Powder Coating Batch Oven

Translation of the Original Operting and Assembly Manual

For professional use.
Always observe the information in this manual, particularly the safety instructions and the warning instructions. Store the manual in a safe place.

Table Of Contents

1. ABOUT THESE INSTRUCTIONS

1.1. Preface

The user manual contains information about safely operating, maintaining, cleaning, and repairing the device. The user manual is part of the device and must be available to the operating and service personnel.

The device may only be operated in compliance with this user manual. Operating and service personnel should be instructed according to the safety instructions.

This equipment can be dangerous if it is not operated according to the instructions in this user manual.

1.2. Warnings, notices, and symbols in these instructions

Warning instructions in this manual highlight particular dangers to users and to the device and state measures for avoiding the hazard. These warning instructions fall into the following categories:

⚠	**DANGER**	Immediate risk of danger. Non-observance will result in death or serious injury.
⚠	**WARNING**	Potential danger. Non-observance may result in death or serious injury.
⚠	**CAUTION**	Potentially dangerous situation. Non-observance may result in minor injury.
ⓘ	**NOTICE**	Potentially dangerous situation. Non-observance may result in damage to property.
ⓘ	**Info**	Provides information about characteristics and how to proceed.

Explanation of warning notice:

⚠ **WARNING**

This notice warns you of danger!

Possible consequences of not observing the warning notice.

- The measures for preventing the hazard and its consequences.

1.3. General characters and symbols

The characters and symbols in this user manual indicate the following:

✓ Requirements that must be fulfilled before an action can be performed.

1. Step 1 of an action to be performed with several action steps.
   - Second level action step
2. Step 2
   - ⇨ Intermediate result of an action

⇨ Result of a complete action

- Action to be performed with an action step

1. Numbered list, first level
   - Numbered list, second level
   - Non-numbered list, first level

– Non-numbered list, second level

[▶▶ 8] = cross-reference

♦ = wearing parts

⋆ = included in service set

● = not part of the standard equipment but available as a special accessory

1.4. Languages

The user manual is available in the following languages:

Original user manual

Language	Order no..
English	2474236

1.5. Abbreviations

Q'ty	Number of pieces
Pos	Position
K	Marking in the spare parts lists
Order no.	Order number
SP	Spare part
HU	Powder Coating Batch Oven (horizontal unit)
VU	Reciprocator (vertical unit)
--	Item not available as spare part
/	Item does not exist

1.6. Terminology for the purpose of this manual

References

For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

Cleaning

Cleaning	Manual cleaning of devices and device parts with cleaning agent.
Flushing	Internal flushing of paint-wetted parts with compressed air.

Personnel qualifications

Trained person	Is instructed in the tasks assigned to him/her, the potential risks associated with improper behavior as well as the necessary protective devices and measures.
Electrically trained person	Is instructed by an electrician about the tasks assigned to him/her, the potential risks associated with improper behavior as well as the necessary protective devices and measures.
Electrician	Can assess the work assigned to him/her and detect hazards based on his/her technical training, knowledge, and experience in relevant provisions.

Skilled person	A person who, based on his/her technical training, experience, and recent vocational experience, has sufficient technical knowledge in electrostatic coating and is familiar with the relevant and accepted rules of technology so that he/she can inspect and assess the status of devices and coating systems based on workplace safety. Additional requirements for skilled people: Expert knowledge in the areas of protection against excessive pressure, electrical hazards, and explosion protection (where applicable).

2. USING IN ACCORDANCE WITH THE INSTRUCTIONS

2.1. Device type

Powder Coating Batch Oven suitable for use in manual powder coating systems.

2.2. Type of use

The “Powder Coating Batch Oven” is exclusively suitable for use in manual powder coating systems.
The device may only be operated under the following conditions:

- Use the device only to work with the materials recommended by WAGNER.
- Do not deactivate safety fixtures.
- Use only WAGNER original spare parts and accessories.
- The operating personnel must be trained based on this user manual.
- Follow the instructions in the user manual.

2.3. Field of application

The device is not suitable for use in potentially explosive areas. (For identification, see Chapter IDENTIFICATION, page 10).

2.4. Processible working materials

- Organic powder
- Metallic powder

Info

Contact your local WAGNER dealer and the lacquer manufacturer if you encounter application problems.

2.5. Misuse

Misuse can lead to physical injury and/or property damage! Special attention must be paid that:

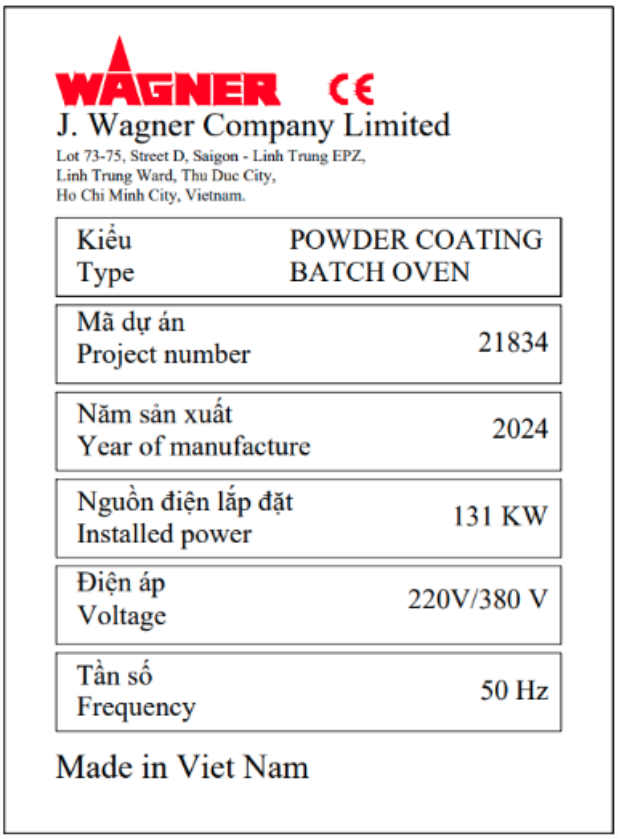
- No liquid coating products, e.g., solvents or water-based, are processed.
- No food, medicine or cosmetics are processed.

3. IDENTIFICATION

3.1. Identification

Device type: Powder Coating Batch Oven
Manufacturer: J. Wagner company Limited
Lot 73-75, Street D, Saigon – Linh Trung EPZ, Linh Trung Ward,
Thu Duc City, Ho Chi Minh, Vietnam

3.2. Nameplate



4. BASIC SAFETY INSTRUCTIONS

4.1. Safety instructions for the operator

- Always keep this user manual at hand near the device.
- Always follow existing regulations concerning occupational safety and accident prevention regulations.

4.1.1 Electrical devices and equipment

Danger of electric shock!
Danger to life from electric shock:

- Place and operate the device in accordance with the existing safety requirements regarding the operating mode and ambient influences.
- May only be maintained by skilled electricians or under their supervision. With open housing, the mains voltage poses a danger.

- Operate device in accordance with the safety regulations and electrotechnical regulations.
- Do not disconnect any plug connections during operation.
- Label plug connections with the warning "Do not disconnect when energized".
- It must be repaired immediately in the event of problems.
- Decommission if a device poses a danger or is damaged.
- Must be de-energized before work commences.
  - Secure the device against being switched back on without authorization.
  - Inform personnel about planned work.
  - Observe electrical safety regulations.
- Ground all devices to a common grounding point.
- Only operate the device with a properly installed socket with a protective ground wire connection.
- Keep liquids away from electrical devices.

4.1.2 A safe work environment

N/A

4.1.3 Personnel qualifications

Danger due to incorrect use of device!

Risk of death due to untrained personnel.

- Ensure that the operating personnel have been instructed by the operator in accordance with the user manual and the operating instructions. The device must only be operated, maintained, and repaired by trained personnel. Refer to the operating instructions for information about the required personnel qualifications.

4.2. Safety instructions for the personnel

- Always observe the information in this manual, particularly the safety instructions and the warning instructions.
- Always follow existing regulations concerning occupational safety and accident prevention regulations.

4.2.1 Personal safety equipment

Danger due to the crushing risk!
Foot crushing caused by the trolley when putting the workpieces into the oven and removing the workpieces from the oven.

- The operator must wear safety shoes (according to EN ISO 20345) when operating the machine.

Danger due to other electrical hazards!
Electromagnetics can cause loss of normal control.

- Perform periodic maintenance to ensure the integrity and safety of the electrical parts.

Danger due to burn!
Hot temperature of the trolley and work pieces can cause burn on contact.

- Operator must observe oven temperature on HMI before entering.

Danger due to other hazardous events due to failure(s) or poor design of the control system!
If the temperature sensor inside the oven is malfunctioning, or giving incorrect value, it can cause fire because of continously increasing temperature.

- Perform periodic maintenance to ensure the integrity and safety of the electrical parts.
- Perform periodic calibration to ensure the accuracy of all sensors.

Danger due to injuries by the radiation of heat sources!
Hot temperature inside oven after finishing batch can cause injuries.

- Operator must observe oven temperature on HMI before entering.

4.2.2 Safe handling of Devices

Danger due to explosion hazards!

- Only use for powder coatings. Do not place flammable solvents near or inside the oven.

4.2.3 Electrical connection cables

Risk caused by improperly laid cables!

Risk of injury and damage to the device.

- Properly lay connection cables and check them regularly.
- Immediately replace damaged connection cables.
- Ensure that no work is ever performed with a damaged connection cable.
- Do not lay connection lines on travel paths of forklifts or through doors/gates.
- Do not lay connection lines in walkable hallways or paths to avoid the risk of tripping.

4.2.4 Maintenance and repair

Danger due to improper maintenance and repair!

Danger to life and equipment damage.

- Only a WAGNER service center or a specially trained person may conduct repairs and replace parts.
- Repair or replacement of devices or parts of devices are only allowed to be performed outside the hazard area by qualified personnel.
- Use only WAGNER original spare parts and accessories.
- WAGNER assumes no liability for changes to the product made by the operating company without the knowledge of WAGNER. Any adjustments to the documentation and the market release are the responsibility of the operating company.
- Only repair and replace parts that are listed in the chapters "Accessories" and "Spare Parts" and that are assigned to the device.
- Do not use any defective components.
- Observe the operating and service manual for all work.

Danger due to slipping, tripping and falling!

Risk of falling when carrying out maintenance tasks on the roof.

- Operators must wear anti-slip safety shoes and fall protection equipment when carrying out maintenance tasks on the roof.

Danger due to drawing-in or trapping!

A person is trapped inside of the oven while performing tasks because someone else closes the door.

- Always check inside of the oven before closing the door and operate the oven.

4.2.5 Protective and monitoring equipment

Danger due to removal of protective and monitoring equipment!

Danger to life and equipment damage.

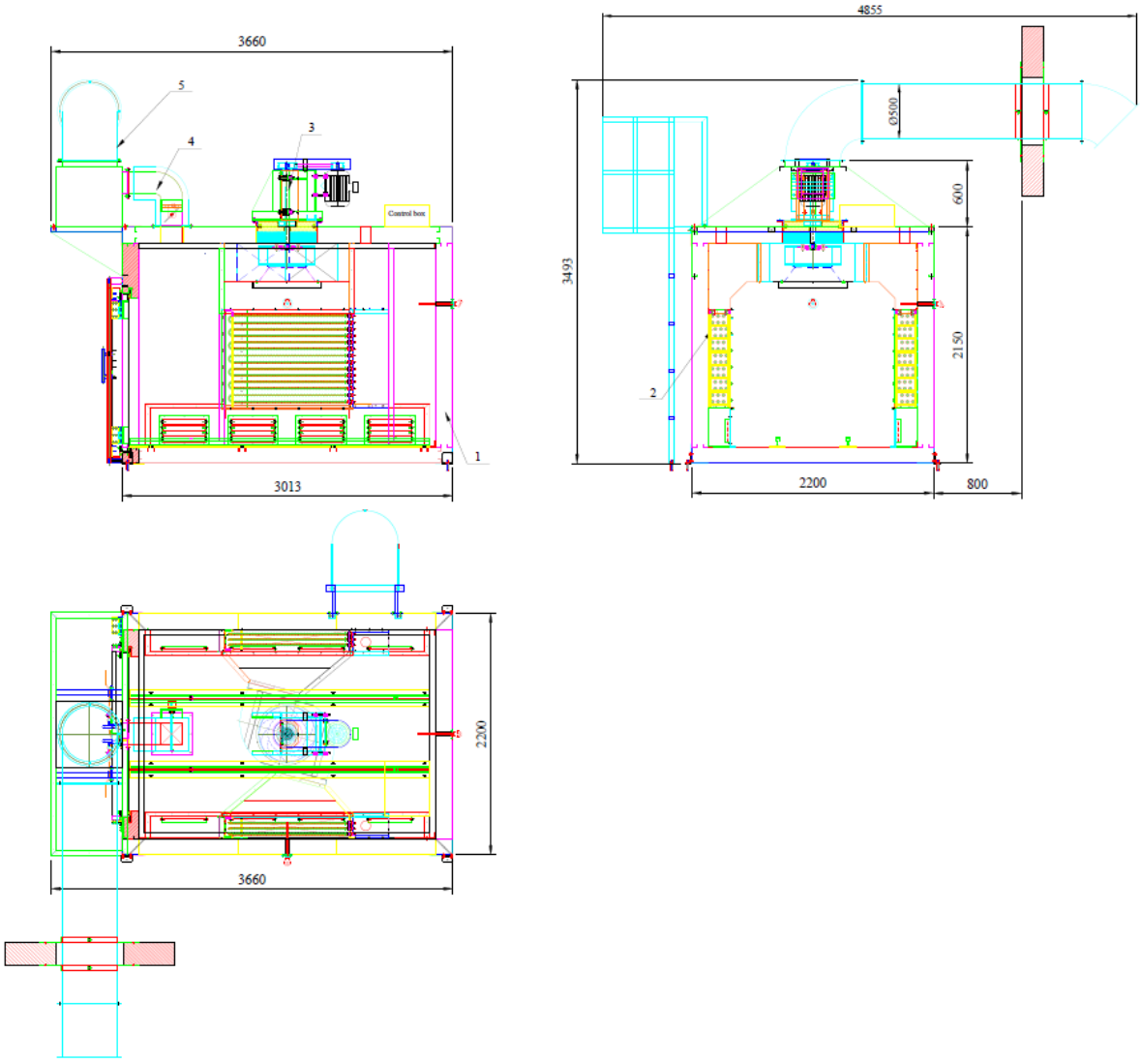
- Protective and monitoring equipment must not be removed, modified, or rendered unusable.
- Regularly check for perfect functioning.
- If defects are detected on protective and monitoring equipment, the system must not be operated until these defects are remedied.

5. DESCRIPTION

5.1. Functioning

An industrial batch oven (Powder Coating Batch Ovens) features excellent heat transfer Technology. The air distribution system circulates heated air throughout the oven to dry powder coated workpieces for balanced and uniform temperature.

5.2. Components



Pos	Name
5	Exhaust ducting
4	Damper
3	Oven circulation fan
2	Electric Heater
1	Oven body

5.3. Safety function

To prevent spark generation due to overheating:

Use a temperature sensor to protect the heatbox.
The temperature sensor is mounted directly onto the heatbox wall.

Operation method:
The temperature sensor is connected to the temperature controller, allowing for the configuration of a warning temperature level and error alerts as per the manufacturer's requirements. In normal conditions, the system operates normally.
When a high-temperature warning occurs:

The system triggers the signal light to turn red.
The alarm is also activated.
The heating elements, including the heating resistors and the Silicon Controlled Rectifier (SCR), will switch to the off state.

5.4. Variants

Standard versions

Project no.	Designation
21834	Powder Coating Batch Oven

Special version

Project no.	Designation
N/A	

5.5. Scope of delivery

Q'ty	Project no.	Designation
1	see Chapter Variants [▶▶ 15]	Powder Coating Batch Oven
The standard equipment includes:		
1	2474236	Operating and assembly manual

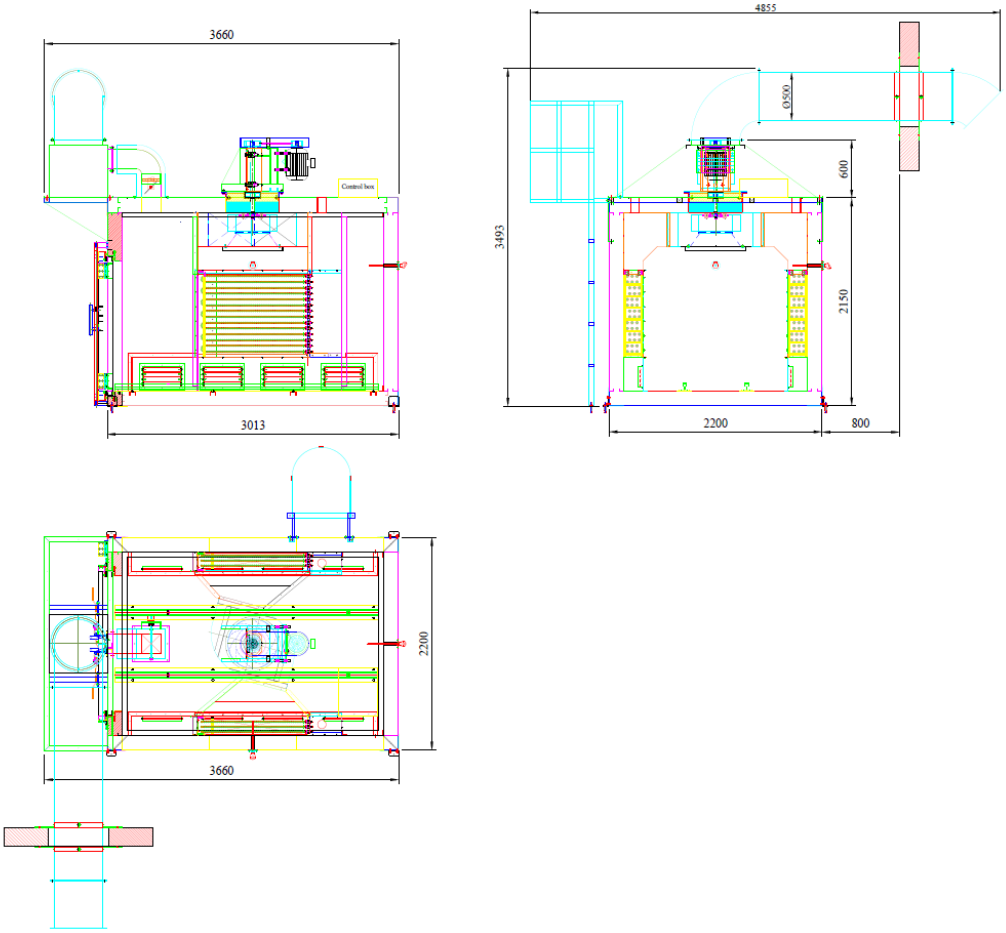
5.6. Data

5.6.1 Technical Data

	Powder Coating Batch Oven
Electrical connection	3/N/PE AC 380V/ 50Hz
Installed power	131 Kw
Permissible ambient temperature	5 – 40 °C; 41 – 104 °F
Operating temperature	200 °C
Maximal humidity	80%
Noise emission	< 72 dB (A)
Weight	2460 kg

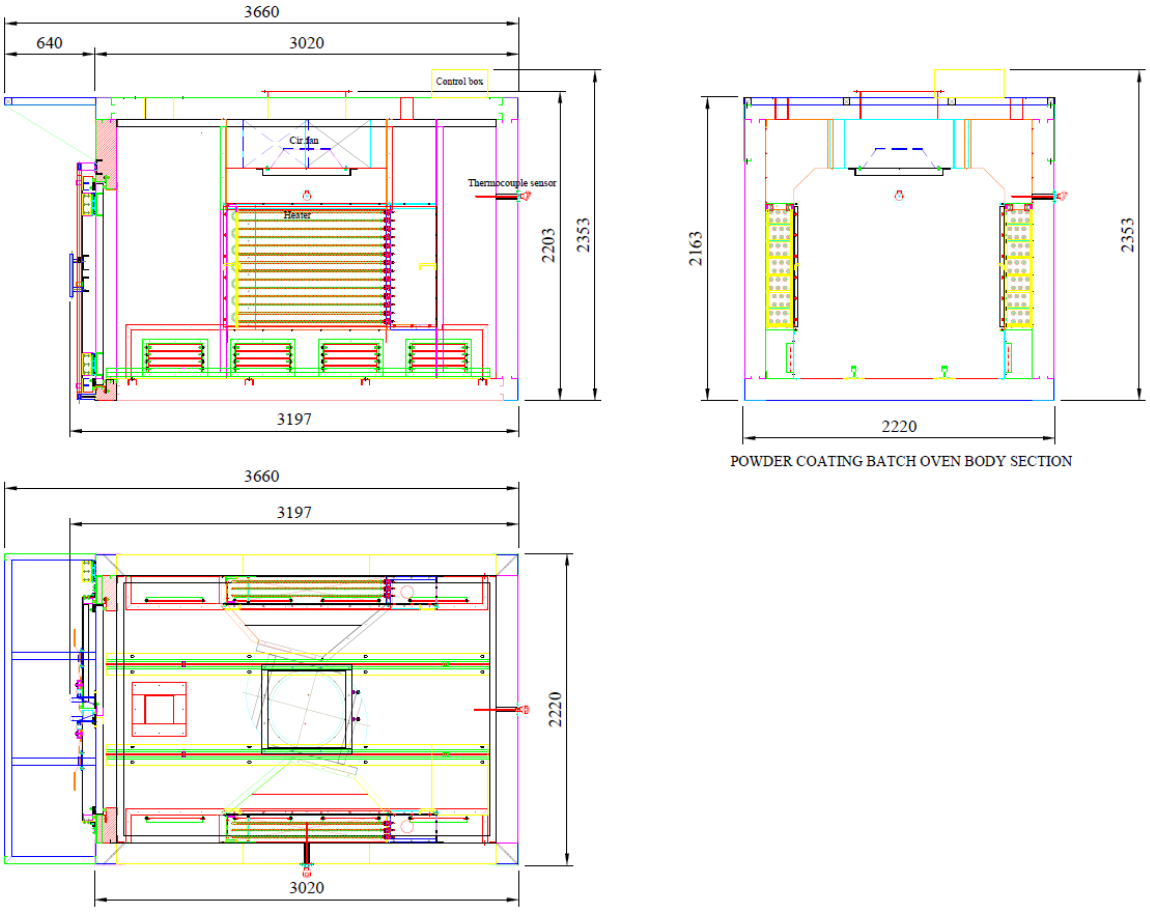
5.6.2 Dimensions

Oven



	Dimensions
Total length	3660 mm
Total Width	4855 mm
Total Height	3493 mm

Oven Body



	Dimensions
Total length	3660 mm
Total Width	2020 mm
Total Height	2353 mm

5.6.3 Accessories

Only accessories that are listed in the "Accessories" chapter (on page 51) of this manual can be used on the “Powder Coating Batch Oven”.

5.7. Control panel

The control panel is used to operate and monitor the system. The panel includes various components which allow operators to control the system, monitor performance, and ensure safety. The lights at the top indicate the status of the system (e.g., red for an error, green for normal operation). The touchscreen interface in the center displays critical information about the system, such as operating conditions, alarms, and settings.

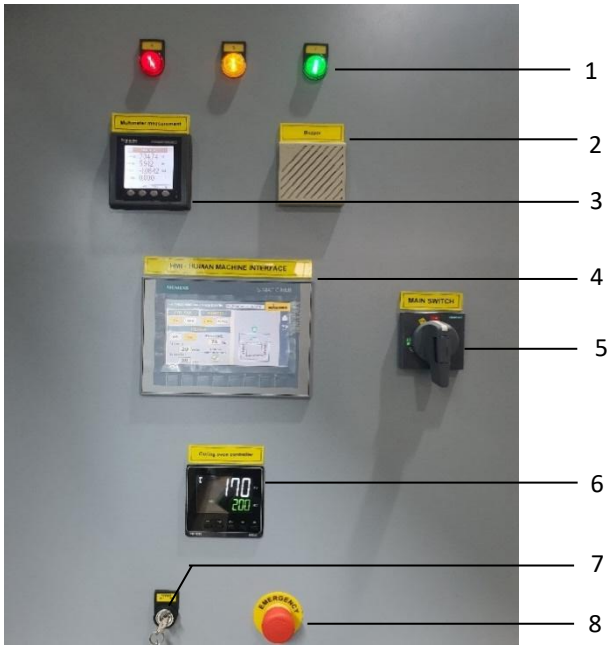


Figure 1 - Operator interface terminal

Pos	Designation	Function
1.	Light indicators	**Red**: Indicates the status of Phase R. **Yellow**: Indicates the status of Phase S. **Green**: Indicates the status of Phase T.
2.	Warning horn	Acoustic signal alerts operators to any issues or abnormal conditions in the system.
3.	Multi function panel meter	Measure and display a variety of electrical parameters.
4.	Touch screen	Display and control function
5.	Main switch	The primary control for powering the system, used to disconnect or connect the power supply.
6.	Temperature controller	Controlling and monitoring temperatures in various industrial processes. There is a sensor in the drying chamber for heating control and regulation. **Principle of operation:** **Heating control and regulation sensor** is located at rear of the oven: This sensor measures the temperature of the drying chamber, providing data to the PLC to calculate and control the SCR output power, ensuring the heating follows the correct operating procedure. This temperature value is not displayed on the HMI; it is shown on the temperature controller mounted on the front of the control cabinet.  Example:

		170: Present value (PV) 200: Set value (SV) Refer to Digital Temperature Controller (Simple Type) E5EC-800/E5EC-B-800/E5AC-800 (48 × 96 mm/96 × 96 mm) manual.
7.	Power key	Turn the control panel on/ off
8.	EMERGENCY button	Shut down the entire system in case of an emergency.

5.8. Control panel interior

Refer to Figure to identify the components inside the control panel.

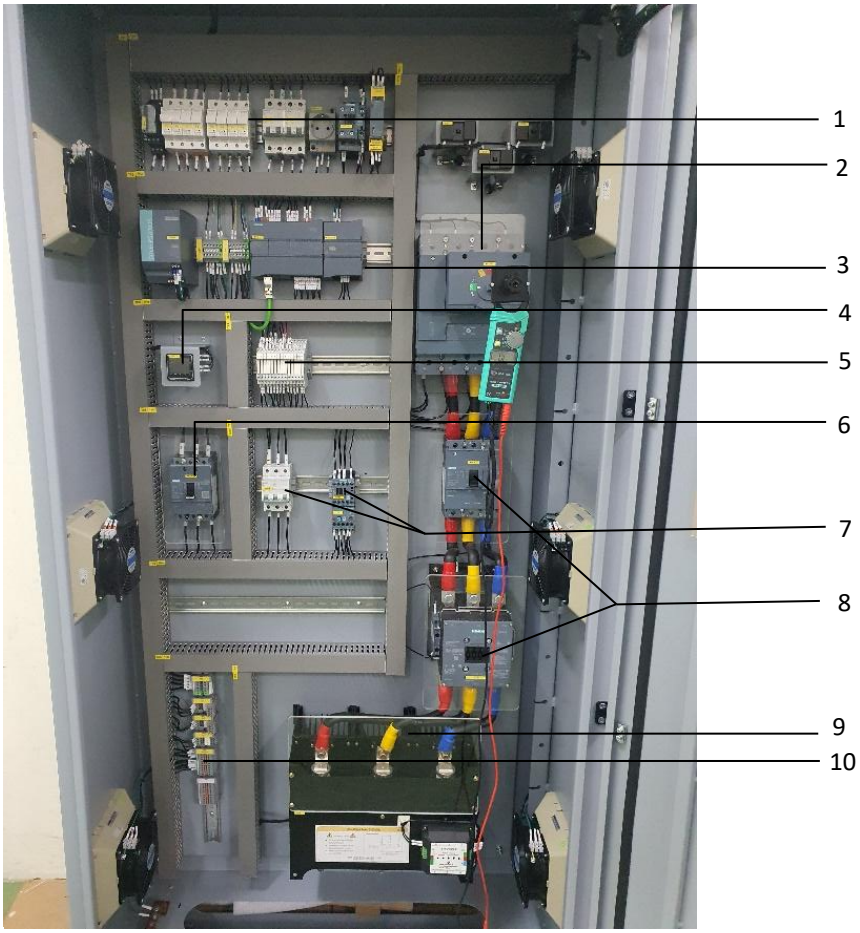


Figure 2 - Control panel interior

1. *Safety protection device cluster*
2. *Main source MCCB (Molded Case Circuit Breaker)*
3. *24V Power Supply and PLC Controller*
4. *Oven temperature protection meter*
   There is a sensor in the heating chamber for overheating protection.
   ***Protection sensor** is located at side of the oven: This sensor is used to protect the combustion chamber and associated equipment. When the temperature exceeds the set value, the system will immediately cut off power to the heating element to ensure the combustion chamber and associated equipment protection.*
   This temperature value is not displayed on the HMI; it is shown on the temperature controller mounted inside the control cabinet.
   Refer to Digital Temperature Controller (Simple Type) E5CC-800/E5CC-B-800/E5CC-U-800 (48 × 48 mm manual.
5. *Relay cluster*
6. *MCCB for power supply to the paint booth cabinet*

7. *MCB (Miniature Circuit Breaker) + Contactor for the thermal circulation fan*
8. *MCCB + Contactor for heating*
9. *SCR (Silicon Controlled Rectifier) for electrical heater control*
10. *Terminal block for peripheral devices*

5.9. HMI (Human-Machine Interface)

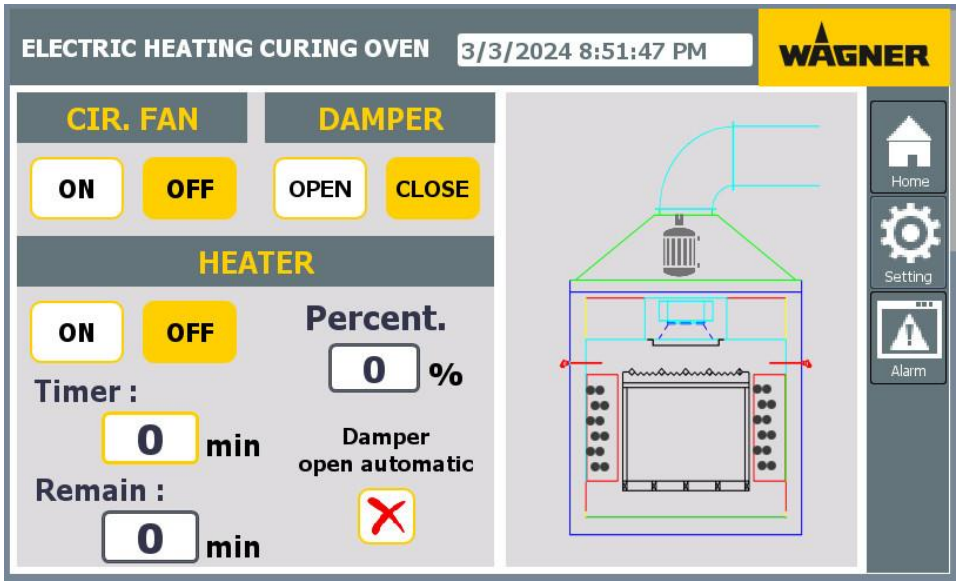
The touchscreen provides useful information, including operating information in the main display, navigation, time, and alarm information.

The sidebar on the right-hand side of the screen provides navigation buttons. These buttons always remain on the screen.

The body of the screen will vary dynamically depending on what the operator is trying to accomplish.

Yellow theme on the button: Indicates the button is selected.
Cell with yellow border at Timer box: Can be used to enter parameters.
Cell with black border: Represents an manualally running number.

NOTE
The operator cannot change the heater box temperature.



5.9.1 Top bar

- **Electric Heating Curing Oven**: The title of the system being controlled, indicating that the interface is for managing an electric curing oven.
- **Date and Time (Example: 3/3/2024 8:51:47 PM)**: Displays the current date and time.
- **WAGNER logo**: This indicates the manufacturer.

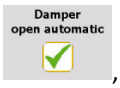
5.9.2 Main control sections

There are four main operational sections related to **Circulation Fan**, **Damper**, **Heater**, and other parameters such as timing and percentages.

1. **CIR. FAN**
   ON / OFF buttons: These buttons allow the operator to switch the circulation fan ON or OFF. The circulation fan controls air movement inside the oven, ensuring even heat distribution.
2. **DAMPER**
   OPEN / CLOSE buttons: These buttons control the oven's damper, which regulate the airflow and exhaust gases.

3. **HEATER**:
   ON / OFF buttons: This section is for controlling the heating element of the oven. Switching the **HEATER** to **ON** starts the heating process, and **OFF** stops it.

5.9.3 Status indicators & controls

- **Percent (0%):** This indicates the current operational percentage of the oven related to the damper position and airflow.
- **Timer (0 min):** The desired drying time will be calculated from the moment the drying chamber reaches the set temperature.
- **Remain (0 min):** The remaining time of the drying process is displayed here.
- **Damper open manual:** The text indicates that the damper will manualally open under specific conditions. The manual mode appears to be inactive in this screenshot (red "X").
- When the damper is in **manual mode** 

, the drying process is finished. The damper manualally opens.
- When the damper is in **manual mode** 

, the user can turn the damper on or off manually.

5.9.4 Oven diagram

A diagram of the oven is shown, with components such as:

- **Fan (at the top)**: The circulation fan controlls the airflow inside the oven.
- **Heating elements (represented near the center)**: These elements are part of the heating system.
- **Damper (at the top)**: Shown above the fan, representing where the damper controls airflow and exhaust gases.
- **Workpiece area**: The middle area where items (such as parts or materials) are placed for curing.

5.9.5 Sidebar

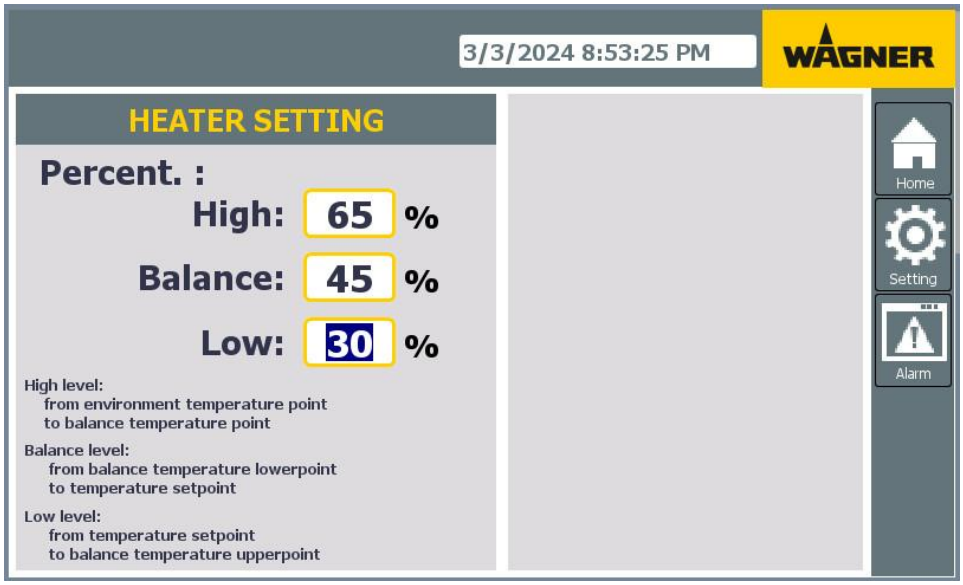
There are several buttons for system navigation:

- **Home**: Takes the operator back to the Home screen of the system.
- **Setting**: The operator can configure or adjust parameters like temperature, timing, etc.
- **Alarm**: Shows a list of alarms or error conditions. Any current issues with the system (such as overheating, fan malfunction, etc.) would be displayed here.

5.10. Parameter settings

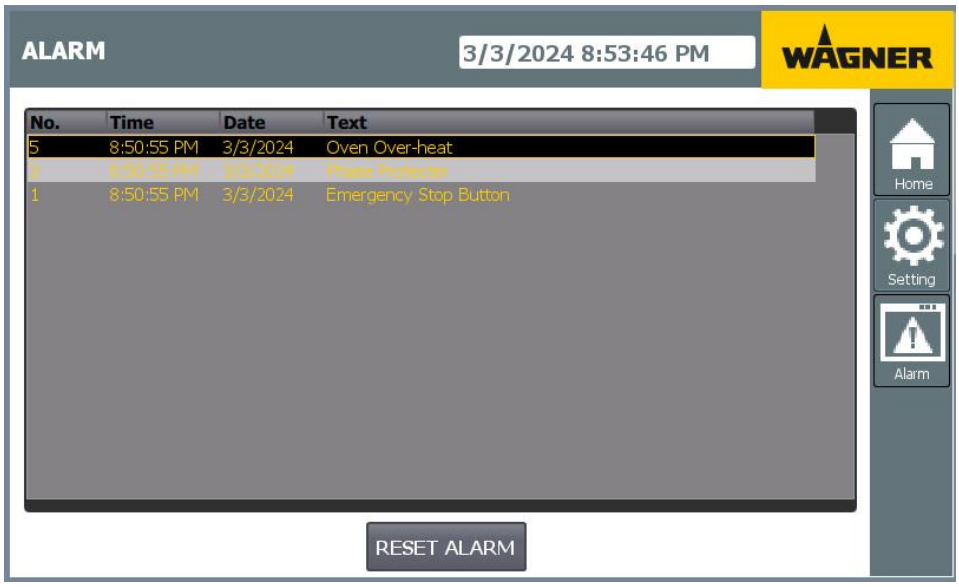
HEATER SETTING Section allows the operator to set various percentages related to the oven's heating control. It includes three default key settings:

- **High (65%):** The upper threshold percentage of the heater's power.
- **Balance (45%):** The balance percentage indicates the median level of heater power.
- **Low (30%)**: This setting refers to the lower threshold at which the heater operates.



5.11. Alarm

ALARM bar indicates the section of the HMI dedicated to displaying alarm statuses.



Alarm Log Table

The table lists alarms that have occurred within the system. Each row has the following columns:

- **No.**: The number assigned to the alarm event in sequence.
- **Time**: The exact time when the alarm occurred (e.g., 8:50:55 PM).
- **Date**: The date on which the alarm was triggered (e.g., 3/3/2024).
- **Text**: A description of the alarm condition or event that occurred.

Reset Alarm Button

- **RESET ALARM**: This button is used to clear the active alarms after they have been resolved or acknowledged by the operator. The system will only return to normal operation after the causes are fixed and the alarm is reset.

6. ASSEMBLY AND COMMISSIONING

6.1. Training assembly/commissioning personnel

- The assembly and commissioning personnel must have the technical skills to safely commission the device.
- When assembling, commissioning, and conducting all work, read and follow the user manuals and safety regulations for the additionally required system components.

A skilled person must check to ensure that the device is in a reliable state after it is assembled and commissioned.

6.2. Storage conditions

Until the point of assembly, the device must be stored in a dry and enclosed room, free from vibrations and with a minimum of dust. The device must be stored in closed rooms.
The air temperature at the storage location must be between -20 °C and 40 °C (-4 °F and +104 °F).
The relative air humidity at the storage location must be between 10 and 85% (without condensation).

6.3. Installation conditions

The air temperature at the installation site must be in a range of between 5 and 40 °C; 41 and 104 °F.

The relative air humidity at the installation site must be between 10 and 85% (without condensation).
The surface on which the reciprocator stands must have the following characteristics:

- vibration-free
- horizontal (permissible slant 1°)
- load bearing capacity (2000 kg/m²; 4409 lbs/m²)

The Powder Coating Batch Oven must be professionally anchored to the foundation.

6.4. Unpack in stages

Organize the oven structure, heater box, duct, and panels in stages as you unpack them. In general, the skids are organized so the parts that go together during assembly are packed on the same skid.

NOTE
For faster unpacking of panels and ductwork, use a reciprocating saw to cut the crates.

NOTE
Other components and pieces of equipment may be shipped banded to skids or wrapped in plastic. Begin unpacking by cutting the plastic and bands that attach them to the skids.

A packing list is attached to each crate. As you unpack a crate, compare all the parts with that crate's packing list to check for shortages or losses in transit. Also check parts for any damage that might have been caused to shipping.

NOTE
Slightly bent panels and angle braces can be straightened and will cause no performance or assembly problems.

If any parts are missing or damaged, contact Wagner to speak to a Technical Service Representative.

6.5. Transportation

⚠ WARNING

Improper means of transportation!

Damage to the device.

- Do not lift the Powder Coating Batch Oven by the linear guideway.
- Only use soft ropes or straps for lifting with a crane or a forklift. Do not use steel cables.

1. Wrap soft ropes or straps around the Powder Coating Batch Oven.
2. Lift the Powder Coating Batch Oven and move to its intended destination.

6.6. Preparing for installation

6.6.1 Accepting delivery of your oven

The oven is delivered unassembled, in multiple crates.
Upon delivery, count the number of crates you received and compare that number to the expected number per the Bill of Lading (a document of title, a receipt for shipped goods, and a contract between a carrier and a shipper). Also inspect each crate for any signs of damage during shipment.

NOTE
If you see shipping damage, note it on the freight carrier's paperwork; failure to do so may result in claim denial.
If any parts are missing or damaged, contact Wagner to speak to a Technical Service Representative.

NOTICE
Wagner recommends storing crates indoors pending installation. If you must store crates outside, protect crates and their contents from moisture to prevent damage to equipment.

6.6.2 Gathering required documentation

The table below lists the location of the hard-copy documents that ship with the oven. Ensure that you can locate these documents and that they are available during the installation procedure.

NOTE
The Operating 's Manual, Job-Specific Guide, Design Drawings, the Control Panel Operator Manual (if applicable), and startup documents are also provided electronically to distributors (if applicable).

Table 1. **Additional documents (if applicable) related to oven installation and service**

Document	Description	How provided
Design Drawings	Provides detailed drawings and instructions for assembling this oven.	Ships in the "Miscellaneous" box
General Arrangement Details	Provides drawings and assembly instructions for common components: may include drawings that do not apply to this oven.	Ships with the Design Drawings in the "Miscellaneous" box.
Electrical Drawings	Provides wiring diagrams for electrical components	Ships inside the control Panel. Refer to “Wiring Diagram for Oven Cabinet R1 18022024.pdf”

6.6.3 Confirming site requirements

Before beginning the installation procedure, confirm that the site where the equipment will be assembled meets the following requirements:

• The concrete floor beneath the oven must be fully cured and in good repair.

• There is sufficient overhead clearance for the exhaust unit and exhaust ductwork in the area where the

equipment is to be located.

• There must be adequate structural support and minimal exposure to power equipment, process equipment, and sprinkler risers.

• The area where you will assemble the oven is free of any corrosive or explosive vapors, such as chlorinated or acid vapors or volatile solvents.

• The facility in which the oven will be installed must have adequate electric power to operate the oven at full output.

• A licensed electrician has verified that the incoming power meets the requirements specified for the equipment. (The power specification is included with the submittal or provided at delivery.)

• The appropriate devices for lifting/rigging are available onsite.

6.7. About the design drawings document

Use this manual in conjunction with the provided Design Drawings document. The Design Drawings document defines the overall layout and detailed structure of your product. If applicable, it also includes exploded-view diagrams and parts lists for each section of the oven.

6.7.1 Page elements

Pages within the Design Drawings document contain the following elements:

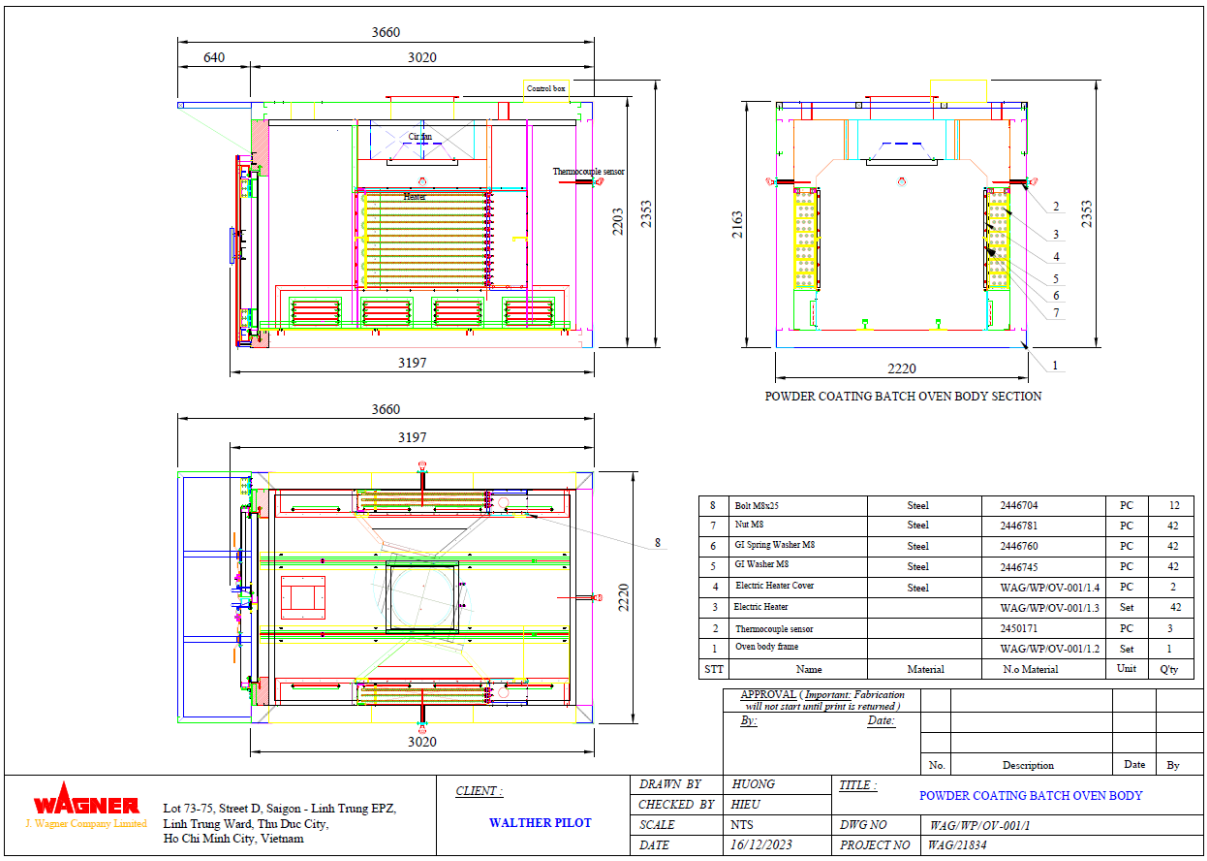
• **Title block:** The title block is located along the bottom edge of each page. It contains the model information, drawing identification label or number, the order/serial number, and other information.

• **Model Info:** Contains text that identifies each page within the Design Drawings document, e.g., “Overall Assembly". When the installation instructions refer you to a specific page within the Design Drawings, look for that text in the Model Info field. (For a description of the various page types that might be included in your Design Drawings document, see “Page types” (» 30).)

• **Drawings:** The main area of each page can contain any or all these types of drawings:
  • An exploded and/or assembled view of the product or subassembly
  • Additional views or “Detail” drawings

• **Bill of Materials:** Any page that includes a drawing with labeled parts also includes a table that lists each item number with its corresponding part number and quantity.

• **Quantity per Assembly:** Pages that show a subassembly of the product and list the quantity provided of that subassembly.



STT	Name	Material	N.o Material	Unit	Q'ty
8	Bolt M8x25	Steel	2446704	PC	12
7	Nut M8	Steel	2446781	PC	42
6	GI Spring Washer M8	Steel	2446760	PC	42
5	GI Washer M8	Steel	2446745	PC	42
4	Electric Heater Cover	Steel	WAG/WP/OV-001/1.4	PC	2
3	Electric Heater		WAG/WP/OV-001/1.3	Set	42
2	Thermocouple sensor		2450171	PC	3
1	Oven body frame		WAG/WP/OV-001/1.2	Set	1

APPROVAL (*Important: Fabrication will not start until print is returned*)
By: Date:

No.	Description	Date	By

WAGNER
J. Wagner Company Limited
Lot 73-75, Street D, Saigon - Linh Trung EPZ,
Linh Trung Ward, Thu Duc City,
Ho Chi Minh City, Vietnam

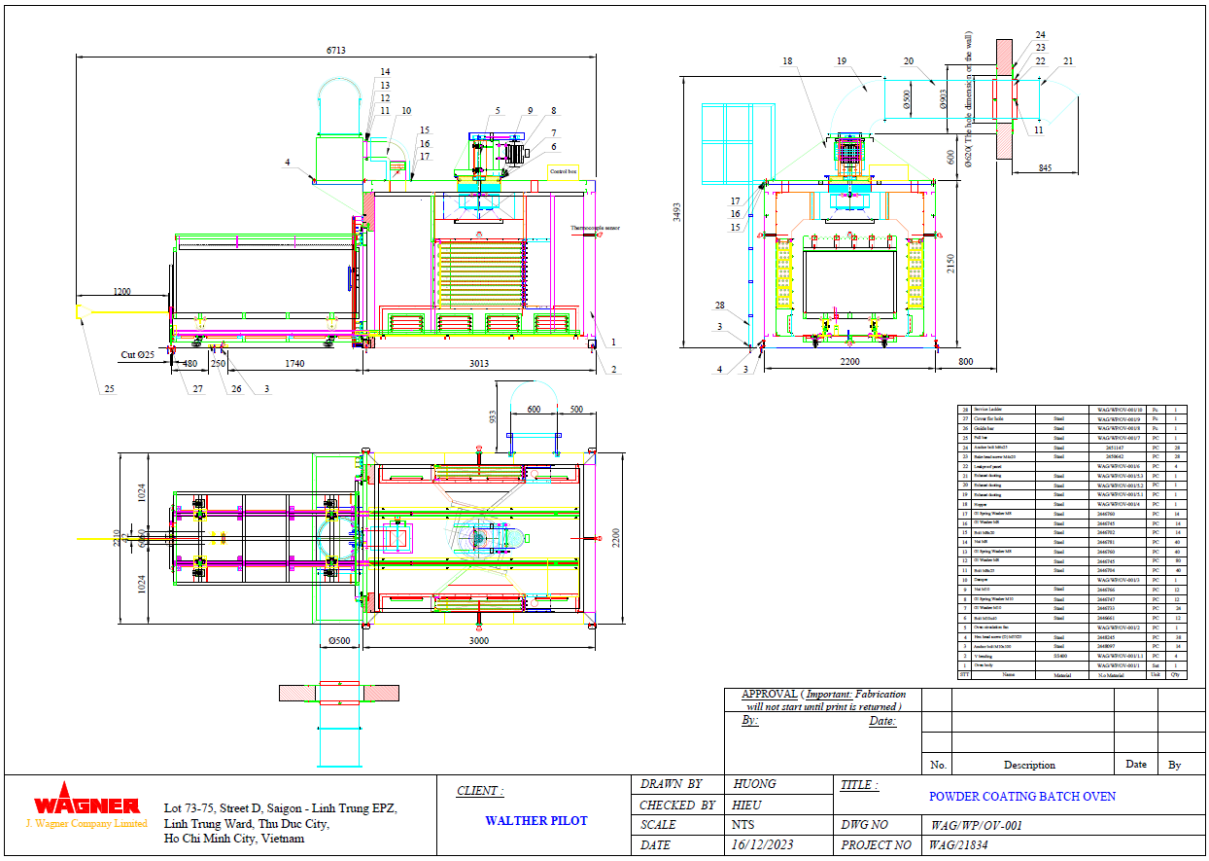
CLIENT : WALTHER PILOT

DRAWN BY	HUONG	TITLE :	POWDER COATING BATCH OVEN BODY
CHECKED BY	HIEU		
SCALE	NTS	DWG NO	WAG/WP/OV-001/1
DATE	16/12/2023	PROJECT NO	WAG/21834

Subassembly: Oven Body

6.7.2 General Arrangement (GA) drawing

The General Arrangement (GA) Drawing shows the overall dimensions of the oven.



6.7.3 Page Types

The Design Drawings document may contain any of the following pages that apply to your product.

Table 2 - Page names in the Design Drawing document

Pos	Description	Page name
1.	Service Ladder	WAG/WP/OV-001/10
2.	Cover for hole	WAG/WP/OV-001/9
3.	Guide bar	WAG/WP/OV-001/8
4.	Pull bar	WAG/WP/OV-001/7
5.	Leakproof panel	WAG/WP/OV-001/6
6.	Exhaust ducting	WAG/WP/OV-001/5.3
7.	Exhaust ducting	WAG/WP/OV-001/5.2
8.	Exhaust ducting	WAG/WP/OV-001/5.1
9.	Hopper	WAG/WP/OV-001/4
10.	Damper	WAG/WP/OV-001/3
11.	Oven circulation fan	WAG/WP/OV-001/2
12.	V bending	WAG/WP/OV-001/1.1
13.	Oven body	WAG/WP/OV-001/1

6.8. Installation of tools and equipment

6.8.1 Required tools

- Screwdrivers
- Wrenches and socket set
- Standard hex key (Allen wrench) set
- Hammer and mallet
- Adjustable pliers
- Caulk gun
- Impact driver and drill
- Chalk and/or felt-tip marker (for marking initial measurements on floor)
- Chalk-line tool
- Laser level (*Suggested:* Quad laser or rotary laser level)
- Tape measures (35-foot and 100-foot)
- Torque nut runner
- Reciprocating saw
- Utility knife
- Wire stripper
- Welder in case modifications need to be made on site

6.8.2 Recommended equipment

- Ladders
- Material handler
- 4m T scissor-lift platforms
- Appropriate lifting device(s) with a sufficient weight requirement to lift the heater box

  NOTE

  Some ovens may require higher weight and height capacities for the end user's specific application.

  • *If applicable to your oven configuration:* Extended reach forklift to set the heater box on top of the oven

NOTE

Lifts and cranes are not required, but they may improve both the safety and speed of installation.

NOTE

The end user is responsible for providing any lifts, cranes, and material handlers. Alternatively, the end user can coordinate with the installer so the installer can rent those items before starting the work.

⚠ **WARNING**

Parts have high weights and centers of gravity!

Risk of injury and damage to the device.

→ Only use appropriate lifting tackle (forklift) for assembly.

→ The Powder Coating Batch Oven should not be lifted by the moving parts or the geared motor.

→ Secure the parts against tipping during transport.

→ Cordon off assembly area to keep out unauthorized people.

6.8.3 Follow assembly guidelines

Follow these guidelines when assembling the oven:

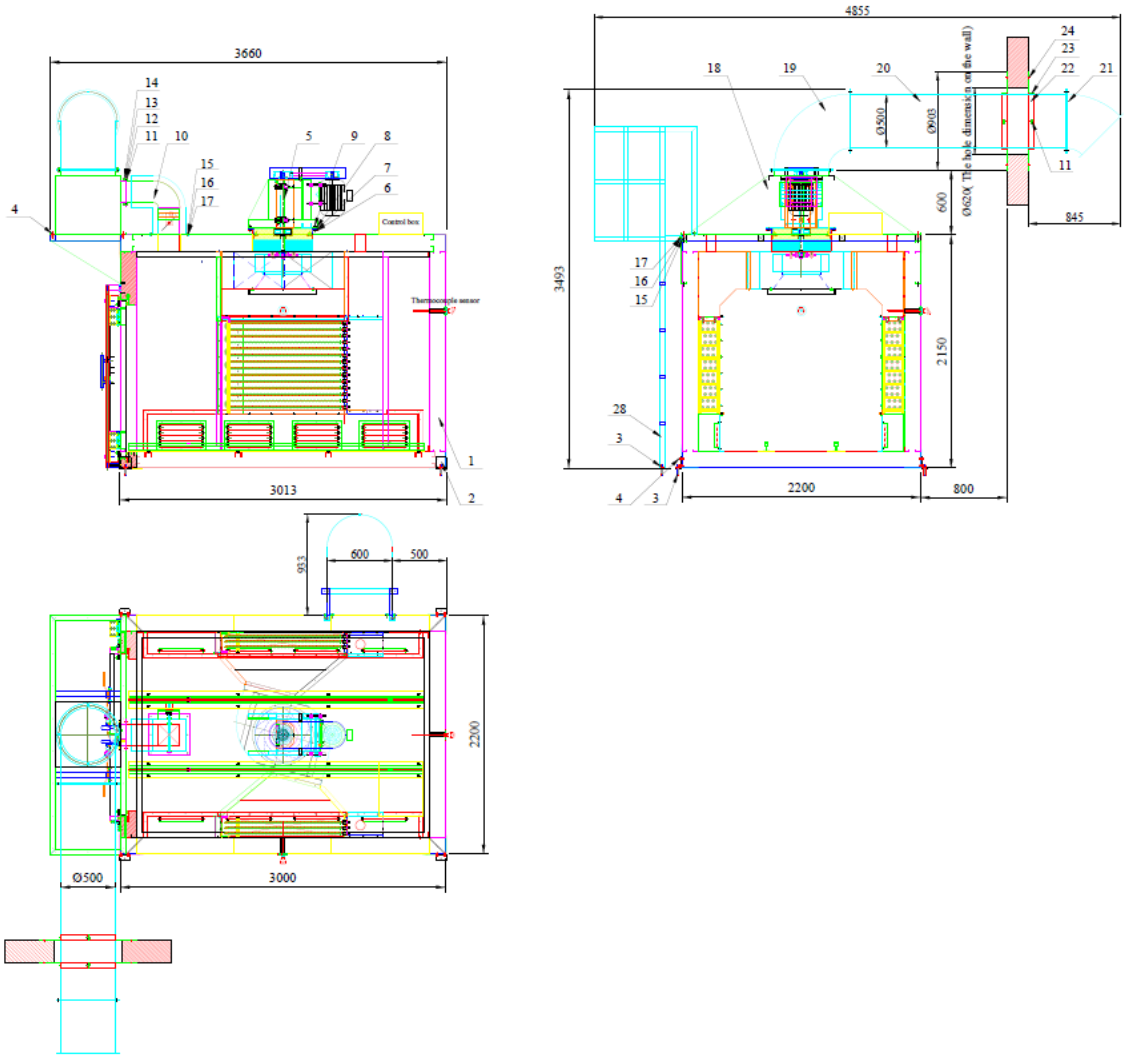
- Assemble the oven in stages, as described in the Design Drawings.
- Place the oven on the floor and leveling

6.9. Installation procedure

This procedure describes how to install a Powder Coating Batch Oven.

Oven:

Reference: Refer to the Design Drawings.

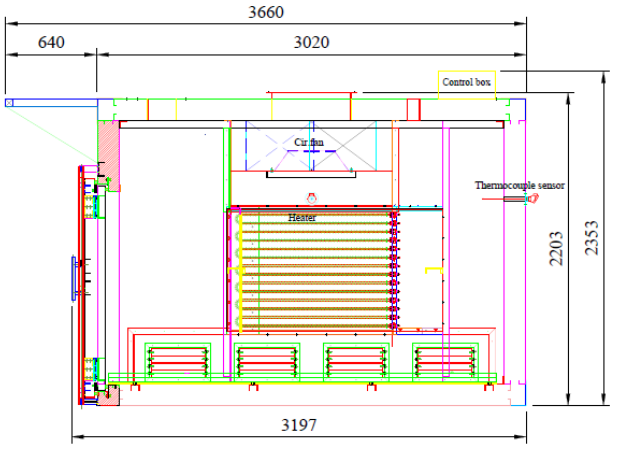


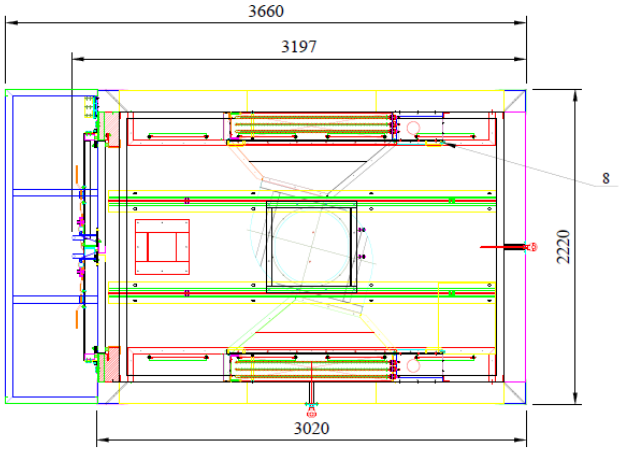
28	Service Ladder		WAG/WP/OV-001/10	Pc	1
27	Cover for hole	Steel	WAG/WP/OV-001/9	Pc	1
26	Guide bar	Steel	WAG/WP/OV-001/8	Pc	1
25	Pull bar	Steel	WAG/WP/OV-001/7	PC	1
24	Anchor bolt M6x25	Steel	2451147	PC	28
23	Bake head screw M4x20	Steel	2450642	PC	28
22	Leakproof panel		WAG/WP/OV-001/6	PC	4
21	Exhaust ducting	Steel	WAG/WP/OV-001/5.3	PC	1
20	Exhaust ducting	Steel	WAG/WP/OV-001/5.2	PC	1

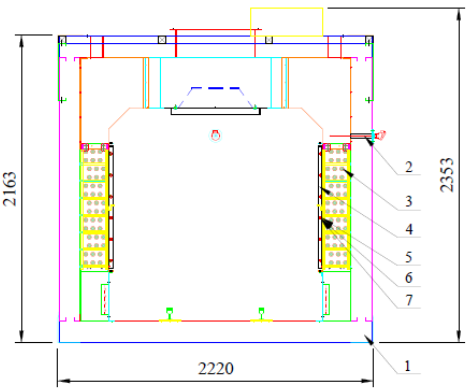
19	Exhaust ducting	Steel	WAG/WP/OV-001/5.1	PC	1
18	Hopper	Steel	WAG/WP/OV-001/4	PC	1
17	GI Spring Washer M8	Steel	2446760	PC	14
16	GI Washer M8	Steel	2446745	PC	14
15	Bolt M8x20	Steel	2446702	PC	14
14	Nut M8	Steel	2446781	PC	40
13	GI Spring Washer M8	Steel	2446760	PC	40
12	GI Washer M8	Steel	2446745	PC	80
11	Bolt M8x25	Steel	2446704	PC	40
10	Damper		WAG/WP/OV-001/3	PC	1
9	Nut M10	Steel	2446766	PC	12
8	GI Spring Washer M10	Steel	2446747	PC	12
7	GI Washer M10	Steel	2446733	PC	24
6	Bolt M10x40	Steel	2446661	PC	12
5	Oven circulation fan		WAG/WP/OV-001/2	PC	1
4	Hex head screw (D) M5X25	Steel	2448245	PC	38
3	Anchor bolt M10x100	Steel	2448097	PC	14
2	V bending	SS400	WAG/WP/OV-001/1.1	PC	4
1	Oven body		WAG/WP/OV-001/1	Set	1
Pos	**Name**	**Material**	**N.o Material**	**Unit**	**Q'ty**

Oven body:

Reference: Refer to the Design Drawings.







POWDER COATING BATCH OVEN BODY SECTION

Pos	Name	Material	N.o Material	Unit	Q'ty
8	Bolt M8x25	Steel	2446704	PC	12
7	Nut M8	Steel	2446781	PC	42
6	GI Spring Washer M8	Steel	2446760	PC	42
5	GI Washer M8	Steel	2446745	PC	42
4	Electric Heater Cover	Steel	WAG/WP/OV-001/1.4	PC	2
3	Electric Heater		WAG/WP/OV-001/1.3	PC	42
2	Thermocouple sensor		2450171	PC	2
1	Oven body frame		WAG/WP/OV-001/1.2	Set	1

DANGER
Do not place, block, or install any objects on, in front of, or next to oven, ceiling panels, personnel doors, or product doors.

This procedure describes how to install a Powder Coating Batch Oven.

1. Marking positions.
2. Place the oven body in position, level the equipment, and secure it.
3. Install the circulation fan.
4. Install the damper.
5. Install the hot air exhaust duct.
6. Install the rails, level them, and secure them.
7. Install the bottom and rear carts.

6.10. Electrical connection

6.10.1.Connecting

1. Position the cabinet, level it, and secure it in place.
2. Install the electrical tray and make connections according to the electrical diagram.

⚠ DANGER

Danger from electric current!

Danger to life and risk of injury.

- Before connecting the device, ensure that the external controller is switched off and the emergency stop button is actuated.

The device may only be commissioned if it complies with the basic requirements of directive 2006/42/EC after it has been assembled.

The operator must meet the requirements of the relevant paragraphs (If applicable):
– Illumination
– Normal Shutdown
– Emergency Shutdown
– Machinery Assemblies
– Selecting the Control or Operating Modes
– Power Supply Malfunction
– Risks from Moving Parts
– Selection of Protective Equipment Against Risks from Moving Parts
– Fire
– Lightning
– Warning Devices

The Powder Coating Batch Oven may only be connected to a controller and commissioning is conducted if the danger zone of the Powder Coating Batch Oven is secured through suitable safety measures. One safety measure is a guard (fence). If a safety fence with an entry point (door) is used, the safety function of the controller must satisfy a minimum safety integrity level of SIL 2 in accordance with EN IEC 62061 and PL d in accordance with EN ISO 13849-1. If a safety fence without an entry point is used, the safety function of the controller must satisfy a minimum safety integrity level of SIL 1 in accordance with EN IEC 62061 and PL c in accordance with EN ISO 13849-1.

A guard is not included in the scope of delivery of the Powder Coating Batch Oven. It is the user's responsibility to provide and install the guard.

6.11. Grounding

⚠ WARNING

Heavy paint mist if grounding is insufficient!

Risk of poisoning.

Insufficient paint application quality

- Earth all unit components.
- Earth the workpieces being painted.

The Powder Coating Batch Oven must be completely grounded for safety reasons. The grounding takes place through the connection of the grounding cable on the grounding connection of the Powder Coating Batch Oven. For this, WAGNER recommends the use of a copper cable of at least 4 mm with adequate mechanical strength.

6.11.1.Grounding the system

Pos	Description
1.	Ground the fan housing to the oven wall (M6).
2.	Ground the door to the oven wall (use durable copper wire).
3.	Ground the oven wall to the cabinet (M6).
4.	Install the grounding wire from the side point shown in the diagram to the grounding terminal of the electrical cabinet.

6.12. Safety checks

A skilled person must check to ensure that the device is in a reliable state after it is assembled and commissioned. This includes:

– Conduct safety checks in accordance with Chapter Safety Checks [on page 42].

7. OPERATION

7.1. Training the operating personnel

– The operating personnel must be qualified to operate the entire system.
– The operating staff must be familiar with the potential risks associated with improper behavior as well as the necessary protective devices and measures.
– Before work commences, the operating personnel must receive appropriate system training.

7.2. Tasks

1. Ensure that:
   - regular safety checks are performed in accordance with Chapter Safety Checks [on page 42]
   - commissioning is conducted in accordance with chapter Assembly and commissioning [on page 25].

7.3. Starting operation

Work steps:

1. **Turn ON** the main power switch on the control panel. 
2. **Turn ON** the control power key on the control panel and wait for the system to start. 
3. From the main interface, select the settings box.
4. In the settings screen, adjust the parameters according to the product requirements. The recommended parameters are as follows: High: 65%; Balance: 45%; Low: 30%
5. Select the Home screen box on the interface.
6. **Turn ON** the circulation fan.
7. Make sure that the damper is in a closed position.
8. Set the drying time on the timer.
9. Set the damper mode after the drying process is complete. (Enable or disable “Damper open manual”).
10. Turn on the heater.
    After each drying cycle is completed, the alarm will sound for 30 seconds to notify the operator, allowing them to proceed with the next step of the operation.

7.4. Switching Off the Powder Coating Batch Oven

7.4.1. Switching Off in normal operation

The Powder Coating Batch Oven is switched off.

NOTE:
If the damper is open, press the **OFF** button to close it.

1. The heater control button will manualally **turn OFF** when the drying process is completed. If the operator wants to finish the drying process before setting time, manually **turn OFF** heater control button.
2. Switch the damper to the closed position.
3. **Turn OFF** the circulation fan (the temperature inside the chamber must be below 80°C).
4. Return to the main interface by selecting the Home screen box.
5. **Turn OFF** the control power key on the control panel.
6. **Turn OFF** the main power switch on the control panel.

7.4.2. Switching Off the Powder Coating Batch Oven in the event of faults or emergencies

In the event of faults or emergencies, the Powder Coating Batch Oven, together with the system, can be switched off by means of the emergency stop equipment.

8. CLEANING AND MAINTENANCE

8.1. Cleaning

8.1.1. Cleaning personnel

Cleaning work should be undertaken regularly and carefully by qualified and trained personnel. They should be informed of specific hazards during their training.

The following hazards may arise during cleaning work:

- health hazard from inhaling powder lacquer,
- use of unsuitable cleaning tools and aids.

8.1.2. Cleaning procedures

The cleaning intervals should be adapted by the operator depending on the level of use and if necessary, the amount of dust.

If in doubt, we recommend contacting WAGNER's specialist personnel.

8.1.3. Cleaning steps

Turn off the power and wait for the temperature to drop to a safe level.

The following table specifies the time intervals and the number of individual cleaning steps.
The individual cleaning steps are described in Chapter **Cleaning steps** [▶▶ 40].

Cleaning intervals	• **Cleaning steps**					
	1	2	3			
During first commissioning	✓					
Weekly	✓	✓	✓			
After extensive use	✓	✓	✓			

1. Check and clean temperature sensors.
2. Check and clean the electrical cabinet.
3. Check and clean inside the drying chamber.

8.2. Maintenance

8.2.1. Maintenance personnel

Maintenance work should be undertaken regularly and carefully by qualified and trained personnel. They should be informed of specific hazards during their training.

The following hazards may arise during maintenance work:

- health hazard from inhaling powder lacquer,
- use of unsuitable tools and aids.

A skilled person must ensure that the device is checked for being in a reliable state after maintenance work is completed.

8.2.2. Maintenance instructions

⚠ DANGER

Incorrect maintenance/repair!

Danger to life and equipment damage.

- Only a WAGNER service center or a specially trained person may conduct repairs and replace parts.
- Use only WAGNER original spare parts and accessories.
- Only repair and replace parts that are listed in the spare parts chapter and that are assigned to the device.
- Before all work on the device and in the event of work interruptions:
  - Switch off the energy.
- Observe the operating and service manuals of the individual components for all work.

Prior to maintenance

– Flush and clean the system according to chapter Cleaning Procedures [40].

After maintenance

- Carry out safety checks in accordance with Chapter Safety Checks [42].
- Put the system into operation and check for leaks.
- Have the system checked for safe conditions by a skilled person.

8.2.3. Safety checks and maintenance intervals

Grounding checks every day

- Before starting work, conduct a visual check to ensure that the system is grounded.

Make sure nobody is inside the oven before switching on the oven

- Always check the inside of the oven: ensure there are no people inside before operating the oven.

No.	Sub assembly		Daily	Weekly	Monthly	Quarterly	Semi-annually	Annually	Task	Technical Requirement	Note
1.	Ovenbody	Silicon connection point			x				- Inspect and seal any joints with silicone if they are loose or leaking heat.	- Ensure that these connections are sealed tightly and do not allow any heat leakage.	
		Screw connection point				x			- Inspect and tighten all screw joints after a period of operation.	- Ensure that all joints are securely fastened to prevent any noise caused by vibration during operation.	
2.	Circulation fan	Circulation fan bearing			x				- Inspect, grease, replace the bearing grease, or clean the inside of the bearings on the combustion chamber circulation fan shaft. Check the seals and tighten the bolts by securing the seals on both ends of the support brackets to prevent leakage.	- Ensure that the amount of grease is filled to 1/2 of the bearing's clearance.	
		Circulation fan pully belt			x				- Check the condition of the belt, adjust it to ensure it is neither too loose nor too tight. If the belt is worn out, replace it with a new one.	- Ensure that the belt is not loose or worn out.	

		Circulation fan motor			x				- Regularly monitor the sound of the fan motor while it operates. - Check the temperature of the electric motor during operation. - Measure energy consumption using an ammeter. - Inspect the contact points of the fuse, circuit breaker, and other starting points of the fan motor. - Clean the exterior of the motor, ensuring no dust accumulation.	- Ensure the fan motor runs smoothly, with no unusual noises. - Tighten the motor base, check the motor insulation, apply sufficient grease, and ensure there are no leaks. The two pulleys must be aligned and not loose relative to the fan shaft.	
						x			- Perform minor maintenance on the fan motor every 3 months.		
								x	- Perform major maintenance on the fan motor once a year.		
3.	Heating resistor sensors					x			- Use a calibrated temperature gauge to check.		

No.	Sub assembly	Daily	Weekly	Monthly	Quarterly	Semi-annually	Annually	Task	Technical Requirement	Note
4.	Damper			x				- Clean and maintain the surfaces of damper components to prevent dust buildup that could obstruct damper operation: external surfaces of the electric damper, connection points between the electric damper and damper blade shaft, and the damper blade shaft.		
					x			- Inspect the bolted connection point securing the electric damper to the damper blade shaft. Ensure the connection is secure enough to allow smooth movement of the damper without noise.		
5.	Natural exhaust							- Inspect and tighten all screw and bolt joints after a period of operation.	- Ensure that all joints are securely fastened to prevent any noise caused by vibration during operation.	
6.	Upper and lower trolleys		x					- Upper trolley: Inject high-temperature grease (200°C) into the grease nipple on the wheels. - Lower trolley: Use a grease gun to apply regular grease to the shaft and		

								bearings of the swivel wheels.		
7.	SCR (Silicon Controlled Rectifier)							- Use a vaccum cleaner to clean dust		

9. TROUBLE SHOOTING AND RECTIFICATION

9.1. Alarm

No.	Error Name	Explanation	Rectification
1	Emergency Stop	**Emergency stop** button is pressed	Check the cause of the emergency stop, resolve the issue (if any), then release the **emergency stop** button.
2	SCR Alarm	SCR controller alarm	Check the 3-phase power supply or whether the SCR controller is operating normally; troubleshoot if necessary.
3	Phase Protector Alarm	Phase loss or voltage drop error	Check the 3-phase power supply to the main MCCB; troubleshoot if needed.
4	Safety Module Signal Alarm	Safety module alarm	Check the emergency stop button and the contactors for normal operation; replace if faulty.
5	Temperature High	Temperature exceeds protection threshold	Check the set values, inspect the equipment for normal operation.
6	Fan Overheat	Motor temperature is too high	Check if the motor is jammed, causing high temperature; resolve the root cause if so.

After addressing the root cause of the error, press the **Reset Alarm** button to confirm the error has been resolved.

⚠ DANGER

Incorrect maintenance/repair!

Danger to life and equipment damage.

- WAGNER devices, protective systems, and safety, monitoring and control equipment may only be serviced/repaired by trained WAGNER service personnel or skilled person. Note national regulations!
- Service, repair or replacement of devices or parts of devices may only be performed outside the hazard area!

Malfunction	Cause	Rectification
Main power is switched off		Check if the phase indicator light on the control panel is on. - Ensure the main power is supplied to the electrical cabinet
MCBs are switched off		- Check if all the MCBs (Miniature Circuit Breakers) inside the electrical cabinet are fully switched on.

10. REPAIRS

10.1. Repair personnel

Repair work should be undertaken carefully by qualified and trained personnel. They should be informed of specific hazards during their training.

The following hazards may arise during repair work:

– health hazard from inhaling powder lacquer,

– danger due to residual pressure in compressed-air lines. – eye injuries from escaping powder lacquer, – use of unsuitable tools and aids.

A skilled person must check to ensure that the device is in a reliable state after it is repaired. A function test should be performed.

10.2. Repair notes

⚠ DANGER

Incorrect maintenance/repair!

Danger to life and equipment damage.

- Only a WAGNER service center or a suitably trained person may carry out repairs and replace parts.
- Use only WAGNER original spare parts and accessories.
- Only repair and replace parts that are listed in the spare parts chapter and that are assigned to the device.
- Before all work on the device and in the event of work interruptions:
  - Switch off the energy.
  - Disconnect the control unit from the mains.
- Observe the operating and service manual for all work.

11. FUNCTION TEST AFTER REPAIR WORK

All functions must be checked in manual and manual mode.

12. INSPECTIONS

If the system is used for electrostatic coating with ignitable coating powders, the test must be performed in accordance with EN 50177.

12.1 Abbreviations

ER	Employer	FT	Function test
FPE	Fire protection engineer	SI	Standard inspection
MFR	Manufacturer	CM	Continuous monitoring
QEW	Electrician	VI	Visual inspection
SP	Skilled person	ME	Measurement
TP	Trained person	TI	Technical inspection

13. DISASSEMBLY AND DISPOSAL

13.1 Disassembly

⚠ WARNING

Incorrect disassembly!

Risk of injury and damage to the device.

- Before starting disassembly:
  - Switch off the energy and compressed air supply.
  - Ensure the grounding of all system components.
  - Secure system against being switched back on without authorization.
- Observe the operating manuals when conducting all work.

We recommend having the WAGNER system disassembled by WAGNER or another specialist.

Before starting disassembly, all supply media (electric current, compressed air) must be disconnected at the connection points.

Before starting disassembly, check whether the supply lines have been interrupted if necessary.

The empty system should be thoroughly cleaned. Fire loads such as unused in exhaust air pipes etc. should be removed to keep the risk of fire during disassembly as low as possible.

We recommend reporting to the public authorities the fact that systems with mandatory approval requirements are decommissioned.

13.2 Disposal

Separate all materials encountered during disassembly as clearly as possible in line with statutory requirements. Conduct appropriate measures to ensure that no dangerous substances can enter the system as it is being disassembled. All waste produced must be separated and disposed of in line with local requirements.

Used materials are:

- Steel
- Plastics
- Cables ...

14. ACCESSORIES

Pos	Accessories	Order code	Q'ty	Unit
1	Bottom trolley	WAG/BCA/OV-001	2	Set
2	Top trolley	WAG/TCA/OV-001	2	Set

15. SPARE PARTS

15.1. How to order spare parts

Always supply the following information to ensure delivery of the right spare part:

Order number, designation, and quantity

The quantity need not be the same as the number given in the quantity column “Q’ty“ on the list. This number merely indicates how many of the respective parts are used in each component.

The following information is also required to ensure smooth processing of your order:

- Billing address
- Delivery address
- Name of the person to be contacted in the event of any queries
- Type of delivery (normal mail, express delivery, air freight, courier etc.)

Identification in spare parts lists

Explanation of column “K“ (marking) in the following spare parts lists:

⧫ Wearing parts. Wearing parts are not included in the warranty.

* Included in service set

⧯ Not part of the standard equipment but available as a special accessory

Explanation of order no. column:

-- Item not available as spare part.

/ Position does not exist.

15.2. Notes on the use of spare parts

⚠ DANGER

Incorrect maintenance/repair!

Danger to life and equipment damage.

- Only a WAGNER service center or a specially trained person may conduct repairs and replace parts.
- Use only WAGNER original spare parts and accessories.
- Only repair and replace parts that are listed in the spare parts chapter and that are assigned to the device.
- Before all work on the device and in the event of work interruptions:
  - Switch off the energy.
- Observe the operating and service manuals of the individual components for all work.

15.3. Spare parts list

Pos	Group	Description	Order number	Unit	Q'ty
1	A2. CIR.FAN 182 (BATCH OVEN) (Q'ty: 01pc)	Foot mounted motor ABB 4KW X 4P	N/A	PC	1
2	A2. CIR.FAN 182 (BATCH OVEN) (Q'ty: 01pc)	Shaft + Key WAG/WP/OV-F182/3,4	N/A	PC	1
3	A2. CIR.FAN 182 (BATCH OVEN) (Q'ty: 01pc)	Pulley on Shaft, Diameter 120, WAG/WP/OV-F182/5	N/A	PC	1
4	A2. CIR.FAN 182 (BATCH OVEN) (Q'ty: 01pc)	Pulley on motor, Diameter 170, WAG/WP/OV-F182/6	N/A	PC	1
5	A2. CIR.FAN 182 (BATCH OVEN) (Q'ty: 01pc)	Fan flange WAG/WP/OV-F182/7,8	N/A	PC	1
6	A2. CIR.FAN 182 (BATCH OVEN) (Q'ty: 01pc)	Spreading wings, Diameter 150 WAG/WP/OV-F182/9	N/A	PC	1
7	C2. OVEN- IR HEATER (Q'ty: 01pc)	Electric heater - 3Kw, 230V WAG/WP/OV-001/1.3	N/A	PC	42
8	I2. TOP CART (Q'ty: 01pc)	Wheel WAG/TCA/OV-001/4	N/A	PC	8
9	I2. TOP CART (Q'ty: 01pc)	Wheel shaft WAG/TCA/OV-001/5	N/A	PC	8
10	J1. BOTTOM CART (Q'ty: 01pc)	Lockable swivel wheel 4040S/A1PCTB	N/A	PC	8
11	O2. CIR.FAN 200 (BATCH POWDER BOOTH)	Flange motor ORANGE1 Ex-e 4kW 4P B5 IE3	N/A	PC	1
12	O2. CIR.FAN 200 (BATCH POWDER BOOTH)	Fan flange BPB-F200/3,4/7	N/A	PC	1

15.4. Wear & tear list

Pos	Group	Description	Order number	Unit	Item Q'ty	Lifetime
1	A2. CIR.FAN 182 (BATCH OVEN) (Q'ty: 01pc)	Bando pulley belt B53	B53	PC	2	6-9 months
2	A2. CIR.FAN 182 (BATCH OVEN) (Q'ty: 01pc)	Bearing UKP209	UKP209	PC	2	9-12 months
3	I2. TOP CART (Q'ty: 02pcs)	Bearing NTN 6206-2Z	NTN 6206-2Z	PC	16	9-12 months
4	J1. BOTTOM CART (Q'ty: 01pc) - 3388 - 4020	Bearing 6203ZZ	6203ZZ	PC	2	9-12 months

16. DECLARATION OF CONFORMITY

16.1 EU declaration of conformity

Herewith we declare that the supplied version of:
Powder Coating Batch Oven (Project Number: 21834)
complies with the following guidelines:

2006/42/EC

Applied standards, in particular:

EN ISO 12100:2010	EN 746-1:1997/A1:2009
EN 60204-1:2018	

Identification:
CE
EU Declaration of Conformity
The EU Declaration of Conformity is enclosed with this product. If needed, further copies can be ordered through your WAGNER dealer by specifying the product name and serial number.
Order number: 2474233

Order number 2474236
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Subject to changes without notice