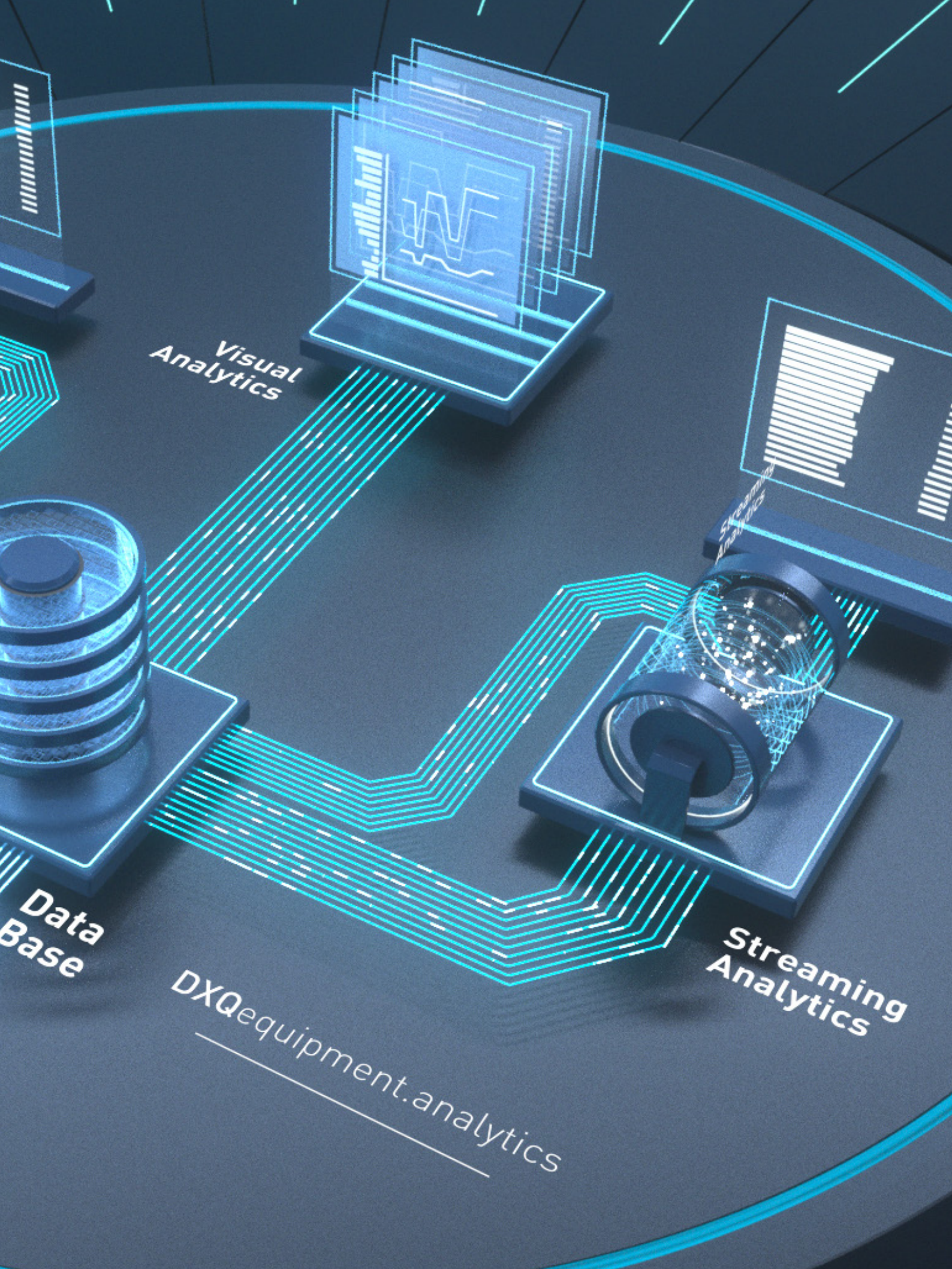
Visual
Analytics

Data
Base

DXQequipment.analytics

Streaming
Analytics

03

Digital products

DXQanalyze

DXQequipment.analytics | DXQ visual analytics course

DXQVA-2   **ADVANCED**   **2 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is intended as an introduction to the features of equipment analytics.

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

The course will introduce participants to the features and interactions of the equipment analytics program. Additional topics such as streaming analytics will be addressed.

COURSE CONTENT

- Introduction
  - Course goal/outline
- General
  - Description
  - Architecture
- Visual analytics menu structure
  - Overview of functions
  - Configuration settings
  - View wizard settings
- Loading robot graphics
  - Display of robot kinematics and characteristics on the graphics
  - Load car body
- Visual analytics tools
  - Import and export
  - Softlog files
- Signal selection
  - Review signal names
  - Creating schemes
  - Workpiece selections
- Analyzing data signals
  - Comparing robot to robot
  - Comparing job to job
  - Displaying data signals in 3D graphics

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DXQanalyze

DXQequipment.analytics | DXQ streaming analytics course

| # DXQSA-1 | ADVANCED | 1 DAY | 4-6 PERSONS | DÜRR TRAINING CENTER OR CUSTOMER PLANT |

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is intended as an introduction to the features of streaming analytics.

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

The course will introduce participants to the features and interactions of the streaming analytics program. Additional topics such as building algorithms to recognize patterns will be addressed.

COURSE CONTENT

- Introduction
  - Course goal/outline
- General
  - Description
  - Architecture
- Streaming analytics model builder
  - Algorithms
  - Predefined blocks
  - Simple comparisons
  - Complex calculations
  - Outputs
- Streaming analytics tools
  - Model management
  - Visualizer
  - Test, activate and delete algorithms
- Signal selection
  - Review signal names
  - Restrictions
- Analyzing data signals
  - Creating links to the station

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DXQanalyze

DXQequipment.analytics | DXQ HMI, VA and SA course

 # DXQ-4   **ADVANCED**   **TBD**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

Course content is a combination of:

- **DXQ**WW-1: **DXQ** Wonderware/HMI training

- **DXQ**VA-2: **DXQ** visual analytics course

- **DXQ**SA-1: **DXQ** streaming analytics course
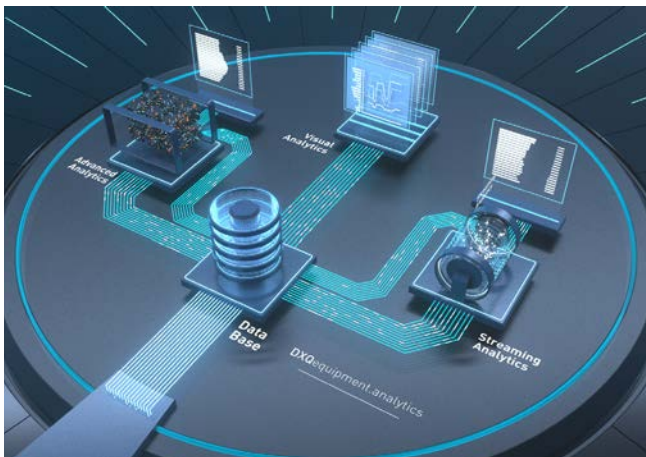
ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

—

COURSE CONTENT

Further information available upon request.

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DXQanalyze

DXQequipment.analytics | DXQ 3D, VA and SA course

DXQ-5   **ADVANCED**   **TBD**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

Course content is a combination of:

- **DXQ**3D-3: **DXQ** 3D-OnSite (V4) training

- **DXQ**VA-1: **DXQ** visual analytics course

- **DXQ**SA-1: **DXQ** streaming analytics course

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

—

COURSE CONTENT

Further information available upon request.

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DXQoperate

DXQequipment.operation | DXQ equipment maintenance training

| # DXQEM-1 | ADVANCED | 1 DAY | 4-6 PERSONS | DÜRR TRAINING CENTER OR CUSTOMER PLANT |

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This tool-box course is intended as an introduction of the features of the equipment maintenance.

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

The course will introduce participants to the features and interactions of the equipment maintenance program. Additional topics such as modifying and adding maintenance tasks will be addressed.

COURSE CONTENT

- Introduction
  - Course goal/outline
- Product information
- Integration into **Eco**Screen
- Application area
- Design and function
- Advantages
- Customer benefits
- Adding tasks
- Technical data

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DXQoperate

DXQequipment.operation | DXQ equipment maintenance training

DXQEM-TB50   **≡** BASIC   **🕐** 0.5 DAY   **👥** 4-6 PERSONS   **📍** DÜRR TRAINING CENTER OR CUSTOMER PLANT

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This tool-box course is intended as an introduction of the features of the equipment maintenance.

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

The course will introduce participants to the features and interactions of the equipment maintenance program. Additional topics such as modifying and adding maintenance tasks will be addressed.

COURSE CONTENT

- Introduction
  - Course goal/outline
- Product information
- Design and function
- Operating conditions
- Technical data
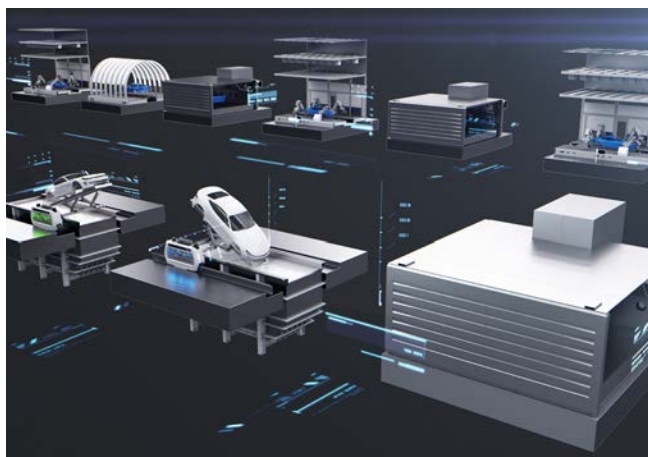
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DXQoperate

DXQequipment.operation | DXQ 3D-OnSite (V4) training

DXQ3D-3 **ADVANCED** **3 DAYS** **4-6 PERSONS** **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is intended for personnel responsible for **Eco**Paint robot path programming. **Eco**Screen 3D-OnSite is the visualization and programming software developed by Dürr Systems, Inc. for generating and editing robot programs in 3D graphics and entering process data parameters.

ADMISSION REQUIREMENTS

Prerequisites for this class are: Dürr system overview, Dürr operations training, and Windows OS understanding.

COURSE STRUCTURE

The course will introduce participants to basic CAD robot path programming and coordinate systems. The setup of 3D-OnSite for the customer's application and modifications to existing paths will be covered. Participants will also gain experience in CAD robot path programming and coordinate systems and use 3D-OnSite for the automatic generation of robot paths with different overlaps and other path patterns. Both the programming syntax and the instruction set of the **Eco**Talk programming language will be covered.

COURSE CONTENT

- Introduction
  - Course goal/outline
- Safety
  - Robot safety
  - General safety procedures
- 3D-OnSite menu structure
- Loading robot graphics
- 3D graphics editor
- Modify existing brush tables
- Modify paths
- Creating paths
- Adding points
- Object tracking/line tracking (if applicable)
- Modifying global variables
- Extras (if allotted time permits)

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DXQEO-2   **▣** BASIC   **⏱** 2 DAYS   **👥** 4-6 PERSONS   **📍** DÜRR TRAINING CENTER OR CUSTOMER PLANT

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is for personnel responsible for operating the Dürr robot zones. The intended audience is those responsible for console operation, equipment start-up and shutdown, zone status monitoring, process data entry, and troubleshooting.

ADMISSION REQUIREMENTS

—

COURSE STRUCTURE

Topics include: graphical user interface, theory of rotational atomization (and/or sealer application), start-up, shutdown, and fault recovery procedures. The course includes a combination of classroom discussions and hands-on activities.

COURSE CONTENT

- Introduction
  - Course goal/outline
  - Equipment overview
- Safety
  - General safety procedures
- System overview
  - Component ID and location
  - Atomizers/applicators/3D gun
  - Fluid regulator/mastic regulator
  - Color changers/helper gun
  - Pumps/dual shot meter
  - Heat exchanger
- Graphic user interface
  - Function and operation
  - Review of screens
  - Brief on data entry
- Control console
  - Operation
  - System start-up and shutdown
- Manual operation
  - Material flow
  - Operating time programs
  - Depressurize system
  - Remove and attach atomizer
  - Jog robots/fixed positions
- Troubleshooting
  - Fault review

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DXQoperate

DXQequipment.operation | DXQ EcoPaintJet Pro 3D-OnSite path generator/patterns

EPJP-5   **ADVANCED**   **5 DAYS**   **4-6 PERSONS**   **DÜRR TRAINING CENTER OR CUSTOMER PLANT**

TARGET GROUP

Operators, maintenance personnel, robot programmers, automation engineers, and other personnel responsible for the operation of the Dürr system.

COURSE OBJECTIVE

This course is intended for personnel responsible for **Eco**PaintJet Pro robot path programming. **DXQ** 3D-OnSite is visualization and programming software developed by Dürr Systems, Inc. for generating and editing robot programs in 3D graphics for the **Eco**PaintJet Pro application.

ADMISSION REQUIREMENTS

Prerequisites for this class are: Dürr system **DXQ** 3D-OnSite (V4) training.

COURSE STRUCTURE

Participants will be introduced to basic CAD robot path programming and coordinate systems. The setup of **DXQ** 3D-OnSite for the customer's application and modifications to existing paths will be covered. Participants will also gain experience in CAD robot path programming and coordinate systems and use **DXQ** 3D-OnSite for the automatic generation of robot paths for **Eco**PaintJet Pro.

COURSE CONTENT

- Introduction
  - Course goal/outline
- Safety
  - Robot safety/general safety procedures
- Review 3D-OnSite menu structure
  - Overview of functions
  - Configuration settings
  - View wizard settings
  - Connecting a station and adding robot flash cards
- Review loading robot graphics
  - Display of robot kinematics and characteristics on the graphics
  - Robot coordinate systems and their display in the graphics
  - Load car body
- Review 3D graphics editor
  - Overview of functions, operating elements, and keyboard shortcuts
  - Loading and graphical editing of existing robot programs
  - Explanation of all editing functions of the 3D graphics editor
  - Save/activate views
- **Eco**PaintJet Pro path editor
  - Starting new paths
  - Automatic path generation function
  - Generating **Eco**PaintJet Pro valve program
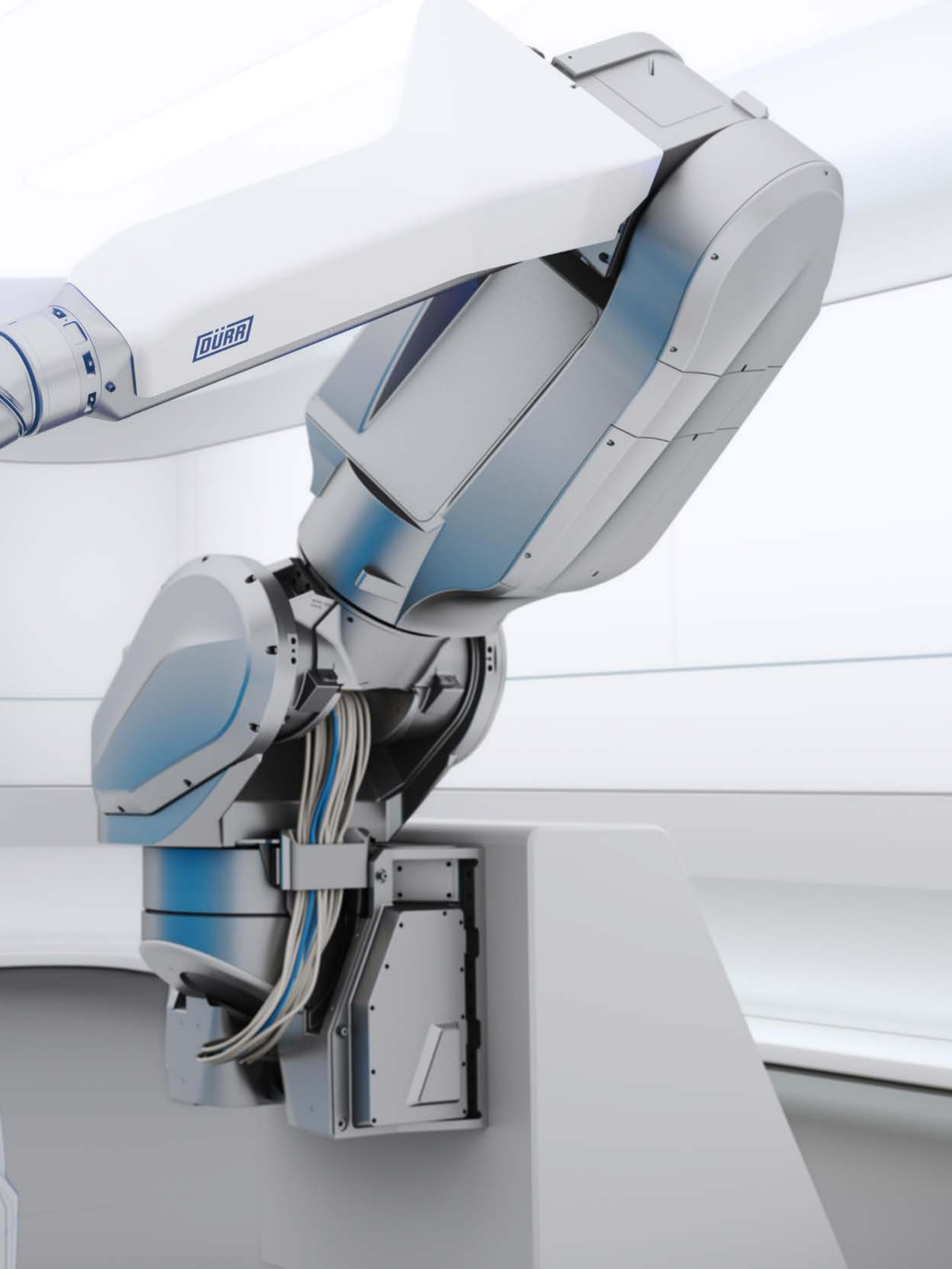 - Testing, modifying, and reviewing paths
- **Eco**PaintJet Pro path editor for patterns
  - Starting new paths
  - Automatic path generation function
  - Generating **Eco**PaintJet Pro valve program
  - Testing, modifying, and reviewing paths

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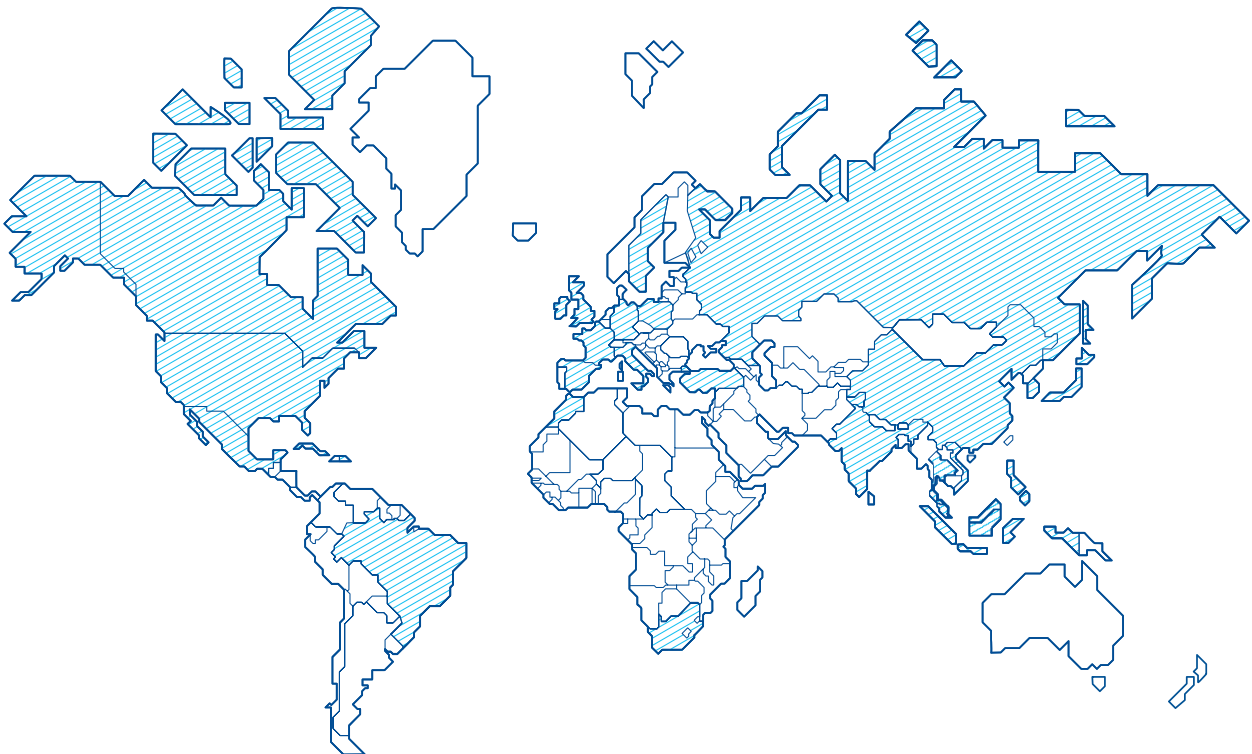
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METHODS

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