Reciprocators and Axes

Cost reduction and quality improvement using automation

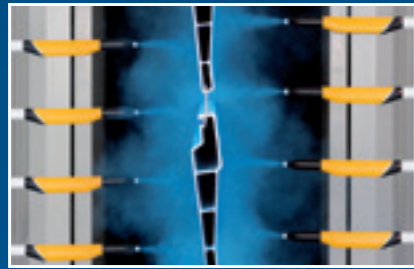### Axes solutions for all automation levels

Making the right choice saves time and money!

Gema offers a broad range of movement axes for different levels of automation – from basic models up to fully automated axes systems, selected to meet the individual needs and situations.

Your global partner for high quality powder coating

Gema

The base for all motions

Reliable and precise vertical reciprocators (Z-axis)
Smooth running, individual programming options and stability combined with high loading capacity are essential for uniform powder coating results. The vertical reciprocators meet these requirements perfectly and feature a solid and maintenance-friendly design. A variety of models, from entry level to heavy loading, build the base for all automation levels, whether simple vertical strokes or complex and multidimensional processes.

Width adjustment (X-axis)
The coating distance between gun and the object surface is vital for precise coating results. A carriage positions the reciprocator either manually or automatically to the desired position. This axis is also used for automatic cleaning of the gun.

Multidimensional axes

Synchronizing with the conveyor (Y-axis)
This option is used for coating hollow bodies, such as oven cavities or control cabinets. The movement of the horizontal Y-axis is synchronized with the conveyor chain speed, guaranteeing accurate coating of edges, recessed parts and internal features. The ideal coating data and movement sequences are programmed in advance and stored in a database, retrievable any time.

Infeed and Rotating (U-axis and R-axis)
For special object geometries and applications, different types of axes are available. Infeed axes are equipped with an independent drive, accurately moving the guns horizontally in and out during the application of complex components.
Rotating axes are ideally suited to trace inner edges and recessed geometries with angled gun nozzles. U-axis and R-axis can be combined if required.
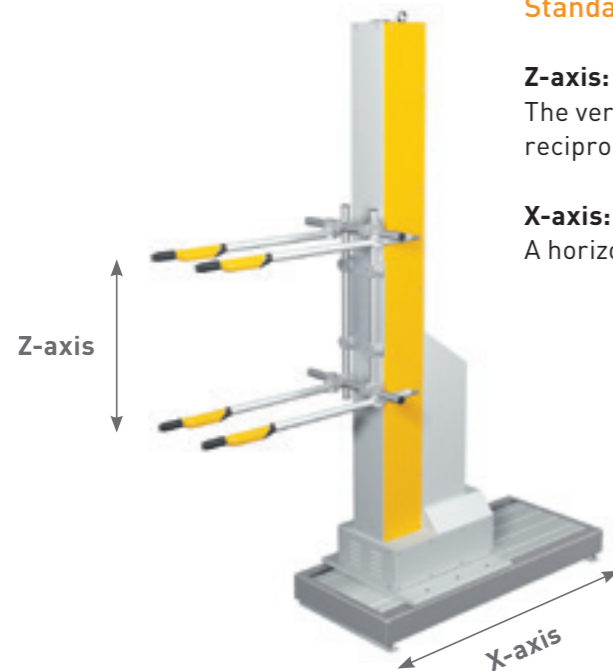

Standard axes for all applications

Z-axis:
The vertical axis movement is the base level for all automation, reciprocating the guns to achieve uniform coating results.

X-axis:
A horizontal axis positions the reciprocator for the width adjustment.

Multidimensional axes for complex applications
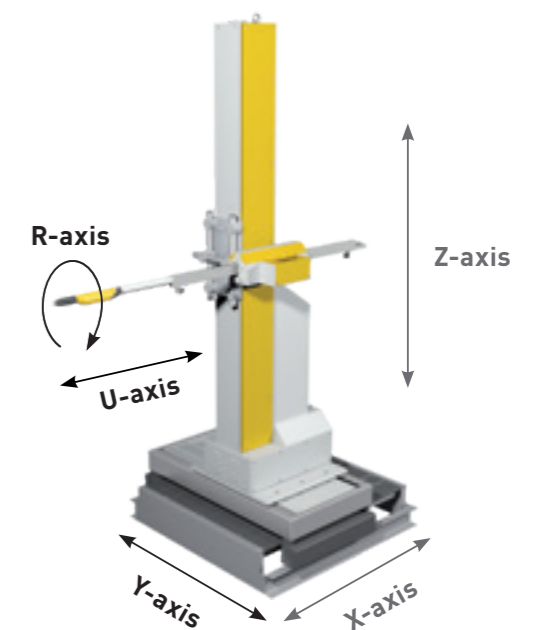
Y-axis:
Moves the reciprocator, synchronized with the conveyor along the booth.

U-axis:
The U-axis positions the gun horizontally into the recessed areas of an object.

R-axis:
The axis pivots the spray gun around its own axis.

Basic and advanced controls

Cost reduction and quality increase

OptiMove Control

The OptiMove axis control unit is user-friendly and simply programmed. Each control module controls a single axis. Despite its compact design, OptiMove offers many functions normally found only in complex control units.

Features:
– Programming via a touch panel
– Up to 255 programs
– Segment operation and stroke adjustment
– Cycle times displayed
– Integrated DigiBus / CAN-Bus

Benefits of Gema axes and reciprocators

– Modular platform for different degrees of automation
– Broad range of axes types
– Long and short-stroke reciprocator operation
– Toothed belt drive for smooth and quiet running
– Reliable, smooth and fast positioning drive technology
– Maintenance-free AC-motor
– Precision positioning accuracy
– Narrow column design for space-saving gun configurations

Benefits of control units

– Modular platform covers single axis control up to multidimensional axes systems
– Ease of retrofit
– Broad range of control options
– Highest levels of programming flexibility

Magic Control 4.0: Everything under control

MagicControl 4.0 is a programmable central control unit to operate a complete powder coating system. All activities are transmitted in real-time and shown on the widescreen display.

Individual programming

The MagicControl unit processes all information whether from object recognition light barriers, a dynamic contour detection system or individual sequence programs automatically positioning the axes into the desired position. This guarantees outstanding coating results, even on complex parts and saves powder.

Storage with maximum security

To maintain security, coating programs and parameters are stored in a program library which can be easily accessed at any time. This guarantees exact and replicable coating results with full flexibility for the operator.

The powder coating world of Gema

Gap and Height Detection

Adjust your axes with Dynamic Contour Detection

Gap detection
The gap control turns the guns off when components are absent from booth. For this application a sensor detects the object to be coated at the booth entrance and the guns are activated just before the object passes the applicators. In case of a gap, the guns are turned off.

Height detection
For the height detection a vertical light grid is used, automatically triggering the required guns. If a short object is detected, only the relevant guns are activated. With horizontal gun arrangements, the reciprocator stroke is automatically adapted to the object heights.

Width detection
In addition to the gap and height detection systems, the width detection automatically adjusts the reciprocators to the object widths.

Dynamic Contour Detection
This sophisticated technology detects the object contour and geometry and automatically adjusts each gun individually to the correct position and starts powder application without the need for programming.

The ability of the laser scanner for fully detection of the external contours of the object in combination with the MagicControl unit and Gema's multidimensional axes provides outstanding coating performances.

Unlimited application possibilities
The objects are coated individually without the need of individual teaching or programming effort. The usage of dynamic contour detection offers new powder application solutions for any object shapes, even struts or projections are detected and coated with ease.
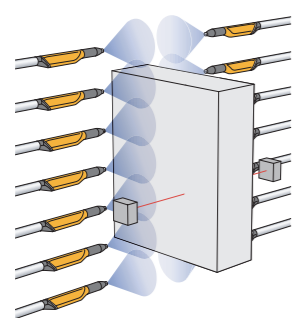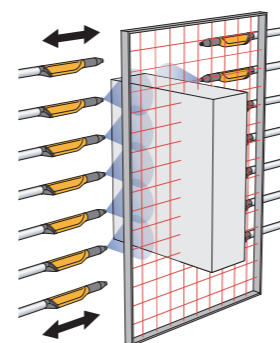

Gap detection
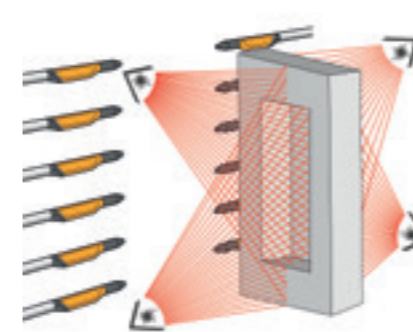Gap detection is the base for the «no part – no spray» function.
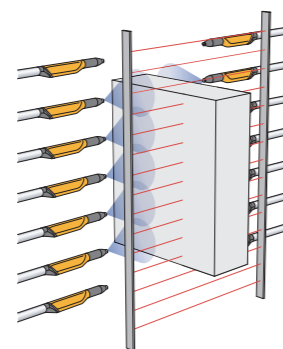
Height Recognition
Depending on the detected object height only the required guns are triggered.
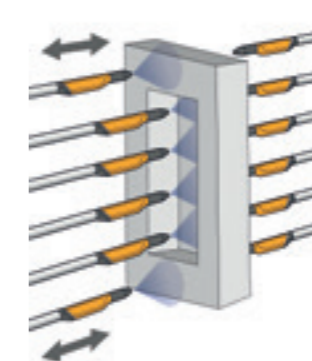
Width Recognition
Automatic adjustment of the horizontal gun position according to the object width.

Dynamic Contour Detection
The contour detection solution is based on laser scanner technology followed by a dynamic and individual positioning of the gun.

Benefits Dynamic Contour Detection:

– High levels of automation in the application process
– New coating solutions for complex objects
– Automated recognition of complex geometries for both the front and rear of the object
– Optimized coating quality
– Powder savings and reduction in overspray
– Drastic reduction of the manual coating operation
– Automated programming of U-axes. No time-consuming axes adjustments

Gema Switzerland

Your global partner for high quality powder coating

Take advantage of our expertise and experience from more than 50 years of electrostatic powder coating applications. From simple hand coating through to fully automated powder coating, we offer solutions that meet the demands and requirements of customers around the world in a wide range of industrial sectors. A global service network ensures you always get professional support, at any time and any place!

Gema is part of Graco Inc. Our goal is to help our customers to increase their productivity while creating attractive, long-lasting products. Our experts continually set new standards in the surface coating industry.

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