Gema Magic EquiFlow BA04 Powder Coating System

Stock No	WZL500
Manufacturer	Gema
Model	Magic EquiFlow BA04
Year of Manufacture	2015
Serial	5014.06227
Condition	Seen working by RSW, Excellent Condition
Work Envelope (WxDxH mm)	800 x 1600
Process Stages	Automatic & Manual
Other Info	Complete with Cyclone and After Filter.
Location	Derbyshire, UK
External Dimensions (WxDxH mm)	6200 x 8000 x 5020

Description

A Gema bespoke, automatic, full mono rail conveyor, cleaning, drying, powder coating and curing system. Full powder recovery, self cleaning booth and multiple reciprocating gun set up. Ideal for a single powder coating cell set up which can be adapted for most simple or complex powder coating requirements.

***plus* Supporting Equipment Available (by separate negotiation).**

- 1 off Stewart Gill powered overhead conveyor, approximately 120 metres in length

- 1 off 16 metre long Pre-treatment Tunnel tunnel manufactured in stainless steel
- 1 off Drying Oven
- 1 off Curing Oven

Technical Data

Current Work-piece data

- Type of Object - Retail Products
- Maximum Work-piece profile dimensions - Height 1600mm & Width 800mm

Production Data

Conveying speed maximum - 0.5 to 3.0 m/min

Application Data

Number of colours - Multiple colours

Factory Services

a) Compressed Air Data:

- Max input pressure - 10 bar
- Min input pressure - 6 bar
- Max permissible water content - 1.3 g/Nm^3
- Max permissible oil vapour content - 0.1 mg/Nm^3

b) Electrical Connection Data

- Single phase voltage - 230 V
- Three phase voltage - 15 V+N+PE
- Frequency - 50/60 Hz
- Voltage tolerance - plus/minus 10%
- Protection class - IP54

Operating Conditions:

- Ambient air temperature range: +10 to +40 °C
- Work piece temperature range: +10 to +50 °C
- Air flow/thermal current near the booth: < 0,1 m/s

Fast Colour Change Booth

The Magic Compact BA04 booth features EquiFlow technology, this ensures a homogeneous airflow in the automatic coating zone as well as optimal powder extraction in manual touch up stations. Powder is prevented from escaping into the atmosphere achieving optimal working conditions.

This constant airflow is the ultimate prerequisite for perfect control of the application process and delivers superior costing results.

Non-stick materials combined with a self-cleaning floor prevent powder accumulation in the booth. An operator can clean

the booth quickly and effectively without entering it. Perfect costing conditions and fast colour changes are the result.

Magic Compact Booth BA04

Booth Openings

- Height - 2050 mm
- Width - 995 mm

Item 1.0 Magic Compact BA04 EquiFlow Booth

1 Off Plastic Booth, Sandwich Design, Consisting of:

- 1 off Upper structure in two halves with steel support, lower end angled towards the longitudinal axis of the booth.
- 6 off Plexiglas windows in the wall with integrated lighting.
- 2 off Gun slots per side.
- 1 off Object outlet with manual coating device.
- 1 off EquiFlow self cleaning booth floor.
- 1 off Adapter for air duct.
- 1 off Air channel in booth base frames, connecting both booth halves.
- 1 off Air duct between booth and mono cyclone, painted steel.
- 1 off Air duct between mono cyclone and after filter made of galvanised steel.

Item 1.1 Automatic Gun Cleaning

16 off Automatic gun cleaning systems for cleaning the automatic guns' external surfaces.

High Efficiency Powder Recovery

The Magic Compact EquiFlow Booth utilises high performance Swing-Wing (SW) filter cleaning technology. This helps to maintain the filter performance and maximise the recovery efficiency and reduce powder and air requirements.

- Ultra long life filter elements.
- 96-98% maintained recovery efficiency.
- Low maintenance.

Item 2.0 Mono Cyclone

Exhaust air volume 16,000 Nm^3/h

Consisting of:

- Cone, pneumatically operated, to clamp/release the sieve.
- Dense phase conveying system, bringing the recovered powder from the mono cyclone to the powder OptiCentre.
- Spare sieve.
- Cone module for mono cyclone.

Item 2.1 OptiFeed Pump

The OptiFeed PP06 powder pump feeds the recovered powder efficiently and gently into the powder supply system.

Item 2.2 After Filter (SW)

Exhaust air volume 16,000 Nm^3/h

Consisting of:

- Filter box with fan and motor.
- Filter cartridges and automatic filter cleaning system.
- Waste powder container.
- Sound level ≤ 80 dBA.
- Air duct between booth and mono cyclone painted steel.
- Air duct between mono cyclone and after filter galvanised mild steel.
- Blow off wand and blow off gun.

Fire Detection and Suppression

Equipping filters with automatic object protection extinguishing systems offers maximum protection for the powder coating system, personnel and building.

Serious damage to filter systems can be avoided through rapid detection of fires and the use of suitable extinguishing agents. In this way, down times of production systems can be avoided and/or reduced to a minimum.

The processing of the incoming signals and messages is performed in the control centre. The control centre monitors the connected warning and triggering devices. The alarm units and locking functions are also controlled.

The reaction of a fire detector leads to the immediate switch off of the filter system and to the triggering of the extinguishing system.

Standards

- VDI 2263 Sheet 6.
- DIN EN 13478

Item 3.0 CO_2 Fire Detection and Suppression System

1 off Fire Detection System

Effective and economic protection against fire damage in a powder booth with cyclone and after filter.

Scope of delivery per exhaust system:

- Vented infrared monitor in the booth.
- Central control unit.

As soon as a fire will be detected, the whole plant will be stopped , powder recovery, powder guns, conveyor.

1 off Flame arrestor to protect the cyclone and the after filter.

Scope of delivery per exhaust system:

- High pressure steel CO_2.bottle, including a balance to monitor the CO_2 content of the bottle.
- CO_2 nozzles.
- Extinguisher release unit.
- Set of hoses.

OptiMatic AS05 Control

The OptiMatic AS05 includes all basic functions, which are necessary for high quality coating. The gun controls clear display screen makes it easy to find the optimal settings in every condition.

3 pre-set programs give the best performance on flat parts, profiles and recoating. Advanced users can create customised programs and achieve perfect coating quality, reproducible time after time.

Item 4.0 Electrostatic Powder Coating Equipment

1 off Optimatic AS05 control cabinet.

The electrostatic powder coating equipment – Type AS05 adjusts the air settings electronically and monitors the production parameters continuously resulting in a high quality coating result.

Cabinet dimensions: 600mm wide x 700mm deep x 1920mm high.

Consisting of:

- Base unit with door (IP54) and main switch.
- Upper cabinet with air pressure regulator, inlet air filter and main.
- 24VDC power supply for up to 15 CG08 gun controls.

16 CANbus module for OptiStar:

Serial interface to the CM30 Control System. Allows bi-directional data communication between CM30 Control and OptiStar CG08.

Item 4.1 Gun Controls

12 off OptiStar CG08 powder gun control units to control and monitor all functions of the electrostatic powder gun including the following functions:

- Control and regulation of current.
- Control and regulation of high voltage.
- Control and setting of the total air (conveying and supplementary air).
- Control and setting of powder output (%).
- Setting of the electrode rinsing air.
- 255 program register, each to store the values of powder output, total air, electrode rinsing air, voltage and current.
- Diagnostic system.
- DVC technology.
- PCC mode.

Application Guns

The automatic OptiGun with the integrated 100kv cascade delivers the highest transfer efficiency in combination with the gun control OptiStar. This means more powder on the workpiece less powder in the recovery system.

The patented DVC technology ensures a precise and constant powder delivery , resulting in a more uniform distribution and consistency to the coating result.

- Any powder.
- Any part.
- Any place.

Item 4.2 Automatic Guns

12 off OptiGun GA03-AX Electrostatic Automatic Powder Gun for quick colour changes.

Main features include:

- Detachable shaft support.
- Detachable gun with integrated hoses and cables flat jet nozzle.
- Self-cleaning and vented centre electrode.
- Super Corona.
- Powder hose.

Item 4.3 Manual Guns

2 off OptiFlex2 W units.

Main features include:

- Independent regulation of current and voltage.
- Selection of pre-set coating programs control and setting of powder output.
- Diagnostic system.
- Control lock.
- A lightweight and ergonomic powder gun designed for operator comfort.
- Ability to control powder output from the back of the gun.

Item 4.4 Powder Pump

12 off OptiFlow IG06 Injector for organic powder.

Uniform powder transport, stable powder delivery, easy to clean internal design and low maintenance costs are the main benefit of the OptiFlow powder injector.

Main features include:

- Detachable compressed air connections vertically by quick couplings.
- Separate connection for powder hose rinsing.
- Hose fitting insert made of PTFE (Teflon).

Reciprocation System and Control

The quiet operation, individual programming options and stability, together with heavy loading capabilities are the indispensable tools required for uniform powder coating.

A broad array of translating and rotating axes complete the range.

- Long and short stroke operation.
- Quiet running tooth belt transmission.
- Maintenance free AC motor.
- Space saving column design.

Item 5.0 Reciprocator Control

4 off OptiMove CR06-Reciprocator Control.

The CR04 reciprocator control module, with separate power packs , serves to control one ZA08 or XT11 axis. The CR06 is mounted in the AS04 cabinet. Different program modes are available:

- Oscillating mode-255 program steps can be programmed.
- Positioning mode-255 program steps can be programmed.
- Sequence programming mode-255 program steps can be programmed.

Item 5.1 Reciprocation

- 2 off Reciprocator type ZA08-13.
- Steel base with vertical central pillar, carriage with plastic rollers and belt drive. AC motor fitted with gear and digital encoder. 1300mm stroke height.
- 2 off gun holders to attach 4 automatic guns each to the vertical carriage.

Item 5.2 X-Axis movement

2 off Carriage type XT11 for ZA08 reciprocators for automatic X-axis traverse movement, AC driven, on rails, several positions.

Item 5.3 Width recognition

Automatic width adjustment controlled by two light barriers. The reciprocator is moved to the position corresponding with the detected width of the object. Up to 63 positions possible (note width less than 200mm cannot be detected).

Item 5.4 Height recognition

Height recognition controlled by one light barrier. If a short work piece is detected the guns below the object will be switched off (up to 15 groups). The reciprocator stroke and speed remain constant, i.e. the upper edge of the work pieces shall always remain at the same level.

OptiCenter Closed Loop Powder Circuit

Integrated within the system are the application and axis controls and fresh powder dosing system. This offers a space saving solution and centralises the control system.

The revolutionary sealed powder circuit ensures powder cannot escape during coating or cleaning ensuring the fastest

colour change with minimal operator intervention.

Item 6.0 OptiCenter

1 off OptiCenter

Main features include:

- OptiStar gun controls.
- OptiMove reciprocator controls.
- OptiSpeeder.
- OptiFeed powder pump.
- Fresh powder dosing system.
- Integrated touch screen control system.
- Isolation valve at after filter for clean down operation.

1 off OptiSpeeder

Main features include:

- Improved fluidisation.
- Advanced fresh powder dosing.
- Low maintenance injectors.
- Reduced air consumption
- Softer powder cloud.
- Sealed powder circuit.
- Simplified powder management.
- Automated cleaning process.

1 off OptiFeed

Main features include:

- Feed directly from the powder bag.
- Maintains a constant powder level in the OptiSpeeder.
- Ensures a constant mix of fresh and recovered powder.
- OptiFeed pump for softer powder conveying.
- Cleaner working environment.
- Sealed powder circuit.
- Elimination of powder losses.

HMI Control Type CM-30 Magic Control

A powerful PC based powder coating process control system, to control up to 36 OptiFlex gun controls and 16 axes. Communication by means of a CANbus with integrated touch screen and soft PLC.

CM-30 control system is mounted on its own pedestal and can be located remotely from the main panel either at the main operator manual station or a position of your choice.

Item 7.0 CM30 Control

Modes of Operation

- Automatic Mode.
- Manual Mode (control of automatic guns and reciprocators).
- Cleaning Mode.
- Maintenance Mode.

Manual Operation

- Manual control of automatic guns and reciprocators.
- Conveyor interlocking disconnected.

Object Management

- A code (number) is assigned to each object.
- Up to 250 object numbers can be stored.
- To each object code the following settings can be allocated.
- Setting of guns (OptiStar).
- Setting of axis.

Automatic Gun Mode

- Groups of guns switched ON/OFF simultaneously (per booth gun slot).
- Guns switched ON/OFF individually.
- Gap Control (No Object-No Spray Control).
- Detection of hangers or objects by means of a photocell or light barrier.
- A CANbus encoder feeds the shift register and controls the operating sequences.
- The offset and delay to switch the guns ON and Off can be set individually per reciprocator station.

Functions

- Full CANbus communication.
- Controls up to 36 OptiFlex (automatic guns).
- Controls up to 4 axis, i.e. max 4 stations with up to 4 axis.
- Digital I/O by passive CANbus nodes.
- Booth and powder recovery control.
- Interlocking with other equipment such as the conveyor system.
- Parameterizing of guns, axis and the booth layout.
- Collective adjustment of powder output.
- Quick correction of powder output without changing the individual output settings.
- Acquisition of operating hours data for guns, axis and filter.
- Extensive diagnostic and help functions.
- Electrically isolated signal for fresh powder required.

Specification Touch Screen-PC

- RISC processor with 1000 MIPS and 64 MB Memory.
- System software and data on individual compact flash cards.
- CANBUs, Ethernet 10/100 Mbit, RS232 and 2 USB ports onboard.
- Infrared touch screen with a 12” TFT colour display, 800 x 600 p.
- Operating System: Windows CE.NET.
- PLC: MXPro.
- Visualisation: Galileo.

Supporting Equipment Available (by separate negotiation).

1 off Stewart Gill powered overhead conveyor serving Pre-treatment Tunnel, Drying Oven, Powder Booth and Curing Oven approximately 120 metres in length.

1 off 16 metre long Pre-treatment Tunnel tunnel manufactured in stainless steel, with base tanks and pumps to spray arrays. Three stages: alkaline cleaner, first water rinse and second water rinse. Tunnel opening 1600mm high x 1000mm wide.

1 off Drying Oven of double skinned sheet metal construction with sandwiched insulation. Gas Fired with three work passes, normal operating temperature 150 degrees Celsius but we are advised can go up to 200 degrees Celsius.

1 off Curing Oven of double skinned sheet metal construction with sandwiched insulation. Gas Fired with two work passes, normal operating temperature 190 degrees Celsius but we ae advised can go up to 250 degrees Celsius.

Photographs taken prior refurbishment. Our refurbishment service is not available on all machines.