En

Operating instructions and spare parts list

OptiCenter OC01
Powder management center

Translation of the original operating instructions

Documentation - OptiCenter OC01

Printed in Switzerland

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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 OptiCenter OC01.

These safety regulations must be read and understood before the OptiCenter OC01 is put into operation.

Safety symbols (pictograms)

The following warnings with their meanings can be found in the ITW 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 OptiCenter OC01 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 as non-conform. The manufacturer is not responsible for any incorrect use, the risk for this is assumed by the user alone. If the OptiCenter OC01 is to be used for other purposes or other substances outside of our guidelines then ITW Gema GmbH should be consulted.
3. Observance of the operating, service and maintenance instructions specified by the manufacturer is also part of conformity of use. The OptiCenter OC01 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 a particular operation) is forbidden until it has been established that the OptiCenter OC01 has been set up and wired according to the guidelines for machinery (2006/42 EG). EN 60204-1 (machine safety) must also be observed.
5. Unauthorized modifications to the OptiCenter OC01 exempts 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 3 D	IP54

Product specific security measures

General information

The OptiCenter OC01 is part of the plant and therefore integrated in the safety concept of the plant.

For the use outside of the safety concept, corresponding measures must be taken.

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

Note:
If the power supply is interrupted or if there is a power failure, powder can escape unhindered from the container (OptiSpeeder) and contaminate the area around the work opening.
- This area must be cleaned before every start-up

Installation

Installation work to be done by the customer must be carried out according to local safety regulations.

Grounding

Check the grounding of the booth and the powder management center before every start-up. The grounding connection is customer specific and is fitted on the booth basement, on the cyclone and on the powder management center. The grounding of the workpieces and other plant units must also be checked.

Operating the equipment

In order to be able to operate the equipment safely, it is necessary to be familiar with the safety regulations, the operational characteristics and functioning of the various plant units.

For this purpose, read the safety notes, this operating manual and the operating instructions of the plant control unit, before starting up the plant.

In addition, all further equipment-specific operating instructions, e.g. the OptiFlex or OptiMatic and all additional components should also be read.

To obtain practice in operating the plant, it is absolutely essential to start the operation according to the operating instructions. Also, later on, they serve as a useful aid on possible malfunctions or uncertainty and will make many enquiries unnecessary. For this reason, the operating manual must always be available at the equipment.

Should difficulties arise, however, your ITW Gema service center is always ready to assist.

Inspection check

The following points are to be checked at every booth start-up:

- No foreign material in the central suction unit in the booth and in the powder suction
- Sieve machine is connected to the cyclone separator, the clamp is tightly locked
- Pneumatic conduction and powder hose are connected to the dense phase conveyor
- The filter elements door is closed, the waste container is fitted in the proper position

Repairs

Repairs must be carried out by trained personnel only. Unauthorized conversions and modifications can lead to injuries and damage to the equipment. The ITW Gema GmbH guarantee would no longer be valid.

Note:
We point out that the customer himself is responsible for the safe operation of the equipment! ITW Gema GmbH is in no way responsible for any resulting damage!

By carrying out repairs, the powder management center must be disconnected from the mains, according to the local safety regulations!

Note:
Only original ITW Gema spare parts should be used! The use of spare parts from other manufacturers will invalidate the ITW Gema guarantee conditions!

About this manual

General information

These operating manual contains all important information which you require for the working with the OptiCenter OC01OptiCenter-OC01-en.doc. 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 function mode of the individual system components - booth, axis, gun control unit, powder gun or powder injector - should be referenced to their enclosed corresponding documents.

Software version

This document describes the operation of the control of the OptiCenter OC01 powder management center with software version 2_1a.

Product description

Field of application

The OptiCenter OC01 Powder management center is conceived for simple and clean handling of the coating powder. It enables an automated cleaning procedure and consequently a quick color change. The conception contains all gun and axis control units, as well as the complete fresh powder metering.

As a part of the process controlled coating plant, the powder management center is laid out for fully automatic operation.

Utilization

The OptiCenter OC01 powder management center is suitable for use in plants with a completely closed powder circuit:

Conveying

- Processing the powder directly from the (original) powder bags
- Integrated electrical and pneumatic control units
- Powder level monitoring by level sensor

Cleaning

- Automatic internal cleaning of the suction tubes, injectors, powder hoses and guns
- Refeed of the recovered powder
- Closed powder circuit - no powder escaping during coating or cleaning procedure. This prevents powder loss, and the workplace and the environment remain clean.

Controlling

- No own exhaust system - the powder management center has no own exhaust system and will be therefore connected directly to the After Filter

Reasonably foreseeable misuse

- Use of moist powder
- Insufficient fluidization at the suction point
- Operation without the proper training

Technical data

Powder transport

OptiCenter OC01	
Conveying performance	230 g/Min.
Recovery	max. 3,5 kg/Min.

Electrical data

OptiCenter OC01	
Input power	1x230 V
Frequency	50/60 Hz
Protection type	IP54

Pneumatic data

OptiCenter OC01	
Input pressure	min. 6.5 bar
Compressed air consumption during coating operation	15 Nm³/h
Compressed air consumption during cleaning (incl. OptiSpeeder and guns)	350 Nm³/h
Compressed air consumption during cleaning of the PP06 hose to the cyclone	120 Nm³/h
Water vapor content of compressed air	max. 1.3 g/m³
Oil content of compressed air	max. 0.1 mg/m³

Dimensions

OptiCenter OC01		with AS04	with AS04+ICS03
Base area (width x depth) (mm)	1150 x 1500	1700 x 1500	1700 x 1500
Overall height (mm)	2100 (2270 - PP06 connection)		
Weight (kg)	env. 400		

Processible powders

OptiCenter OC01	
Plastic powder	yes
Metallic powder	yes
Enamel powder (continuous duty)	OptiFeed PP06-E only

Sound pressure level

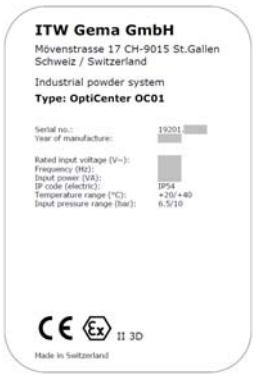
OptiCenter OC01	
Sound pressure level	< xx dB(A)

The sound pressure level was measured while the unit was in operation; measurements were taken at the most frequent operator positions as well as at a height of 1.7 m from the ground.

The specified value is applicable only for the powder management center itself and does not take into account external noise sources or cleaning impulses.

The sound pressure level may vary, depending on the powder management center configuration and space constraints.

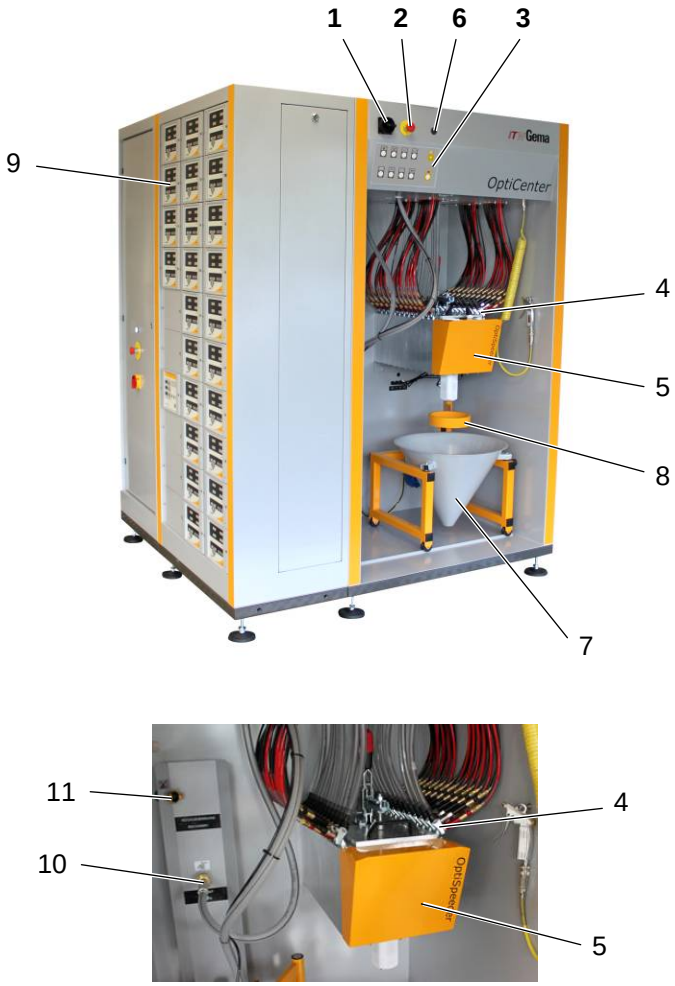
Rating plate



Note:
Fields with a gray background contain contract-specific data!

Structure and function

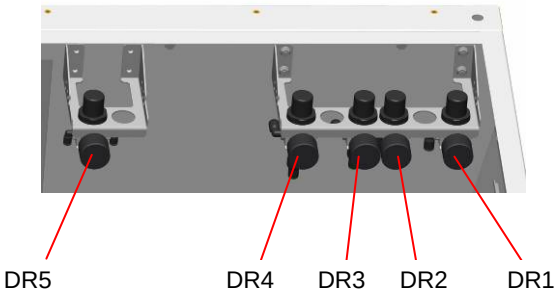
General view



OptiCenter OC01 - layout

1	Main switch	7	Powder bag cone with vibrator
2	Emergency stop push button	8	Powder bag fixation
3	Control unit/operating panel	9	Gun and axes control units
4	Injectors	10	"Waste" connection
5	OptiSpeeder	11	OptiSpeeder connection
6	Vibrator switch		

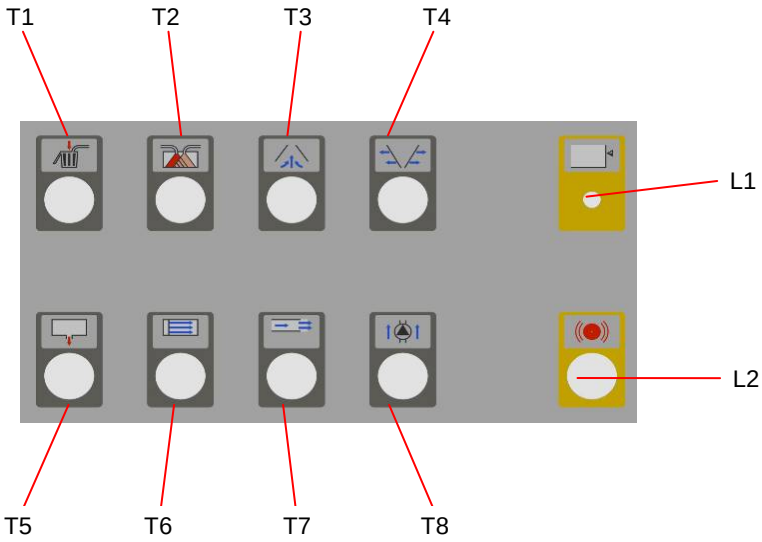
Compressed air indicators



DR1	AirMover
DR2	OptiSpeeder fluidizing air
DR3	Level sensor fluidizing air
DR4	Valve block supply
DR5	Fluidizing/suction lance fluidizing air

Operating elements

Push buttons



Designation	Function
T1	Operating mode **Coating without powder recovery**
T2	Operating mode **Coating with powder recovery**
T3	**Switching on the exhaust air manually**
T4	**Switching on the vibrator**
T5	**Emptying the OptiSpeeder!**
T6	**Cleaning the OptiSpeeder**
T7	**Cleaning the powder hoses**
T8	**Cleaning the powder pumps**

L1 Hopper full indicator (green)

L2 Powder shortage indicator (red)

OptiSpeeder

The OptiSpeeder is suited for the automated preparation and fluidization of the coating powder.

The OptiSpeeder can contain 6 / 7 kg powder, and can be equipped with up to 24 or 30 IG06-P OptiFlow injectors.

Powder bag cone

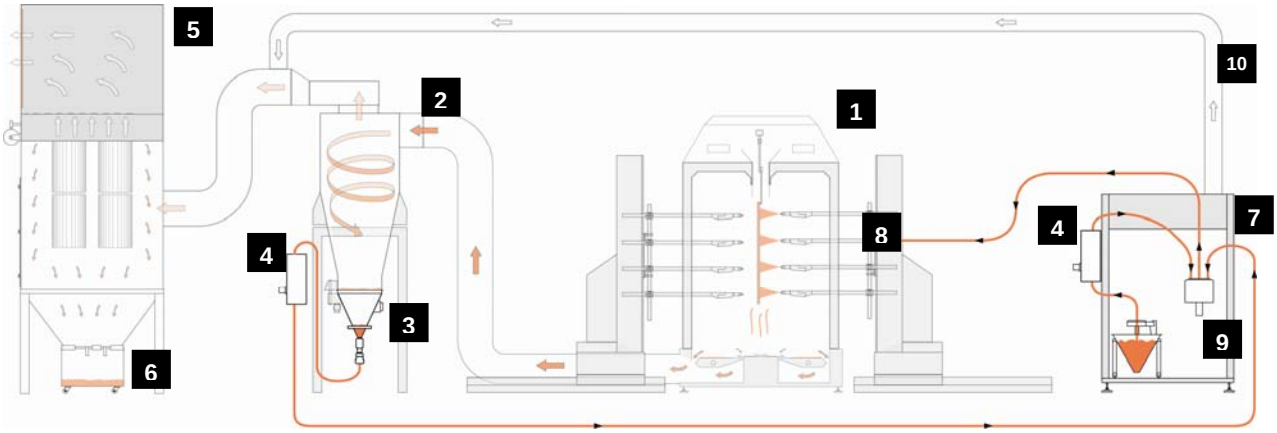
- Capacity up to 25 kg
- Mobile to allow the powder to be emptied easily
- Fluidizing/suction lance
- Fresh powder pump connection
- Recowery powder pump connection

Principle of function

Powder circuit

During the typical OptiCenter OC01 (**7**) operation, the powder bag is put in the powder bag cone. The powder is fluidized in the bag with the fluidizing/suction lance and then fed to the OptiSpeeder in the OptiCenter OC01. The fluidized powder is aspirated by the injectors and fed through the powder hoses to the guns/spray nozzles (**8**). The powder, which does not adhere to the workpieces, will be absorbed by the exhaust air of the booth (**1**) and separated from the air in the cyclone separator (**2**).

The separated powder is cleaned by passing it through the integrated sieve (**3**) and fed back into the OptiSpeeder by the dense phase conveyor (**4**), where it is prepared again for coating operation.



Powder flow in the plant

1	Booth	6	Refuse container
2	Cyclone separator	7	OptiCenter
3	Sieve	8	Automatic guns
4	OptiFeed PP06 Powder pump	9	OptiSpeeder
5	After Filter	10	Exhaust air ducting

Start-up

Set-up and assembly

Note:
Installation work to be done by the customer must be carried out according to local safety regulations!

WARNING
The OptiCenter must only be installed in locations with an ambient temperature of between +20 and +40 °C, i.e. never next to heat sources (such as an enameling furnace) or electromagnetic sources (such as a control cabinet).

Preparation for start-up

Compressed air supply

Note:
The compressed air must be free of oil and water!

The OptiCenter requires a connection to a sufficient dimensioned compressed air circuit.

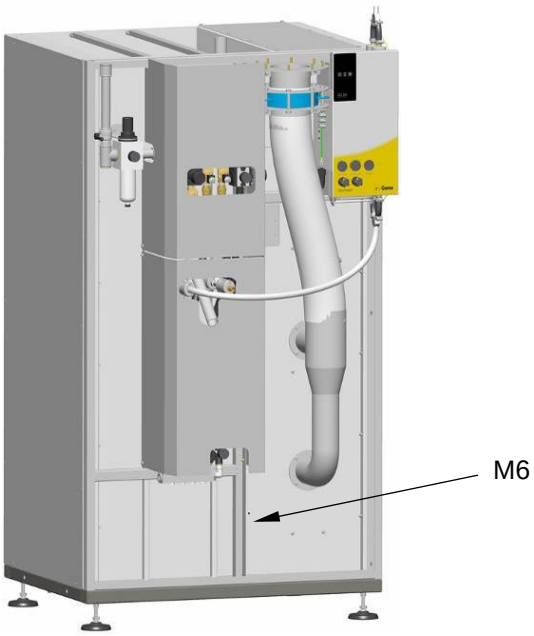
In order to ensure a perfect operation, a pressure of **6 bar** must be adjusted with the main pressure regulator.

Compressed air supply

Grounding of the powder management center

DANGER
The OptiCenter must be grounded according to the general, local safety regulations. The grounding of the powder management center must be checked regularly.

A corresponding connection point at the OptiCenter is reserved for the potential equalization.



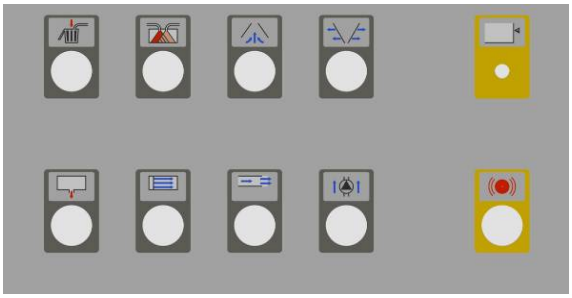
Potential equalization - connection point

Operation

Push buttons

The operation of the powder management center takes place by the push buttons.

The push buttons serve to initiate the function commands, which are necessary for the satisfactory operation of the powder management center.



Push buttons

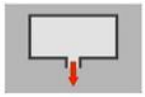
Operating modes

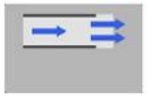
General information

The following operating modes are available:

- **different coating modes**


- **Cleaning / color change**






The operating modes are explicitly described in the following chapters.

Basically, the control unit is not in one of these operating modes after switching on, or after a restart. The operating modes are selected by the push buttons.

Coating without powder recovery (spray waste)

There is no powder recovery in this coating mode - the powder, which does not adhere to the object, is fed directly to the waste.

Utilization of this operating mode:

- When restarting the plant or after the color change (a few minutes)
- If highest coating quality claim is required
- If the volume of order is very small

Coating with powder recovery

This coating mode allows the coating with recovery of the powder, which does not adhere to the object.

Utilization of this operating mode:

- Long time coating operation with the same powder and high coating quality with minimal powder loss
- Immediate coating following a powder change with minimum demands on quality and the smallest possible of powder loss

Cleaning / color change

This operating mode enables the user to clean the OptiCenter. The higher the requirement for cleanliness, the higher is the time expenditure.

The cleaning of the components is partially automated, however, some of them must be cleaned manually.

Utilization of this operating mode:

- After switching on the equipment, if very high quality is required on initial coating application
- Before every color change

Coating operation

Before switching on the OptiCenter OC01

Before switching on the OptiCenter, the following points must be observed:

- Observe the safety regulations
- Check the grounding of the OptiCenter, the booth and the other plant units and ensure it, if necessary
- Check the compressed air supply

Starting up the OptiCenter OC01

Start-up

The start-up takes place according the following steps:

1. Switch on the booth (see also the booth operating instructions) - the **Booth ready** signal may be present
2. Switch the powder management center with the main switch:
   - the interior lighting switches on
3. Wait for booth release
   - the display shows the basic menu

4. 

5. 

6. 

7. 

8. 

9. 

10. 

Recovery hose

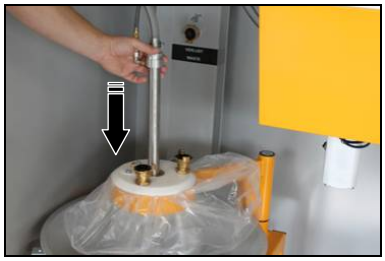
11. Setting the fluidization

12. Select desired coating mode on the OptiCenter (**Coating with** or **without powder recovery**)

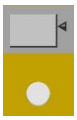
13. Select desired operating mode (**AUTOMATIC** or **MANUAL**) on the booth control unit (see therefore the corresponding operating manual)

Coating with powder recovery

1. 

2. 

3. Push the  button
   - the fluidization switches on
   - the vibrator is switched on

4. Do not coat until the indicator for the level probe  lights up.
   The OptiSpeeder is now filled with powder.
   - Coating can now commence

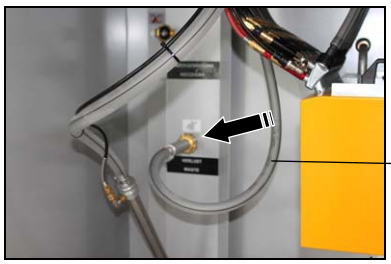
5. If necessary, replace the powder bag,
   see also "Replacing the powder bag"

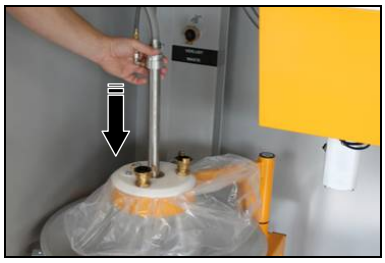
6. If necessary, switch on the exhaust air manually 
   the button blinks as long as the function is active

7.  push again, in order to terminate this operating mode

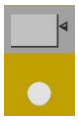
Coating without powder recovery (spray waste)

1. Switch on the exhaust air manually 
the button blinks as long as the function is active

2. 

3. 

4.  Push
   - the fluidization switches on
   - the vibrator is switched on

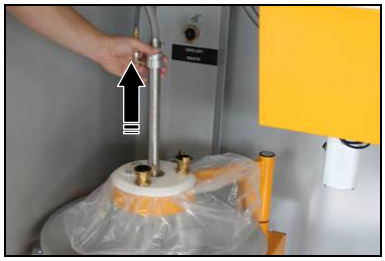
5. Do not start coating until the level probe indicator  lights up.
The OptiSpeeder is now filled with powder.
   - Coating can now commence

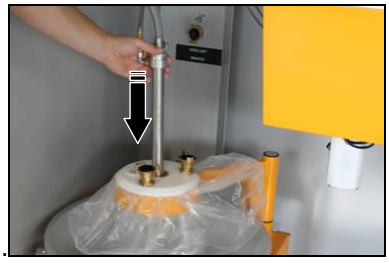
6. If necessary, replace the powder bag,
see also "Replacing the powder bag"

7.  push again, in order to terminate this operating mode

Replacing the powder bag

1. Check visually the powder level in the bag cone
2. Hold the full powder bag ready
3.  Switch on
4. Empty the used powder bag with the residual powder into another container or dispose of it

5. 
6. 
7. 

8. 
9. 
10. 
12. 
13.  push again, in order to switch off the exhaust air

Switching off the OptiCenter OC01 (after each work day)

Note:
Before the equipment can be turned off, the contents of the container (OptiSpeeder) must be emptied into the cone. If this is not done, the powder can escape from the container unhindered.

The following steps must be taken to switch off the powder center:

1. Check if all the workpieces have been coated
2. Stop the operating mode **Coating**
   - the level control is switched off
   - the vibrating table switches off
3. Clean the OptiCenter thoroughly, in order to avoid powder accumulation (see therefore in chapter "Cleaning / Color change")

WARNING
Empty the OptiSpeeder!

4. Switch off the powder management center at the main switch
   - the interior lighting expires

Cleaning / color change

Note:
A great deal of air is required for the cleaning procedure!
Make sure that 6 bar is always available!

WARNING
Powder can escape if the OptiSpeeder lid is not closed properly.
- Check that the lid fits properly
- Check if the clamp has locked in place properly. The clamp's closing tension has been set in the factory and must never be changed!

Cleaning operating mode

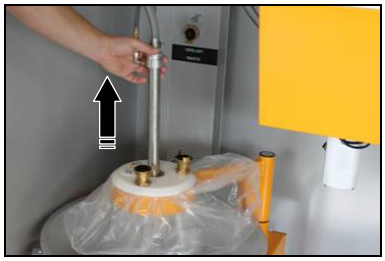
Cleaning procedure

Plant control (e.g. Magic Control CM-10)

1. Select the cleaning mode.
2. Close the booth doors
3. Clean the guns externally
4. Adjust the movement axes to the cleaning position, so that the guns can be cleaned from the inside.

OptiCenter

5. Push  or  , to end the coating procedure
6. Push  , the exhaust air is switched on

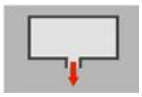
7. 

8. 

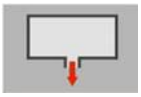

9. 


10. 

11. 

12. Push 
the button illuminates for approx. 40 seconds

13. The pinch valve below the OptiSpeeder opens and the powder in the OptiSpeeder flows into the powder bag

14. The process is complete when the  button starts flashing. The button can be pressed once again if necessary. If a button flashes, this is a sign that the next cleaning phase needs to be activated.

15. 

16. 

Recovery hose

17. 

18. Press  button

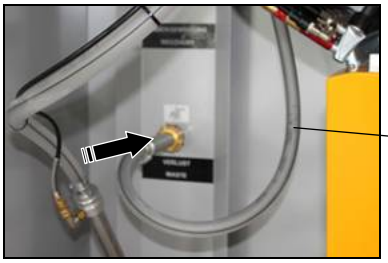
19. The OptiSpeeder is cleaned, the powder from the OptiSpeeder is transported into the extraction system (waste)

20. The powder from the booth is returned to the powder bag

21. The process is complete once this button  starts flashing (after approx. 180 seconds for **intensive cleaning** and approx. 30 seconds for **fast cleaning**). The button can be pressed once again if necessary. If a button flashes, this is a sign that the next cleaning phase needs to be activated.

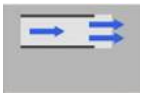
22. Basic booth cleaning can be started now already. Activate the corresponding command on the Magic Control CM-10

NOTE!
If you do not want this powder to be recovered, connect the recovery hose to the waste connection.

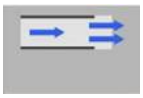


Recovery hose

23. Finish cleaning the booth

24. Push the  button

- The powder hoses are cleaned and the powder is transported to the extraction system (waste)
- The powder from the booth is returned to the powder bag

25. The process is complete when the  button starts flashing. Depending on the number of injectors, cleaning will last for:
40 seconds (1-12 injectors),
80 seconds (1-24 injectors) or
120 seconds (1-36 injectors).
The button can be pressed once again if necessary. If a button flashes, this is a sign that the next cleaning phase needs to be activated.

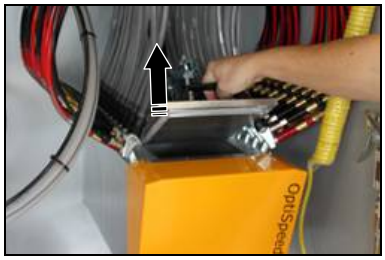
26. 

Recovery hose

27. 

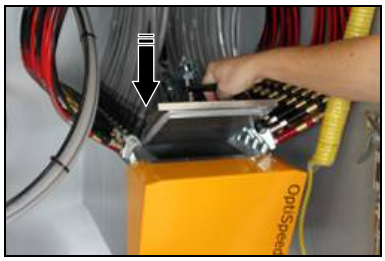
28. 

29. Clean the OptiCenter

30. 

31. 

32. 

33. 

34. Push the  button

    - The fresh powder pump is cleaned. The powder is transported to the extraction system (waste).

35. The process is complete when the  button starts flashing. The button can be pressed once again if necessary. If this button flashes, this is a sign that the cleaning process can be terminated.

36. Open the monocyclone 

Attention:
In order to avoid damage to the sieve when blowing through the transport hose, make sure that the sieve is swung out completely during the cleaning process!

37. Slowly swing out the sieve and clean it with the compressed air gun 

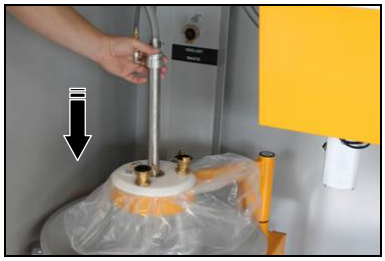
38. Press the button on the monocyclone
    The cleaning process is started.
39. The hose is blown through in pulses

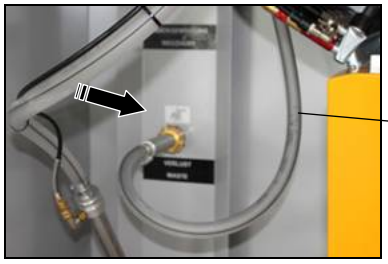
The procedure can be stopped or resumed manually by the user.

40. Swing the funnel on the cyclone slowly away and, at the same time, clean it off with the compressed air gun
41. Clean the inside of the cyclone with the cleaning lance
42. Close the sieve and funnel on the cyclone again

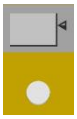
43. 

44. 

45. 

46. 

47. Push the  button

48. Do not start coating until the level probe indicator  lights up. The OptiSpeeder is now filled with powder.

49. Keep the guns switched on until the first hangers have passed.

50. Push again the button  , in order to terminate this operating mode

51. 

52. Push the  button

Messages

Error messages

If faults occur in the powder management center, an error message shown in red lettering appears on the display. The causes of these errors must be eliminated, before further procedures can be carried out (see therefore the troubleshooting guide).

If the error has been eliminated, the display returns to the previous menu again.

Display	Description	Activity
 is lit	OptiSpeeder empty, level sensor indicates the status, no coating operation possible:	
	Powder accumulation on level sensor	Open OptiSpeeder service cover and front panel: - Clean the sensor - Readjust the sensor sensitivity - Check the fluidizing of the sensor if necessary, increase the fluidizing air pressure - Remove the fluidizing air hose and check it
	Sensor defective	replace
	Cable defective	replace
Vibrator defective	Motor protection switch Q6 has reacted	Remove the small maintenance panel and switch on the motor protection switch again. With repeated Alarms, contact an ITW Gema service center
	Vibrator defective	replace
	Cable broken	replace
Powder recovery pump conveying problem	Powder pump does not function properly	
	- Pump defective	- see corresponding operating manual OptiFeed PP06
	- Hose clogged	Check the recovery system
		- Check the level sensor (see also Error message no. 03)
		- Check the cyclone funnel for powder abrasion

Display	Description	Activity
		- Contact an ITW Gema service center
Powder recovery pump overpressure	Powder pump is switched off	
	- Hose clogged or connected incorrectly	Check the recovery system and/or connect correctly
	- Pressure sensor at the OptiFeed PP06 Powder pump defective	replace (see also corresponding OptiFeed PP06 operating manual)
24 V valve block failure	Safety equipment (F7) has reacted, control unit switches to Standby mode	Check the 24 VDC Power pack (G4)
		Check the safety equipment whether all 4 LEDs illuminate green
		- If one or more LEDs illuminate, reset the correcponding channel and if necessary, restart
Fuse Fxx defective	Fuse (1 AT) in the WAGO-Modul A1 defective, control unit switches to Standby mode	Replace the fuse, otherwise contact an ITW Gema service center
Powder alert in OptiSpeeder	Powder warning, flashlight activated	Check the powder bag, otherwise powder shortage
Powder shortage in OptiSpeeder	Powder bag empty, chain conveyor is stopped, flashlight activated	Replacing the powder bag
CAN bus malfunction	No communication with CM10/CM20	Switch on the CM10/CM20 superordinated control unit
	CAN-Bus participant defective	Contact an ITW Gema service center

Maintenance

Daily after longer working interruptions and at the end of shift

WARNING
Before switching off the plant, the OptiSpeeder must be emptied and cleaned

Check weekly

- Check the injector nozzles and replace them, if necessary