En

Operating instructions and spare parts list

Magic Control CM-30
Plant control

Translation of the original operating instructions

Gema

Documentation Magic Control CM-30

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General safety regulations

This chapter sets out the fundamental safety regulations that must be followed by the user and third parties using the Magic Control CM-30.

These safety regulations must be read and understood before the Magic Control CM-30 is put into operation.

Safety symbols (pictograms)

The following warnings with their meanings can be found in the Gema operating instructions. The general safety precautions must also be followed as well as the regulations in the operating instructions.

DANGER!
danger due to live electricity or moving parts. Possible consequences: death or serious injury

WARNING!
improper use of the equipment could damage the machine or cause it to malfunction. Possible consequences: minor injuries or damage to equipment

INFORMATION!
Useful tips and other information

Conformity of use

1. The Magic Control CM-30 is built to the latest specification and conforms to the recognized technical safety regulations and is designed for the normal application of powder coating.
2. Any other use is considered non-compliant. The manufacturer shall not be liable for damage resulting from such use; the user bears sole responsibility for such actions. Gema Switzerland GmbH must be consulted prior to any use of the Magic Control CM-30 for any purposes or substances other than those indicated in our guidelines.
3. Observance of the operating, service and maintenance instructions specified by the manufacturer is also part of conformity of use. The Magic Control CM-30 should only be

used, maintained and started up by trained personnel, who are informed about and are familiar with the possible hazards involved.

4. Start-up (i.e. the execution of approved operational tasks) is forbidden until it has been established that the Magic Control CM-30 has been set up and wired according to the guidelines for machinery (2006/42/EC). EN 60204-1 (machine safety) must also be observed.
5. Unauthorized modifications to the Magic Control CM-30 exempt the manufacturer from any liability from resulting damage.
6. The relevant accident prevention regulations, as well as other generally recognized safety regulations, occupational health and structural regulations are to be observed.
7. Furthermore, the country-specific safety regulations also must be observed.

Explosion protection	Protection type
CE Ex II 3D	IP54

Product-specific safety measures

General information

The Magic Control CM-30 is a constituent part of the system and is thus integrated into the safety system of the plant.

If it is to be used in a manner outside the scope of the safety concept, then corresponding measures must be taken.

Note:
For further information, see the more detailed Gema safety regulations!

About this manual

General information

These operating manual contains all important information which you require for the working with the Magic Control CM-30. It will safely guide you through the start-up process and give you references and tips for the optimal use of your new powder coating system.

Information about the functionality of the individual system components – booth, gun control unit, manual gun or powder injector – should be referenced to their enclosed corresponding documents.

Software version

This document describes the operation of the CM-30 plant control with software version starting from:

Software	Version
Galileo	CM-30_V1_1a
MXPro	CM-30_V1_1a

Function description

Field of application

The Magic Control CM-30 plant control is built exclusively for electrostatic coating using organic powders. Any other use is considered non-compliant. The manufacturer shall not be liable for damage resulting from such use; the user bears sole responsibility for such actions.

The Magic Control CM-30 plant control is especially well suited for the fully automatic coating of any parts. The Magic Control CM-30 plant control also supports the operator optimally during a color change. The Magic Control CM-30 plant control is especially well suited for operation in Magic booths.

Magic Control CM-30 - Overview

Typical characteristics

All OptiStar gun control units, CR0x axis control units, light grids, powder centers and the digital in- and outputs communicate by CAN-Bus (field bus).

System	Monitor	Flash Card	Number of guns	Number of stations	Axes per Station	Axis type
CM-30						from ZA04
Magic Control	12"	1 / 1	36+	8	5	from XT09

Technical data

Magic Control CM-30 Plant control unit

System

Magic Control CM-30	
Processor	RISC/1000 MIPS
Memory	64 MB
Remanent memory	32 kByte
2. Compact Flash slot	yes

Electrical data

Magic Control CM-30	
Nominal voltage	24 VDC SELV extra-low safety voltage
Voltage range	24 VDC according to DIN 19240 20.4 - 28.8 VDC actual
Reverse voltage protection	yes
Protection	yes (internal melting fuse)
Electrical insulation	no
Current consumption	max. 34 W/24 VDC
Switch-on current max.	3 A^2s

Display

Magic Control CM-30	
Technology	TFT color LCD
Resolution	800 x 600 pixels (SVGA)
Number of colors	65536
Display surface	246 x 185 mm
Operation	Infrared touch
Front screen	VSG laminated safety glass, anti reflex coated, scratch-proof

Dimensions

Magic Control CM-30	
Mechanical dimensions	361 x 279 x 80 mm
Window	342 x 261 mm

Connections

Magic Control CM-30	
Ethernet	1 x Fast Ethernet 100Base-TX Fast Ethernet 10Base-TX
CAN	1 x CAN, potential-free CiA, D-Sub 9pole
Comboard slot	2 x COM-TP
CompactFlash slot	2 x CompactFlash card type I/II

Environmental conditions

Magic Control CM-30	
Climate	0-50°C, 10-85% relative humidity, not condensing
Vibration / shock / drop test	Vibration - IEC68-2-6 Shock - IEC68-2-27 Drop test - IEC68-2-32

Start-up

General information

The Magic Control CM-30 plant control is parameterized, configured and tested at the Gema factory. This allows for faster initial start up, with fewer parameters requiring configuration on site.

The application data in the lab report offers additional assistance, since it can be used as the default setting for guns and lifting equipment.

General operating instructions

Symbols

White

= interaction

Orange

= active state

i.e. gun is performing powder coating, fan is running, powder management system is ready

Red

= Error

Function keys

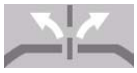
Open / close the cone caps

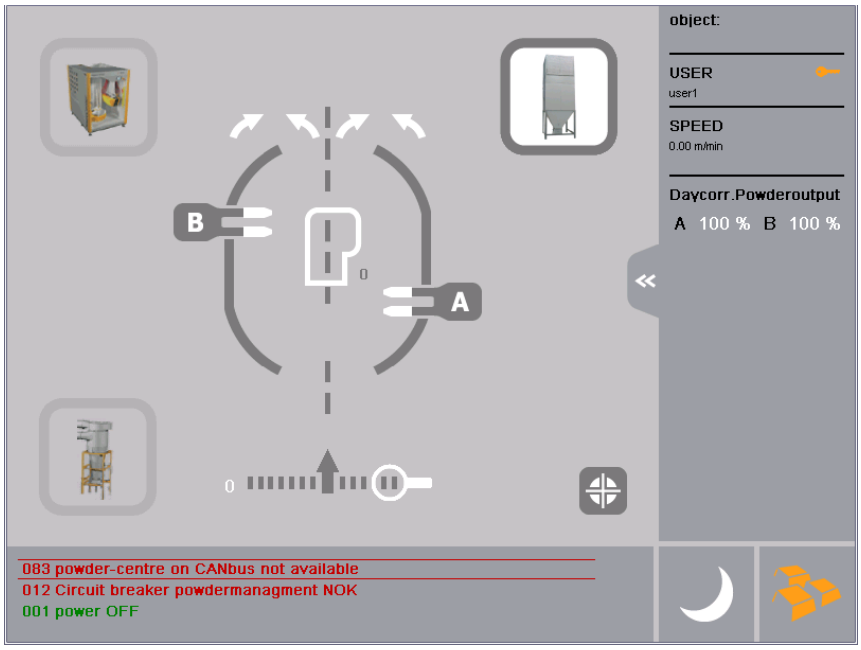
1. Press the key
   to open the cone caps

2. Press the key
   to close the cone caps

Open / close the doors

1. Press the key to
   close the doors

2. Press the  key to
   open the doors



Error acknowledgement, alarm horn switches off.

Help key

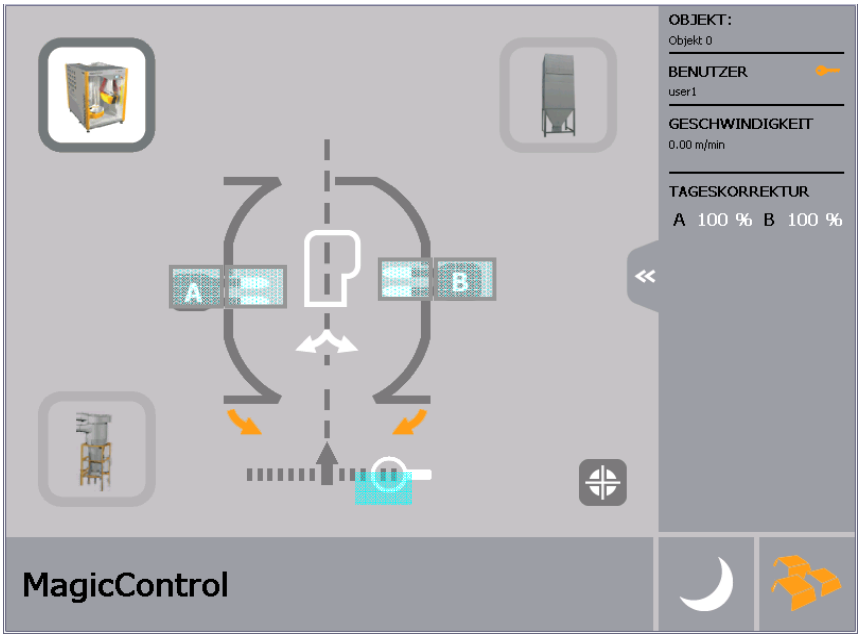
Check the light grid

Press the key to
call up the following page:

Light grid - information

- Display of the width on the left and on the right
- Display the height (for beam interrupted vertically)
- Display of the segments

Touch key fields



Touch key fields

Activated touch key fields

Edit axis values, select or deselect axes

Edit gun values and select or deselect

Daily correction, select or deselect guns

Conveyor simulation, if conveyor does not run or CAN bus sensor is not installed or defective

Start and stop guns

Start and stop axes

Object data is loaded directly onto the gun and axis controller

Object data are not downloaded

Starting the equipment

General information

1.

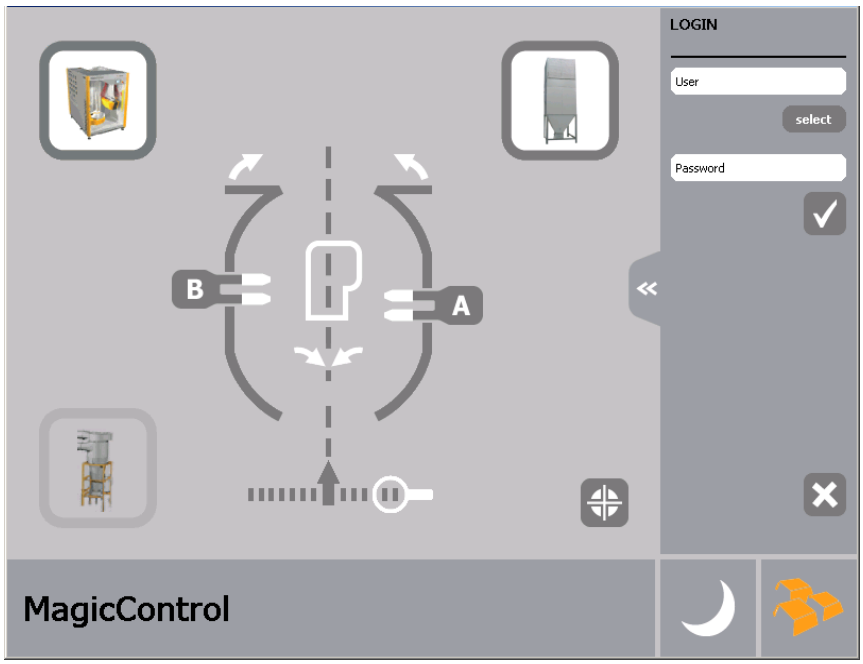
Turn main switch.

2.

Turn key switch to turn on the control voltage.
The control lamps illuminate. The Magic Control CM-30 plant control starts the operating system, the PLC control and the operating software up to the start page.

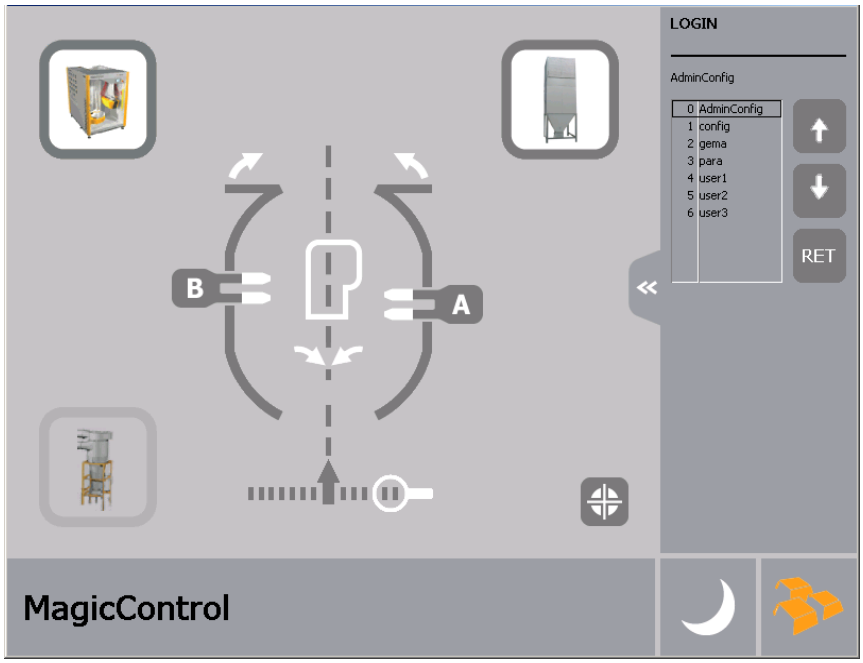
Start page

3. Touch the screen
   The screen switches to the main page:

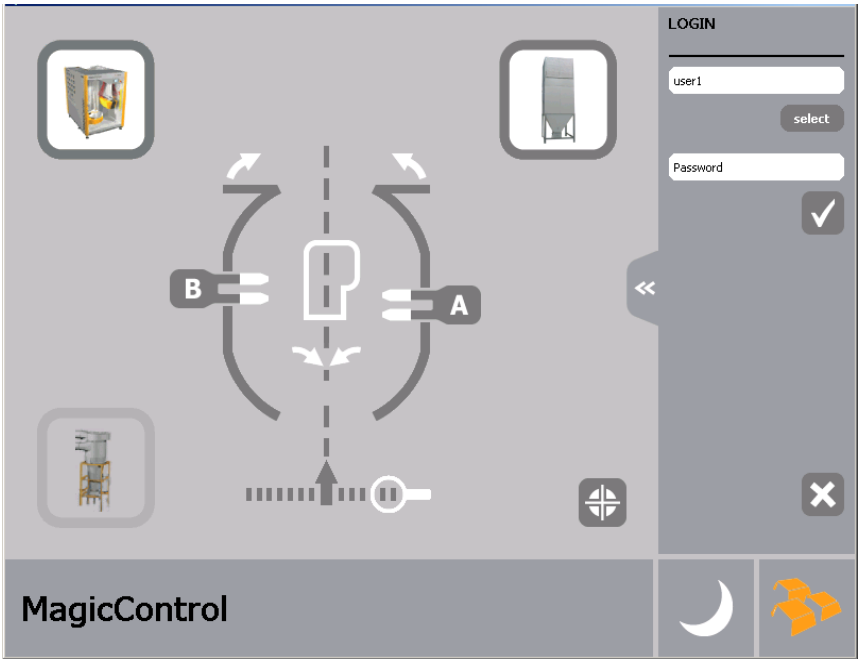


Main page not logged in

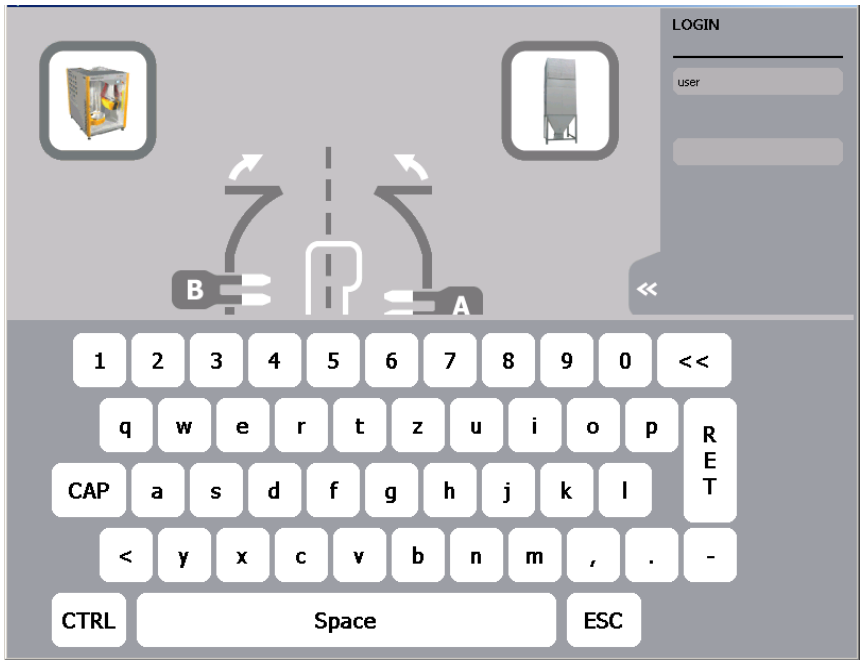
4. Push the button



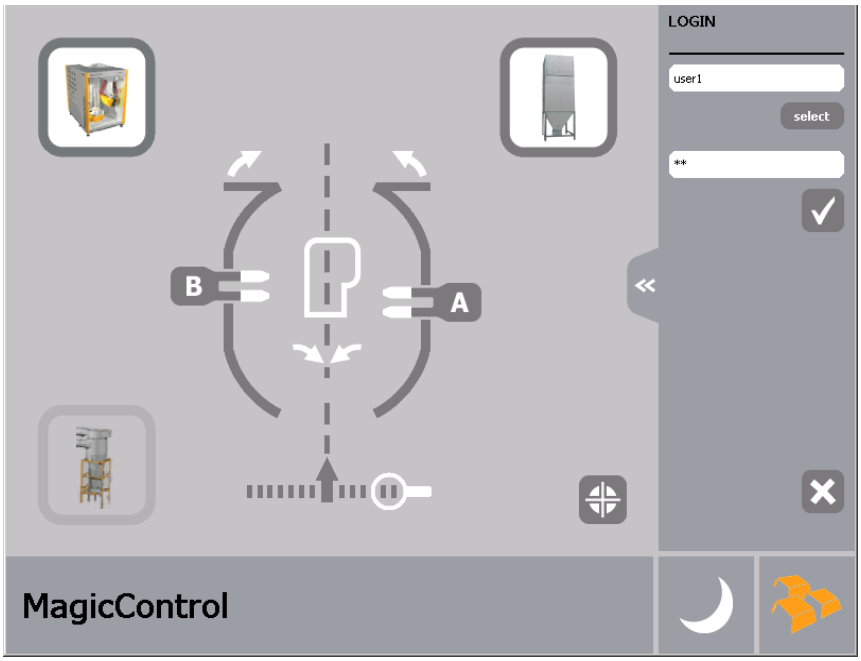
5. Press the ↑ or ↓ keys to select the desired user profile
6. Push the RET button



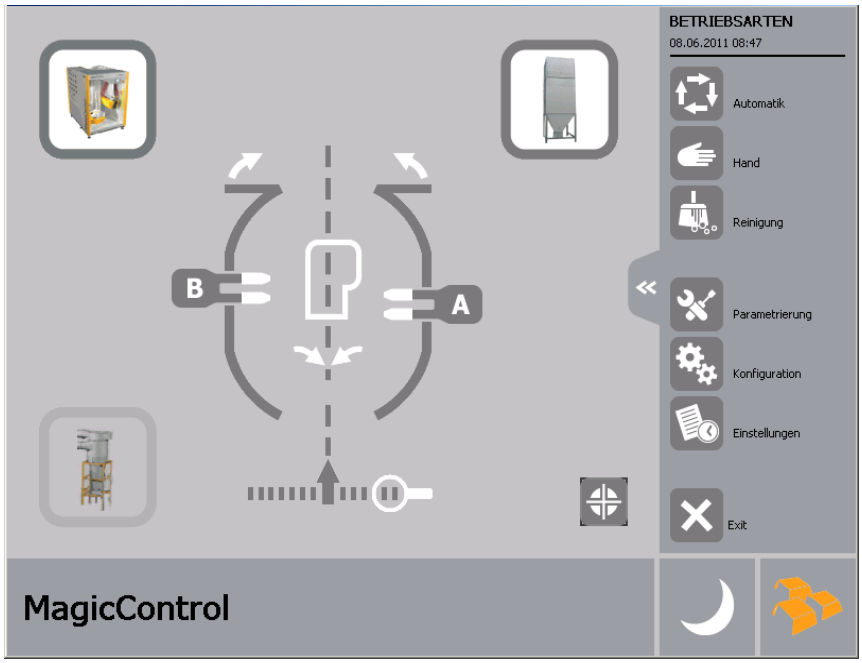
7. Password Push



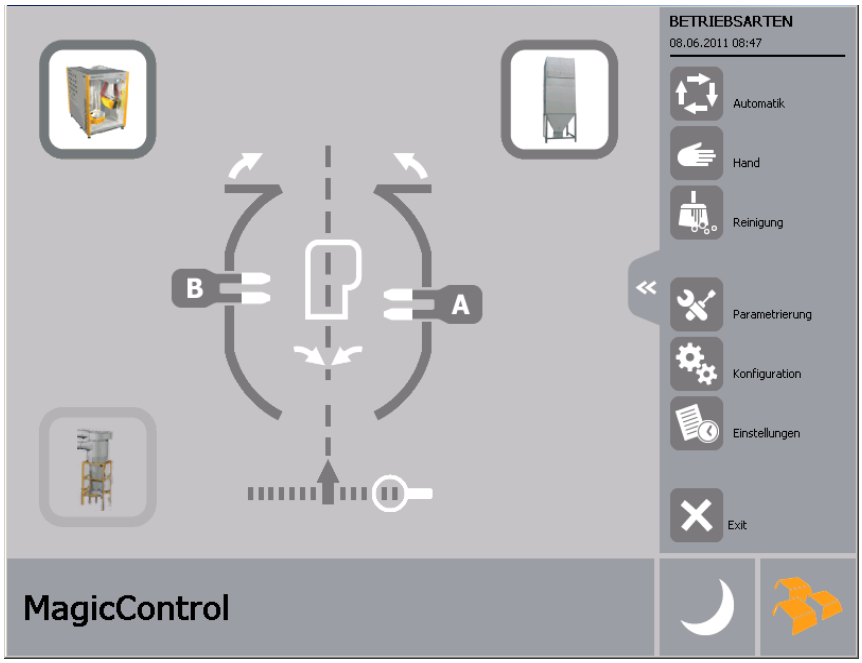
8. Input password and confirm with RET



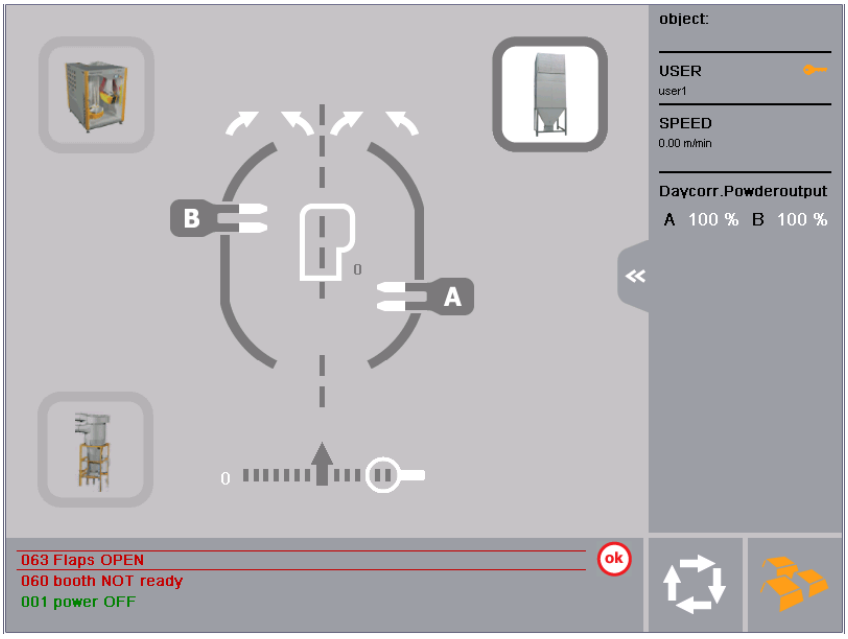
9. Press the key



10. Press the key
    All axes move to their reference point position.



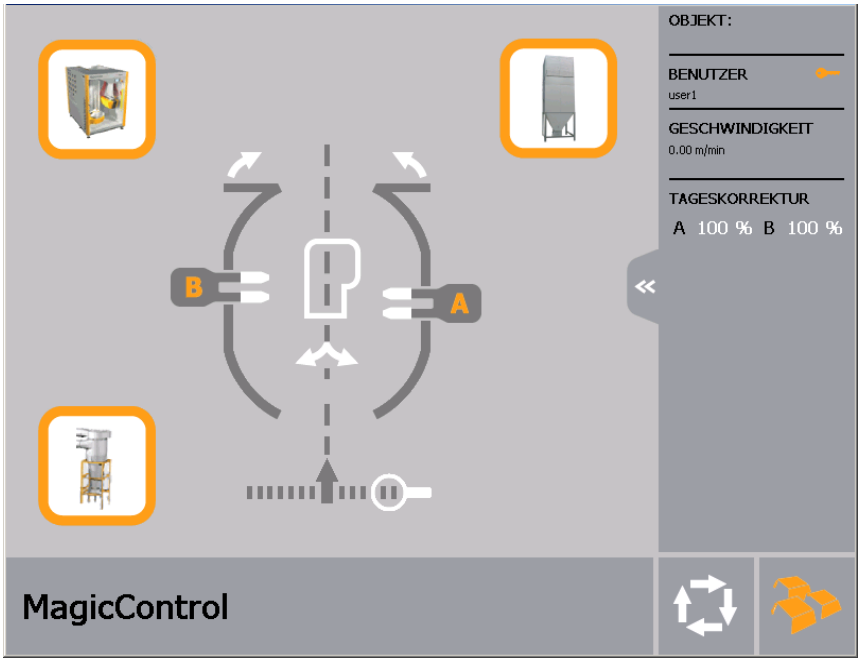
11. Move all other system components such as the powder management system into the proper operating mode (More information on this in the respective operating instructions)
    A message is displayed if the system components are not yet operational:



Automatic operation mode

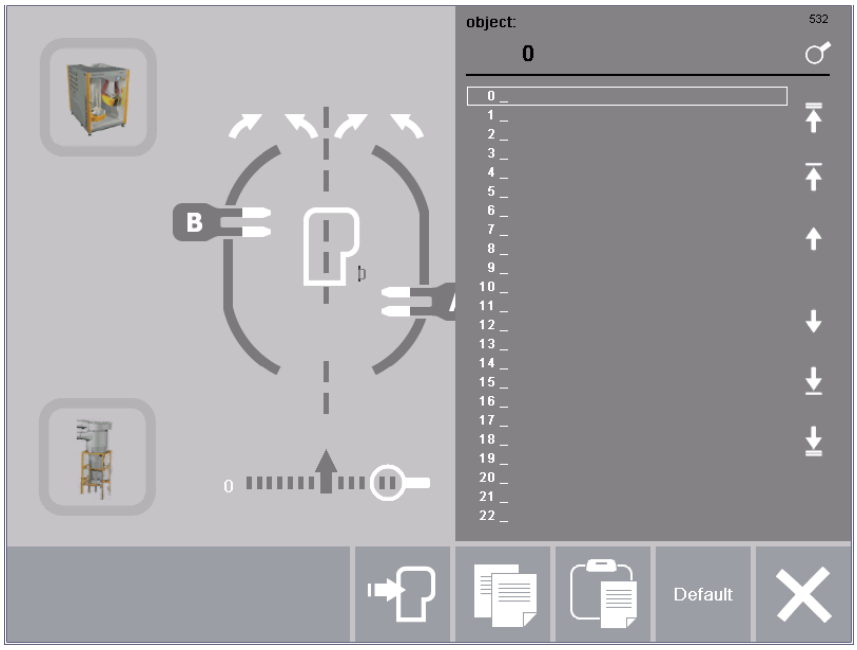
- The guns and axes start automatically based on the information from the light grid or the light barrier
- Object changes are carried out manually or automatically
- Daily correction of the powder output can be modified
- Guns can be selected or deselected
- Light grid can be controlled

1. Press the key to select the automatic operating mode (For manual operation see below)



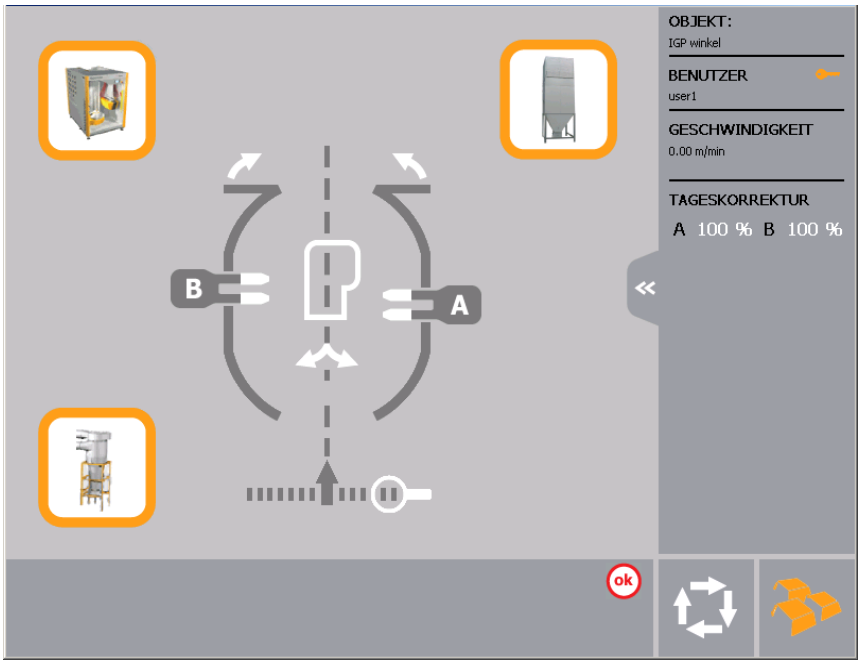
Note:
For systems with a regulated secondary filter, the motor switches into the “ECO mode” during automated operation. The motor does not switch to a higher frequency until parts are moved through the object recognition module.

2. Press on the symbol to charge the coating objects (More information on this below)



3. Select desired object:
   = Jump to first object in the list
   = Page up
   = Up one row
   = Down one row
   = Page down
   = Jump to the last object in the list

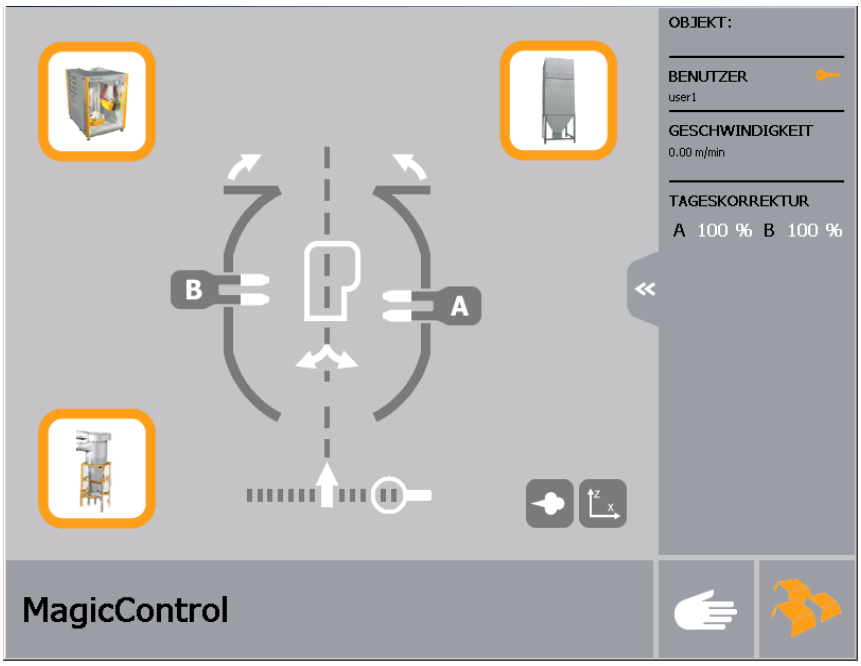
4. Press the key to confirm the change



5. The CM 30 is now ready for production

Manual operating mode

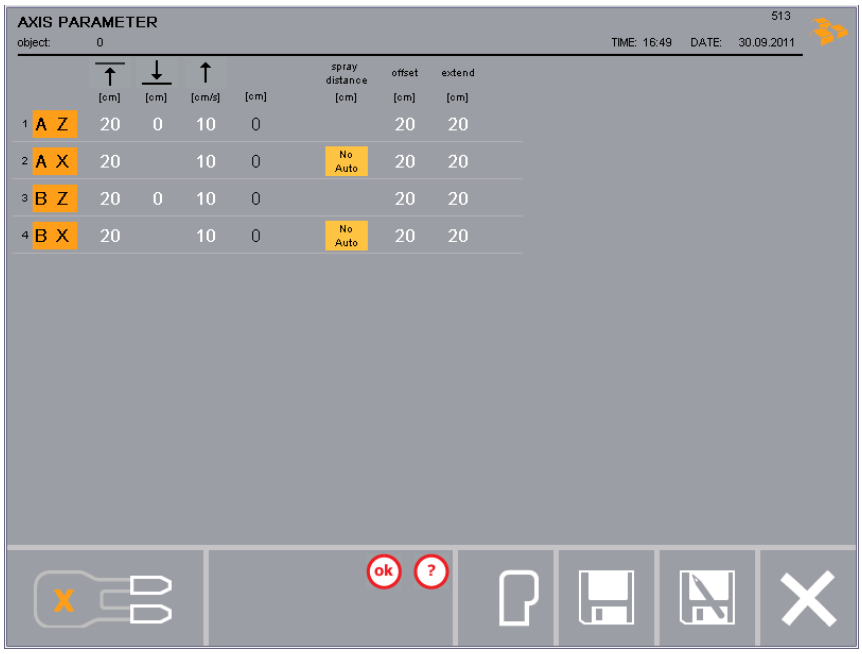
1. Press the button to select the manual operating mode



Manual operating mode

Edit axis values, select or deselect

1. Press the key
   The following page is displayed:



Edit and start axes

If the symbol is orange, then the changes can be implemented directly

Open object data management system

Save

Save as

Leave current page without saving, discard changes.

2. Press the key
   The key turns orange and the axis is selected.
   Only selected axes can be started.
3. Press the key
   The axes start
4. Press the key
   The axes stop
5. Touch the corresponding input field to change the position of the axes
6. By pressing the key , the error description is displayed

Axes start independently from the conveyor

1. Press the key

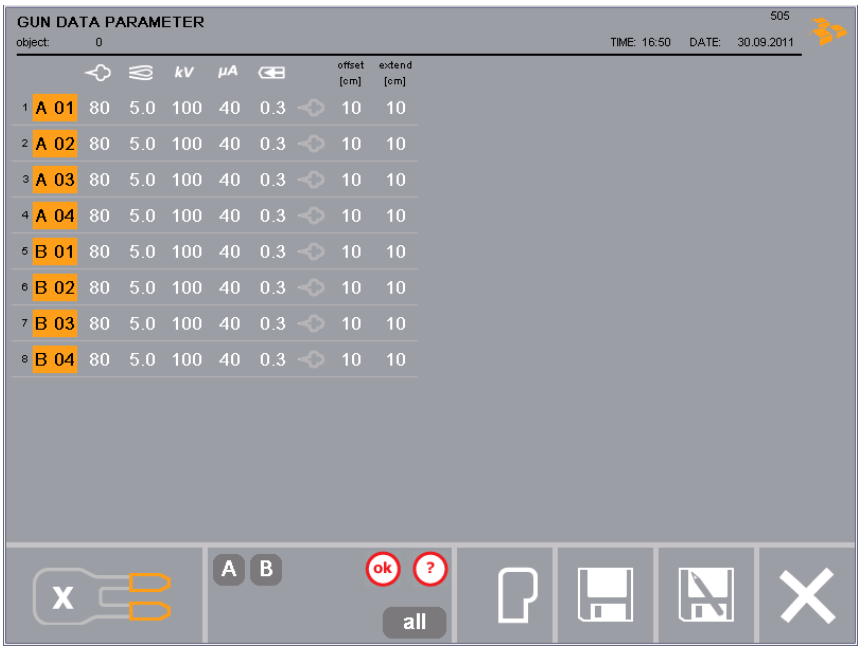
   The key turns orange and the activated conveyor is simulated

2. Press the key

   The key turns orange and the lifting devices move if the axes are selected

Edit gun values, select or deselect

1. Press the key
   The following page is displayed:



Edit gun values, select or deselect

Select or deselect guns.

1. Press the 1 A 01 key
   The key turns orange 2 A 02 and the gun is selected

Change gun data

Gun data can either be changed individually, for each station or for all guns at once.

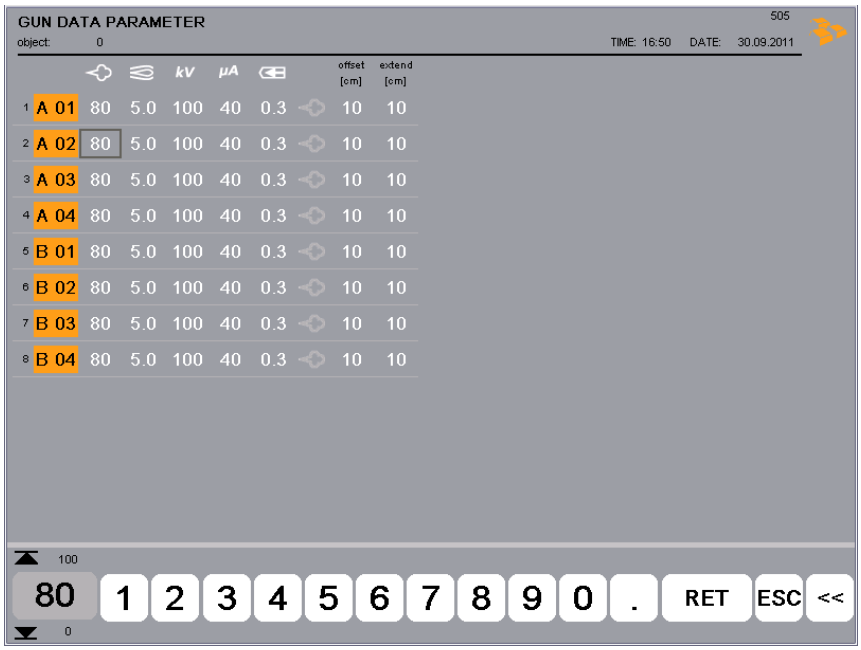
Change gun data for station

1. Push the A button
2. Station A is selected. The values are automatically changed for the selected station
3. Touch the corresponding input field to change the gun data

Change gun data for all guns at once

1. Push the

button
2. The values are automatically changed simultaneously for all guns
3. Touch the corresponding input field to change the gun data



4. Input the desired value and confirm with RET
5. Press the key to save the changes

Guns start independently from the conveyor

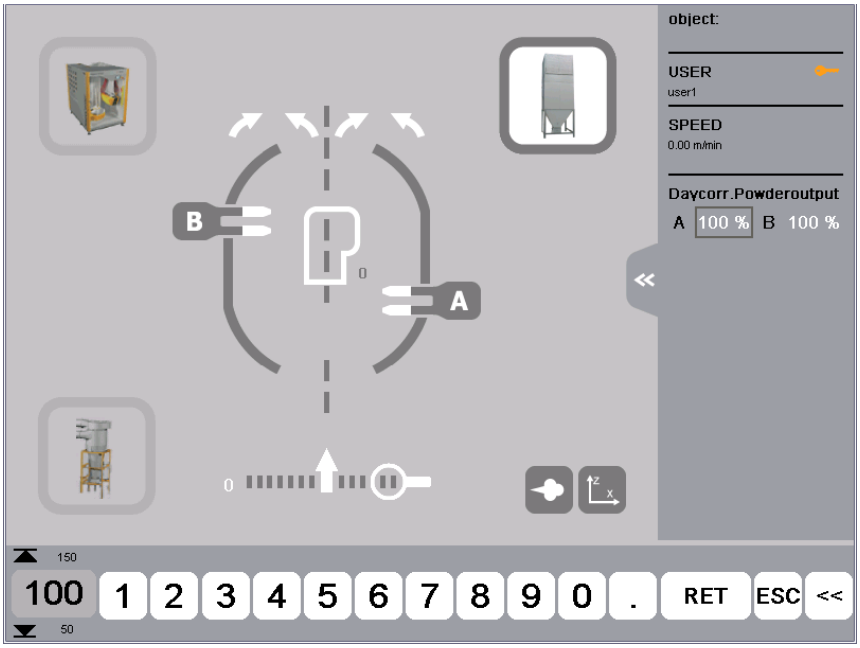
1. Press the key

   The key turns orange and the activated conveyor is simulated
2. Press the key

   The key turns orange and the guns spray powder if the guns are selected

Daily correction

The CM-30 control unit offers the option of making a percent-based correction of the powder output for all guns at a station.



1. Press the corresponding A 100 % B 100 % key
2. Input desired value (max. 150, min. 50)
3. Press RET key to confirm

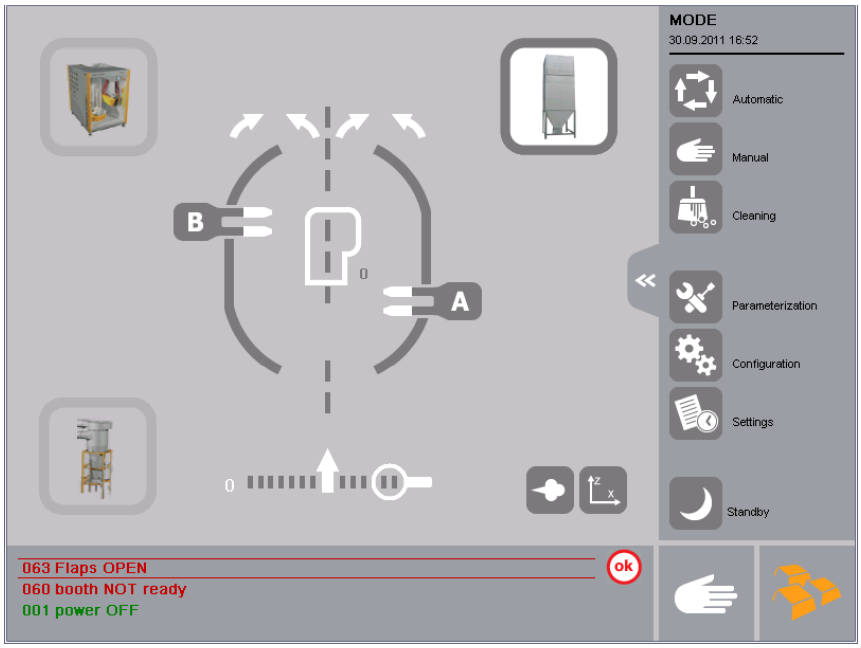
Simulation of the CAN bus sensor

1. Press the key

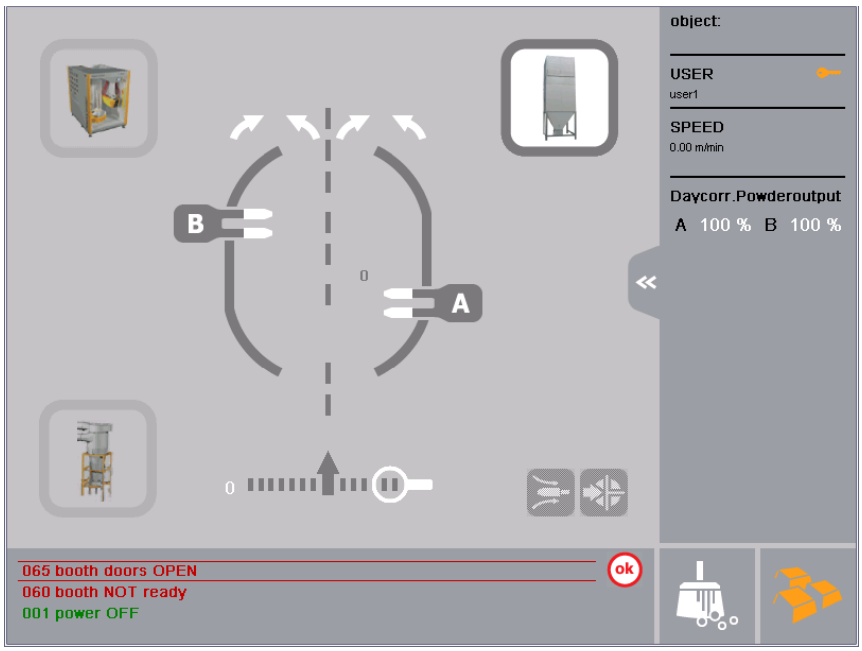
   The key turns orange and the CAN-bus sensor is simulated

Note:
This function is used if the CAN Bus sensor is defective or the conveyor in not operational. This simulation of the CAN Bus sensor allows for coating to be performed anyway.

Cleaning operation mode

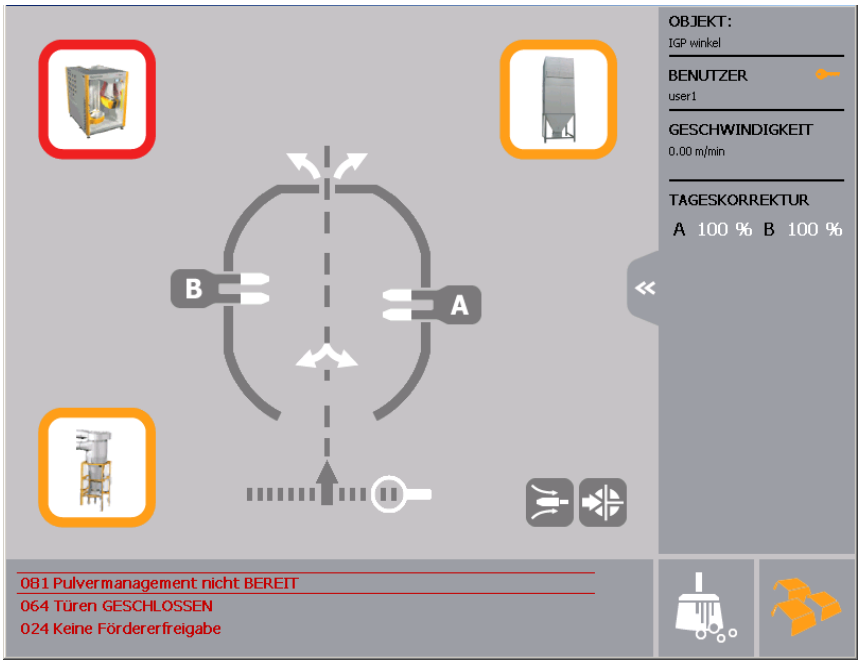


1. Press the key
   The following page is displayed:



The cleaning of the booth floor functions at an increased cleaning frequency

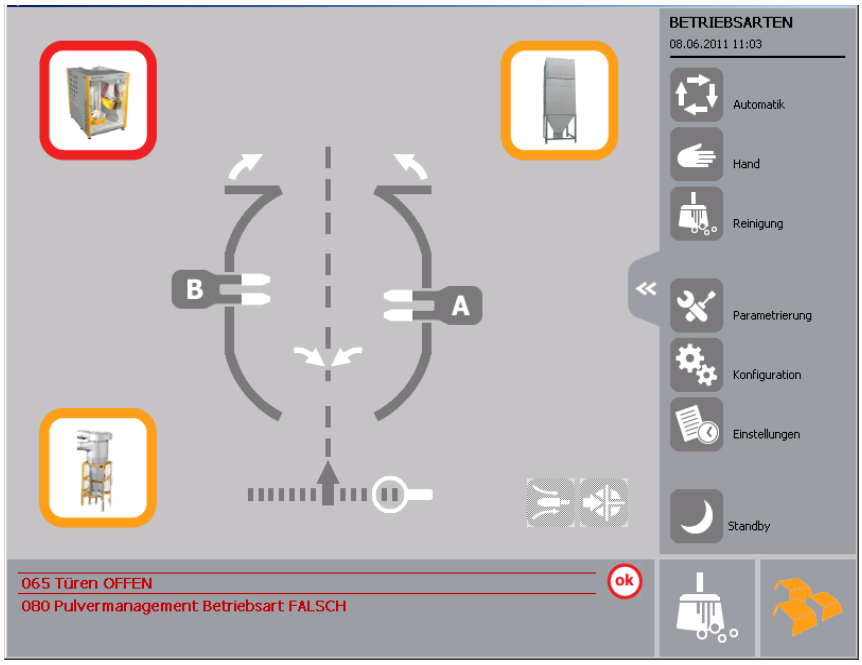
2. Press to close the booth doors



Move the axes into the cleaning position and the guns are cleaner from the exterior

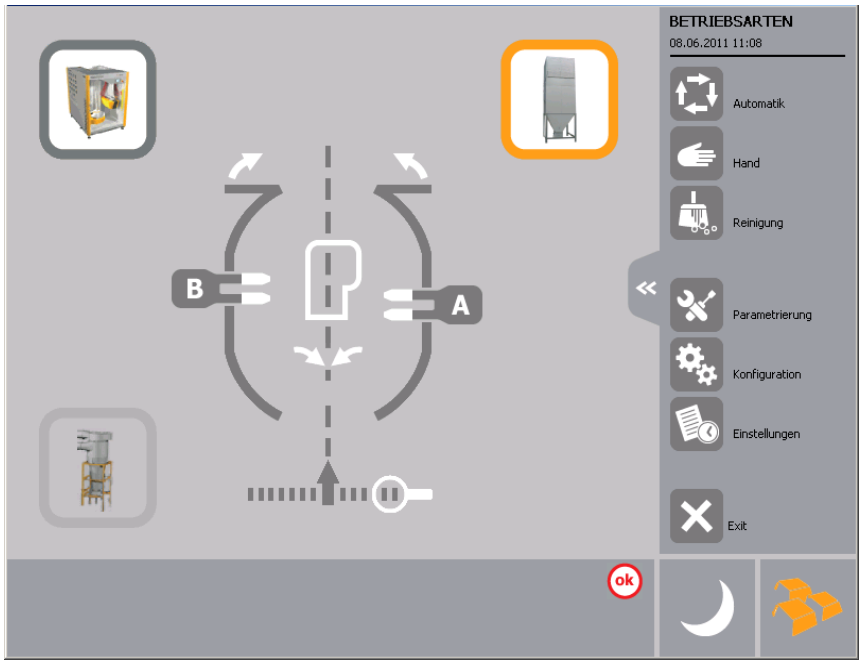
3. Switch the powder management system into cleaning mode
4. Press the key
   The external gun cleaning is started and the key turns orange .

   The exterior cleaning of the gun can be repeated using the key as often as desired
5. Follow the cleaning steps for the respective powder management system (MagicCenter, OptiCenter or powder center)
6. Once the interior of the hoses have been cleaned, the guns and nozzles can then be cleaned manually
7. Press the button to extend the guns completely out of the booth.
8. Press key to retract the gun into the booth.
9. Continue to follow the cleaning steps for the powder management system
10. Open the booth doors and close the caps (if present)
11. Press to leave the cleaning mode



12. The cleaning of the booth floor continues to run
13. Select the desired operating mode
14. Finish production
15.

Push

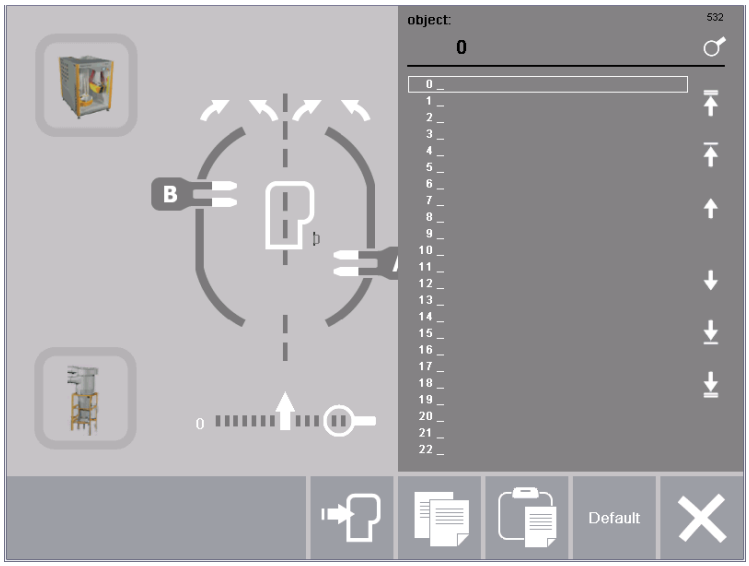


16.

Push

Object data administration

Load and save object data



Load object data

= Jump to first object in the list
= Page up
= Up one row
= Down one row
= Page down
= Jump to the last object in the list

Data search by name entry

Copy data

Insert data

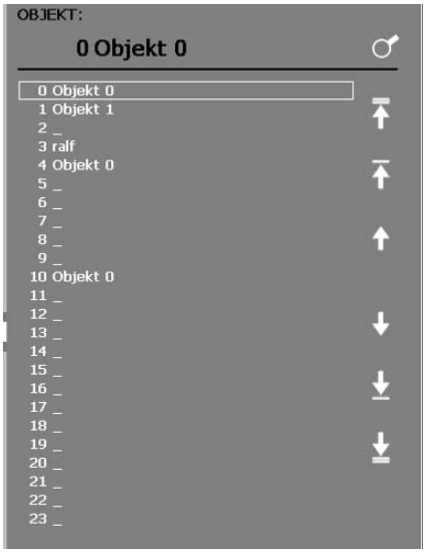
Default

Set default value

Abort

Copy and insert object data

1. Select object data

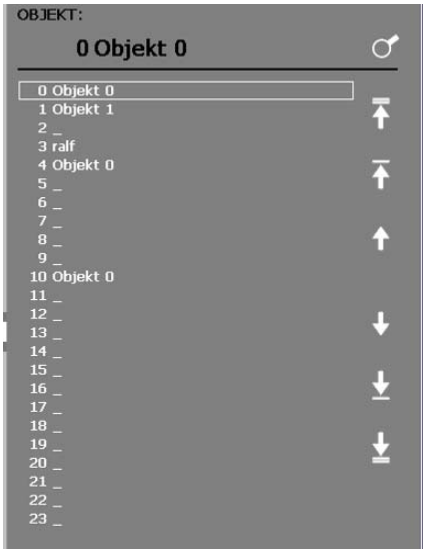


Select object data

2. Press the key
   Object data is copied to the clipboard
3. With help of the arrow keys, select the object to which the data from the clipboard should be copied
4. Press the key
   Object data is copied to the current object

Indicate object data

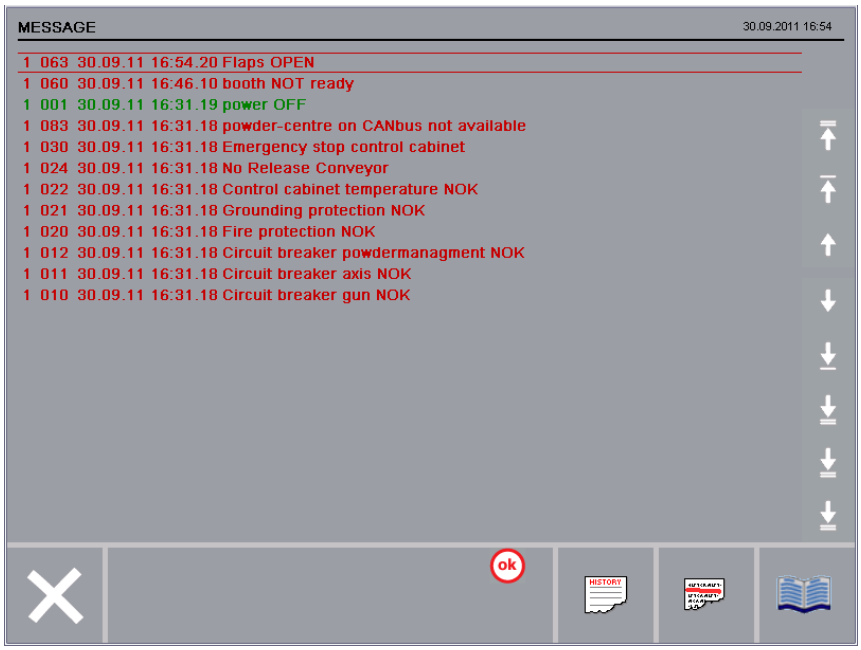
By pressing the table field, a keyboard is displayed with which the data set can be named.



Indicate object data

Error messages / Diagnosis

Main page error display



Error display

= Jump to first entry in the list
= Page up
= Up one row
= Down one row
= Page down
= Jump to the last entry in the list

Display error history (History)

Delete error history (History)

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Acknowledge error

User levels and access

User level 0 (gema)

- The panel can be used without any limitation
- The level is reserved for Gema's technical staff
- After 3 minutes, the system logs out automatically

User level 1 (user 1)

- No configuration possible
- Plant parameters and object-related data (gun and axis data) can be modified
- After 30 minutes, the system logs out automatically

User level 2 (user 2)

- No configuration and parameterization possible
- Plant parameters can not be modified
- Object-related data (gun and axis data) can be modified
- No automatic log-out

User level 3 (user 3)

- No configuration and parameterization possible
- The user can only activate existing object data, modify the daily correction and deselect guns
- If no user is logged in to the panel, then the user panel is locked
- No automatic log-out

Spare parts list

Ordering spare parts

When ordering spare parts for powder coating equipment, please indicate the following specifications:

- Type and serial number of your powder coating equipment
- Order number, quantity and description *of* each spare part

Example:

- **Type** Magic Control CM-30
  Serial number 1234 5678
- Order no. 203 386, 1 piece, Clamp - Ø 18/15 mm

When ordering cable or hose material, the required length must also be given. The spare part numbers of this bulk stock is always marked with an *****.

Wearing parts are always marked with a #.

All dimensions of plastic hoses are specified with the external and internal diameter:

Example:

Ø 8/6 mm, 8 mm outside diameter (o/d) / 6 mm inside diameter (i/d)

WARNING!
Only original Gema spare parts should be used, because the explosion protection will also be preserved that way. The use of spare parts from other manufacturers will invalidate the Gema guarantee conditions!

Magic Control CM-30 - complete

1	Micro Touch Panel MC 12" – complete (with Item 2)	268 992
2	Compact Flash Card - 2 MB	269 018

Magic Control CM-30