

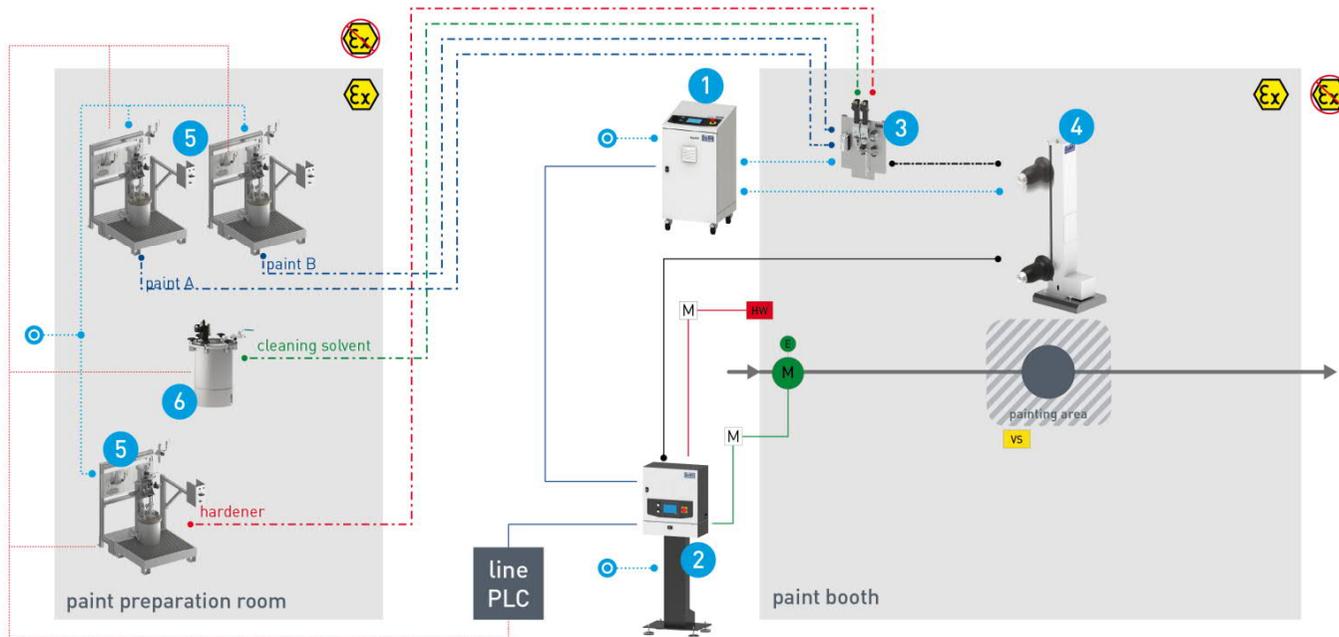
LEADING IN  
PRODUCTION  
EFFICIENCY

A photograph showing two white, cylindrical robotic components. The one on the left is a nozzle assembly with a central circular opening. The one on the right is a larger, more complex assembly with a central circular opening and several protruding arms or fingers around it. Both are set against a plain, light-colored background.

## 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

- M Multiplexer
- hw Hardware-Sync
- vs Virtual-Sync
- M 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



# EcoRecip as Manipulator

## Interfaces and Installation



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



CPU

E-Stop  
Gun on/ Gun off



### Mechanical Data:

Capacity Kg	Size	Total height mm	Usable stroke mm	Distance from the ground mm	Minimum speed m/min	Maximum speed m/min	Weight Kg	Noise level dB
30	170	2500	1700	625	10	50	200	< 70
	220	3000	2200				220	
	270	3500	2700				240	
	320	4000	3200				260	
	170	2600	1700				250	
	220	3100	2200				270	
	270	3600	2700				290	
	320	4100	3200				310	
80	170	2500	1700	560	10	50	275	< 70
	220	3000	2200				300	
	270	3500	2700				325	
	320	4000	3200				350	
	170	2500	1700				280	
	220	3000	2200				300	
	270	3500	2700				320	
	320	4000	3200				340	

### Electrical data:

Model	30	80
Input power	0.55 kW	0.75 kW
Power supply voltage	230 V AC +/- 10% 3F 50 Hz (others available on request)	

# 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**.

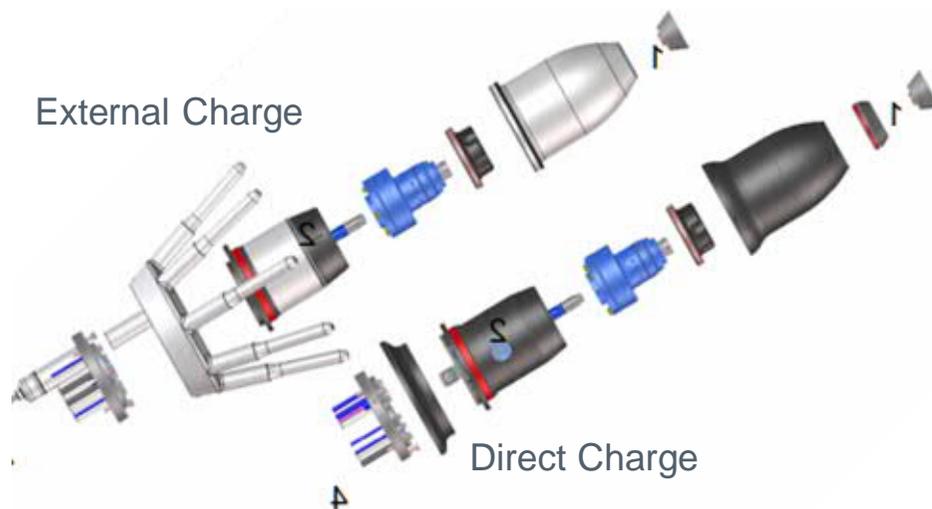


# EcoBell 2 SL

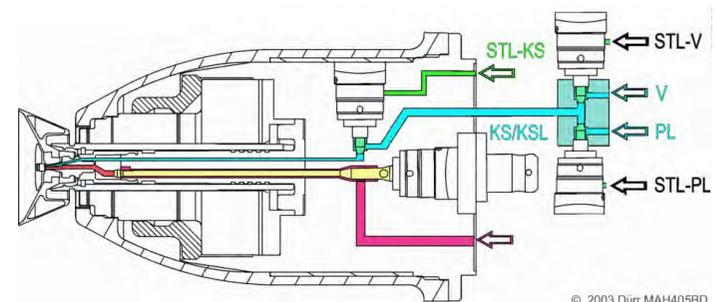
## General Information



- EcoBell is available in two different version:
  - 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



High efficiency turbine of the EcoBell

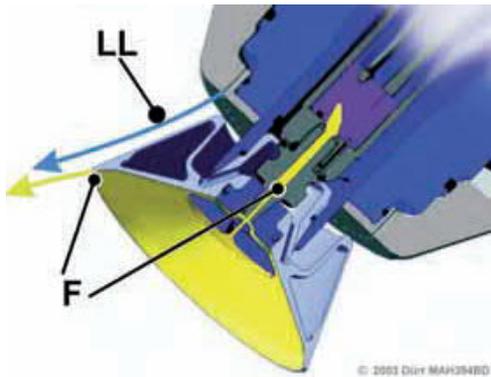


Working principle of the EcoBell

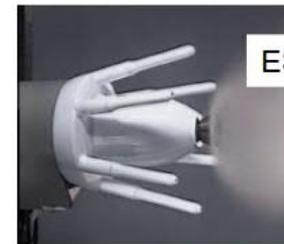
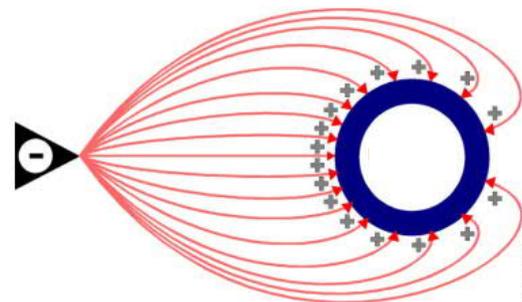
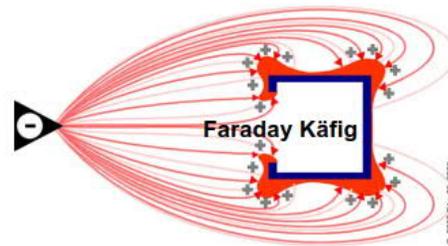
# EcoBell 2 SL

## Advantages of ESTA Atomizer

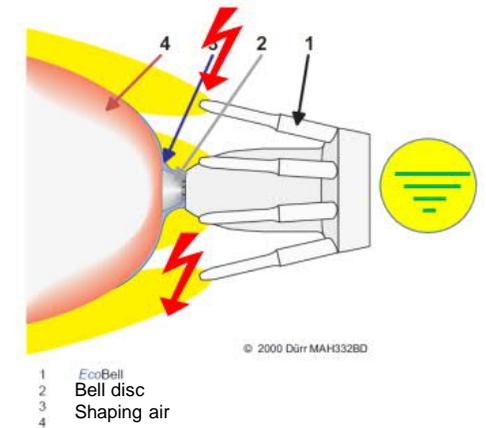
- Advantages in comparison to airspray guns:
  - Smoother and finer paint droplet distribution which leads to higher surface quality
  - **Higher transfer efficiency**
  - **Electrostatic wrap around effect – Tuning parameter**
  - Rotary symmetric spray pattern



Shaping Air System



ESTA-Prinzip



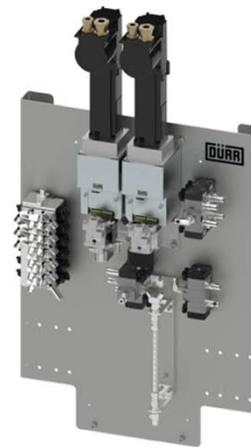
# EcoBell 2 SL

## 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



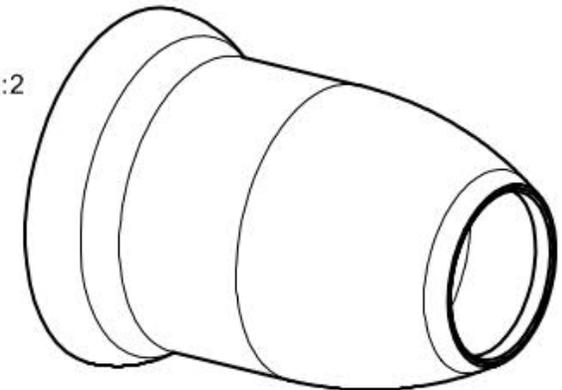
# EcoBell 2 SL

## 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...



GEN2  
Scale 1:2



# 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**



# Control Cabinet

## Webshop Configuration



F30310001V

Operation Instruction  
Datasheet

### Specification

Weight	140000 g
Dimensions	600 x 1225 x 600 mm
Operating temperature	10 - 40 °C
rel. Humidity operation	20 - 80 %
Storage temperature	0 - 60 °C
Compr. Air Quality ISO 8573-1	1:4:1
Dyn. connection pressure P1	6,0 - 8,0 bar
Dyn. connection pressure P1	87 - 116 psi
Supply voltage	380,0 - 480,0 V
Frequency	50 - 60 Hz
Number of phases	3
Effective power	4000,0 W
Current consumption, max.	5,8 A
Fuse	16 A
Protection class	IP54
High voltage range	< 80 kV

EcoAUC

1 PC

**Configure**

Add to Shopping Template

Back to Product Details

**Please select your required configuration in turn, starting from the top.**

**EcoAUC** 1PC ✓

✓ EcoAUC ✓

✓ Process  Please select  
 1K

✓ Atomizer Rot. Atomizer Direct Charge  
[Help](#)

✓ Dosing System  Please select  
 1 Dosing Pump

✓ Version  Please select  
 EU

✓ No. of Colors 8

✓ Dosing Pump Paint  Please select  
 3.0 ccm  
 4.5 ccm

✓ Purgeability Paint  Please select  
 Yes  
 No

Dosing Pump Catalyst None

✓ Flange Package  Please select  
 5 m  
 10 m

✓ Return  Please select  
 Yes  
 No

Order Code ECOAUC -1K-DC-1DP-EU-8 -450-Y-N-10-Y

✓ Atomizer

Rot. Atomizer Direct Charge

Please select

Rot. Atomizer External Charge

Rot. Atomizer Direct Charge

Rotating Atomizer no Charge

Airspray

Airless

AirAssisted

This Configurator is only for Control Unit.  
Atomizer, Pumps and instllation equipment has to be ordered on top.

# Products EcoBell Package

## Configuration and Possibilities

- 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



	Dürr	Integrator
Consulting services on product use and solution implementation	X	
Composition of all required components		X
Ordering the components		X
Function and efficiency testing of all components	X	
Detailed documentation for each product	X	
Packaging and transport	X	
Installation and commissioning		X

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[www.durr.com](http://www.durr.com)

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**Ondrej Keller, Technical Sales, INP, APT**

## Thank you

Änderungen vorbehalten. Die Informationen in dieser Präsentation enthalten lediglich allgemeine Beschreibungen bzw. Leistungsmerkmale, welche im konkreten Anwendungsfall abweichen können. Die gewünschten Leistungsmerkmale sind nur dann verbindlich, wenn sie bei Vertragsschluss ausdrücklich vereinbart werden.

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