Showcase of automated bell painting system

24.10.2019
Bietigheim-Bissingen
Mühlbauer/Keller, PP
Reciprocator & 2K unit integration scheme

SCHEME SETUP
- Process: 2K
- No. of colors: 2
- No. of solvents: 1
- No. of hardeners: 1
- Application: Rotating atomizers

APPLICATION COMPONENTS
1. EcoAUC
2. EcoRecip - controller
3. Fluid board
4. EcoRecip
5. Small paint supply
6. Pressure pot

ELECTRIC COMPONENTS
- Multiplier
- Hardware-Sync
- Virtual-Sync
- Motor with encoder

ELECTRIC LINES
- Part detect signal
- Ethernet
- Encoder electric signal
- Reciprocator connection
- Sensor signal

MEDIA
- Fluid
- Compressed air
- Compressed air source
EcoRecip as Manipulator

General Information

- **EcoRecip** is a product line of multiple axis manipulators, suitable for paint application in production lines.
- **EcoRecip** can be used with different types of application equipment, spray guns or rotary atomizers.
- Main working axis is vertical.
- Optional working axes can be horizontal (positioning) and tilting.

![Diagram of EcoRecip Manipulator](image-url)

CARRIAGE

MOTOR HOUSING

ADJUSTABLE FEET BASE

BASE
EcoRecip as Manipulator

Interfaces and Installation

- E-Stop
- Encoder Impulse
- 1x Trigger (part recognition)

- E-Stop
- Gun on/ Gun off

**CPU**

### Mechanical Data:

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<th>Usable stroke mm</th>
<th>Distance from the ground mm</th>
<th>Minimum speed m/min</th>
<th>Maximum speed m/min</th>
<th>Weight Kg</th>
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### Electrical data:

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<td>Input power</td>
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<tr>
<td>Power supply voltage</td>
<td>230 V AC +/- 10% 3F 50 Hz (others available on request)</td>
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EcoBell 2 SL
Integration of EcoBell Package

- The EcoBell 2 SL can be installed on any manipulator:
  - On different robots with the help of an angle adapter
  - On a lifting device as straight version or with angle
  - Mounted on linear axes or simply static

- The EcoBell Package can be purchased as a complete solution, but also as an individual component for installation in an external system.
EcoBell 2 SL

General Information

- EcoBell is available in two different versions:
  - Direct charge (EcoBell2 SL DC) which can be used either with solvent based or waterborne paint. In case of waterborne paint a galvanic separation system is needed
  - External charge (EcoBell2 SL EC) which can only be used with waterborne paint and does not need a galvanic separation system
EcoBell 2 SL
Advantages of ESTA Atomizer

- Advantages in comparison to airspray guns:
  - Smoother and finer paint droplet distribution which leads to higher surface quality
  - Higher transfer efficiency
  - Electrostatic wrap around effect – Tuning parameter
  - Rotary symmetric spray pattern
EcoBell 2 SL
Products EcoBell Package

- The Bell Package itself consists of:
  - The rotary atomiser incl. turbine, steering air ring
  - One bell disc (standard size D52, serrated or not serrated)
  - A flange package available in lengths of 5m or 10m
  - A high-voltage cable
  - Connection cable
  - Fluid Plate
  - Eco AUC control unit
EcoBell 2 SL
Products EcoBell Package

**Optional:**
- Angle adapter 60°
- Conversion kit for various shaping air ring & bell disk combinations
- Paint supply stations/ lifting stations for hobbok up to 200L or pressure pots, pumps, filter units
- EcoBell Cleaner D

**Accessories:**
- Hand Earthing Stick, installation tools for all components, paint and air hoses, measuring and adjustment devices
EcoBell 2 SL
Bell disc and shaping Air ring variations

- Conversion kit for other bell discs and shaping air ring applications:
  - New housing necessary - Different mounting of the shaping air rings
  - Shaping air rings are available in different designs (1x shaping air or 2 x shaping air, 0/30°, 0/45°, 30/45°,...)
  - Bell disc size available Ø40, Ø52, Ø55, Ø65
    → Bell discs available in different sizes and designs (serrated), not serrated, diagonally serrated...
Control Cabinet
General Information

- The *Control cabinet* is for actuation of the following application components:
  - High rotation atomizer (hereafter called "rotating atomizer") with direct charging, external charging or without charging through high tension
  - or Spray guns with air spray, air assisted or airless
  - Color Changer
  - Gear Wheel Pump
  - or Paint pressure regulator
This Configurator is only for Control Unit. Atomizer, Pumps and installation equipment has to be ordered on top.
Products EcoBell Package
Configuration and Posibilities

- Advantages of a complete system (consisting of EcoBell, EcoAUC, Small Supply System/PumpPackage and Fluid Plate)
  
  ✓ Standard components are *pre-assembled and tested* at Dürr (100% control)
  
  ✓ Components can be *easily connected* and assembled on site
  
  ✓ Configured components have a *unique material number*
  
  ✓ Spare parts package is defined
  
  ✓ Completeness (including all hoses and connecting pieces) checked by Dürr technicians
# Integration EcoBell Package

## Responsibility matrix

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<thead>
<tr>
<th></th>
<th>Dürr</th>
<th>Integrator</th>
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<tr>
<td>Consulting services on product use and solution implementation</td>
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<td>Composition of all required components</td>
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<td>Function and efficiency testing of all components</td>
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Application Technology
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74321 Bietigheim-Bissingen