

INSTRUCTIONS FOR USE

Sintering furnace

e.ON
sinter fast +



Rév 011221

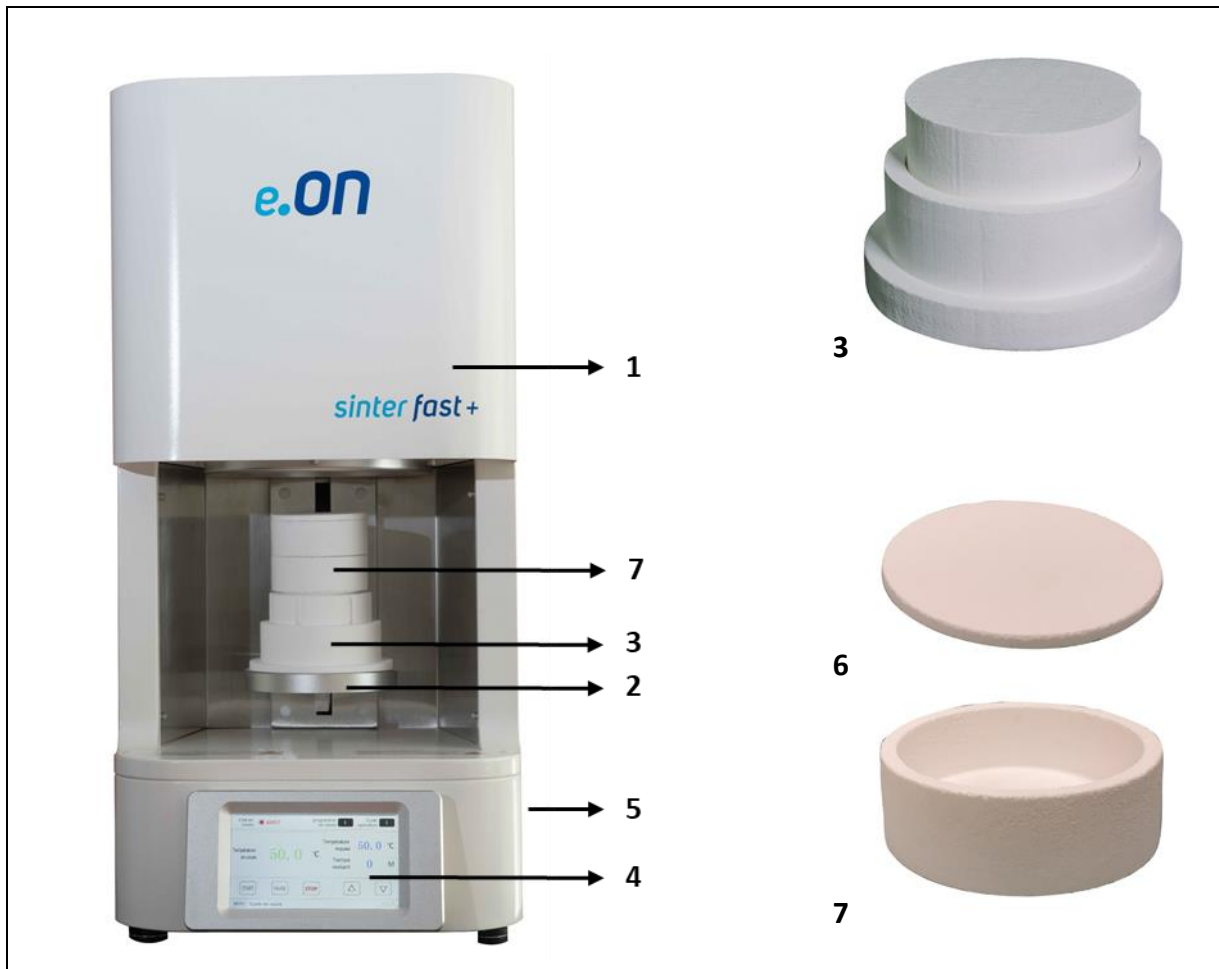
e.ON sinter fast +

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Non-contractual visual

Translation into English from original in French

A. EQUIPEMENT DESCRIPTION



N°	DESCRIPTION
1	Upper part of furnace
2	Platform
3	Support (<i>base and additional raise support</i>)
4	Touch screen
5	Power switch ON/OFF (<i>rear side</i>)
6	Tray for sinterizing cover
7	Tray for sinterizing

B. INSTRUCTIONS FOR USE

1. SAFETY INSTRUCTIONS

1.1. USE

e.ON sinter fast + is a sintering furnace for production of many elements in conventional cycle and the rapid production of some elements for Zirconium oxide (ZrO₂) dental restorations. This furnace has to be operated only by dental professionals. e.ON sinter fast + have to be used in the conditions and for the intended use in this manual. Any other use that will be made of it is considered inappropriate. In this case, the manufacturer declines all liability and immediately cancels the equipment warranty.




According to the product's instructions and functionalities, **it is imperative to read carefully the manual before furnace installation and operations.** Retain the manual for future reference.




1.2. SAFETY INSTRUCTIONS

Pictograms' meaning used in these instructions for use:

	General warning		Electrical hazard		Burn hazard - Hot surface
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Observe following safety instructions:

	<ul style="list-style-type: none"> - During operation and after use, the furnace head surface, platform, support, tray for sinterizing and cover may reach high temperatures: do not touch. - Wear suitable gloves for handling prosthetic objects, tray for sinterizing and cover and support.
	<ul style="list-style-type: none"> - The unit has to be connected to an electrical installation in accordance with the applicable standard in the country in which it is being used. This installation has to provide protection against overcurrent, overload and ground faults. - This furnace requires its own power line and has to be connected to a circuit breaker. - Connect it directly to the mains socket. Do not use multiple sockets. - Ensure that the connection cables are in perfect condition to prevent short circuits. - Before any technical intervention, the unit has to be switched off (with the breaker) and disconnected from the main power supply. - Do not spill liquid on the ventilation openings or inside the furnace.
	<ul style="list-style-type: none"> - Ensure that the movement of the tray is not blocked by an object, this may result in malfunction of the unit and damage to certain components. - The furnace must be placed on a flat surface, keeping sufficient clearance around the unit to ensure proper ventilation (<i>see chapter 4.2</i>). - Do not block the ventilation openings to avoid overheating.

	<ul style="list-style-type: none">- For moving:<ul style="list-style-type: none">- take hold the furnace by its base: NEVER LIFT BY UPPER PART OF FURNACE.- the furnace must remain in an upright position: NOT HORIZONTAL POSITION.- do not leave any accessories or the support in the heating chamber.- Never use the furnace without support.- Use only the support, tray for sinterizing and cover provided by UGIN DENTAIRE. Before use, check it (no dirt or damage). If damaged: do not use.- Respect the positioning of support (base and additional raise support) and the maximum number of trays to stack (see chapter 6.7): damage equipment risk.
	<ul style="list-style-type: none">- The chamber is made up refractory ceramic fibers.<ul style="list-style-type: none">- Handle carefully.- They can release dust: remove with a vacuum cleaner - do not blow or use compressed air.
	<ul style="list-style-type: none">- Use only genuine spare parts. The use of non-original spare parts voids any warranty for your device.- Do not introduce stranger objects inside the unit during the maintenance operations. It is forbidden to modify the material without authorization.- Do not execute different operations of maintenance from those listed in this manual. Any operation not included in this manual can involve risks.- For any further information concerning installation, maintenance and use, contact the customer's service UGIN DENTAIRE.

1.3. WASTE DISPOSAL

Observe the waste disposal regulations for electrical and electronic equipment: do not dispose of with household waste.

The unit is subject to Directive 2012/19/EU on waste electrical and electronic equipment and to the laws of the country in which it is being used, and must be disposed of in accordance with applicable regulations.

The chamber contains refractory ceramic fibers. They must be disposed in accordance with applicable regulations in force.

2. EC DECLARATION OF CONFORMITY

The equipment's EC declaration of conformity is provided as appendix of instructions for use.

Content of the declaration EC:

- Name and address of the manufacturer:
UGIN DENTAIRE
25 rue de la Tuilerie
38170 SEYSSINET-PARISSET – FRANCE
- UGIN DENTAIRE declares, on its own exclusive responsibility, that the product:
 - Sintering furnace **e.ON sinter fast +**
 - Serial number: *see the equipment's EC declaration of conformity*
- Fulfills the essential requirements of health and safety of the following directives:
 - Machinery directive 2006/42/EC
 - Electromagnetic compatibility directive 2014/30/EU

3. TECHNICAL INFORMATION

3.1. TECHNICAL DATA

e.ON sinter fast + is a sintering furnace for Zirconium oxide (ZrO₂) dental restorations. This furnace has to be operated only by dental professionals and in the conditions described in this manual (*see chapter 1.1 and 3.2*).

TECHNICAL DATA	
Maximum temperature	1 730°C
Operating temperature	Less than 1 650°C
Temperature accuracy	± 1°C
Heating rate	To 94°C/minute maximum
Screen	High definition colour touch screen 7" (155x87mm)
Number of programs	40 free programs (with 40 possible stages)
Number of heating elements (rods)	4 in MoSi ₂ (<i>molybdenum disilicide</i>)
Sensor	Thermocouple double components Pt/Rh (<i>Platinum / Rhodium</i>)
Dimensions (<i>height, width, depth</i>)	830mm x 420mm x 600mm
Weight	74 kg
Chamber size (<i>height, diameter</i>)	120mm x 110mm
Maximum power consumption	3 kW
Supply voltage	230 V (50/60 Hz)

3.2. CONDITIONS OF USE, TRANSPORT AND STORAGE

▪ **Authorised conditions of use**


- Ambient temperature: +10°C to +40°C.
- Humidity range: maximum relative humidity 80% for temperatures until 31°C, without condensation and decrease linear until 50% to 40°C, without condensation.
- Ambient pressure: up to an altitude of 2000 m above sea level.

▪ **Authorised conditions of storage**

- Ambient temperature: -20°C to +65°C.
- Humidity range: maximum relative humidity 80%.
- Ambient pressure: up to an altitude of 2000 m above sea level.

▪ **Conditions to transport**

- Wait the complete cooling before packing/transporting.
- Use the original packaging only, with the protective elements (polystyrene...).
- Take hold the furnace by its base, never lift by upper part of furnace.
- For transport, the furnace must remain in an upright position: not horizontal position.
- Install the furnace in the packaging with the protective elements. Also protect the accessories for transportation.
- During transport, do not leave moving parts (including accessories and support) in the chamber that could damage the rods.



NEVER LIFT BY UPPER PART OF FURNACE: risk material damage.
 For transport, the furnace must remain in an **upright position: NOT HORIZONTAL POSITION.**
 Heating elements may be damaged in horizontal position due to vibration/shock.

3.3. ACCESSORIES

- **Accessories delivered** with the furnace (*included in the packaging*):

<i>ACCESSORIES</i>	<i>QUANTITY</i>	<i>UGIN CODE</i>
- Tray for sinterizing	2	FCE07SIN0030
- Tray for sinterizing cover	1	FCE07SIN0023
- Box of zirconia pearls	1	FCE03SIN0001
- Support <i>(two parts: base and additional raise support)</i>	1	FCE07SIN0015
- Wrench	1	---
- Allen wrench <i>(number 3 and 4)</i>	2	---
- Exhaust pipe	1	

4. INSTALLATION

4.1. UNPACK

- Unpack **e.ON sinter fast +** and check that it is in perfect order (furnace and accessories).
- Any defects should be reported to the carrier.
- Remember to get the carrier to sign the delivery note.

NOTE: keep the original packaging to transport the furnace (see chapter 3.2)

4.2. INSTALLATION

- Install in a ventilated room. Observe the conditions indicated in chapter 3.2.
- Place the furnace on a flat, level and clear surface. Keep a distance from other objects around not less than 25 cm. Keep it away from heat sources (radiators and/or other equipment that release heat).
- Despite excellent insulation, the furnace provides heat and, in the long term, can discolour surfaces that are nearest.
- Do not shake the furnace, avoid vibrations and shocks.
- The molybdenum silicon rods are very brittle at room temperature: DO NOT HANDLE THEM. Avoid moving the furnace after installation.
- Dust, corrosive or explosive gases can damage the body and the insulation.
- Its forbidden placing inflammables, toxic, volatile or explosives around the furnace.



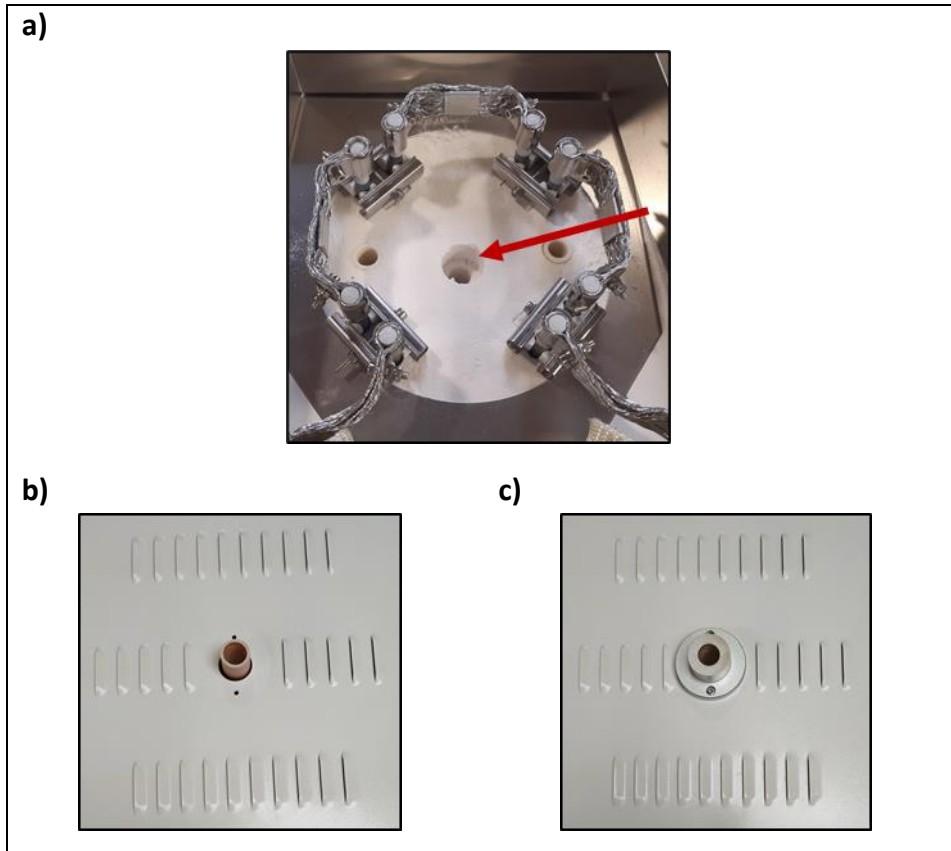
This unit requires its own power line and has to be connected to a circuit breaker.

Grounding is mandatory to avoid accidents and the dangers of overheating the power line.

Due to the power of furnace: **connect it directly to the primary socket**, do not use multiple sockets (risk of electrical interference).

4.3. BEFORE START-UP

- Open the furnace upper cover (unscrew).
- Remove carefully the cushioning foam pad protecting heating elements.
- **Then visually inspect the heating element** (no damage). Avoid handling.
- **Install exhaust pipe:**
 - a) Install the conduit on the intended location (in the centre of heating elements)
 - b) Close the furnace cover (screw)
 - c) Fix the base of exhaust pipe (screw)



5. START-UP

After checking that the mains voltage matches that noted on the rating plate, plug the cord into a standard **20A socket** with a ground terminal, or which is recommended, **directly on a minimum 20A line of the electrical panel**.

NOTE: If not used for a long time, switch off the power supply.


- Activate the **breaker (ON/OFF)** at the back of furnace.
- Following power up, the initialization interface appears on the screen. The main screen automatically appears as follows: **menu “Working interface”**.

Note:

Temperature unit: degrees Celsius (°C)

Unit of time: minutes (M)



- **Lower the platform:** press the "down arrow" key on the touch screen 
- **Remove the cushioning foam pad** placed on the platform and inside the heating chamber.
- Remove the dust with a vacuum cleaner (do not use compressed air).
- Visually inspect the heating elements.
- First time use, press the “arrow key upward” and “arrow key downward” on touch screen.
- Check the alignment of the platform with the base of the chamber: movements must be made without friction.
- Do not place any objects behind the platform that could obstruct its movement or fall, which could damage the furnace or cause a failure.
- Place the support on the platform.



DO NOT PLACE ANY OBJECT WHICH MAY BLOCK THE ASCENT AND DESCENT OF THE PLATFORM



IMPORTANT

- **Carry out a decontamination program as a precautionary measure before the first use of the furnace:** start the pre-recorded program number 40 (*see chapter 6.6*).
- **For the first time or after a long time without use, need to preheat the muffle furnace to eliminate condensation and avoid fractures of the refractory material: launch a decontamination program** (pre-recorded program number 40).









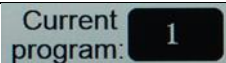
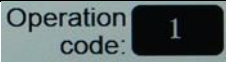
6. USE AND CONFIGURATION

6.1. WORKING INTERFACE

Following power up, the initialization interface appears on the screen.

The main screen automatically appears: menu **“Working interface”**.

6.2. CONTROL KEYS

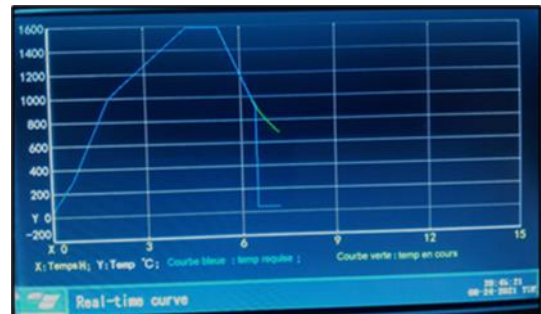
PICTURES	KEYS	DESCRIPTION
	Start cycle (RUN)	The selected program is started.
	Pause (HOLD)	In running state, the program will be in a suspended state, the temperature remains constant.
	Stop (STOP)	Under operating state or suspended state, the program will end.
	Ascent platform (ARROW KEY UPWARD)	Press this key, the platform will rise, press again, the platform will stop at the desired level.
	Descent platform (ARROW KEY DOWNWARD)	Press the key, the platform go down, press again, the platform will stop at the desired level. <i>NOTE: if the furnace temperature is above 300°C, it is not possible to start a cycle (risk of damaging the insulation materials). Then, press descent platform key (ARROW KEY DOWNWARD): an alert message appears in the status bar (bottom of the screen).</i>
 	Menu (MENU or logo Microsoft)	Pull-down menu appears, <u>as shown below:</u>
	Working interface	Parameters current cycle display.
	Real-time curve	Display of the cycle curve (temperature/time).
	Program editor	Program settings.
	Parameter setting	Software settings. Only access with technician code (reserved for technicians customer's service UGIN DENTAIRE).
	Language selection	Available languages: English, French, Spanish and Italian.
	Date setting	Setting the date, time and day of the week.
	Current program	Number of the recorded program that will start or in progress
	Operation code	This code is a follow-up of the cycle progress. It is displayed according to the programmed steps (operation code No. 1: 1 st step; operation code No. 2: 2 nd step; etc.). When starting the cycle, check that the operation code displayed is at 1.

6.3. REAL-TIME CURVE (CURRENT CYCLE)

This screen shows the diagram of the current cycle (time/temperature).

On the screen are displayed two curves: the temperature setting in the cycle (blue curve) and the temperature in real time (green curve).

The green curve appears with the blue curve superimposed with the temperature is regulated.



6.4. INTERFACE PROGRAM EDITOR

A total of 40 programs, composed of 40 temperature/time pairs, can be edited and saved by selecting a different program number, each program and pairs of can be edited. To select a program, press the right or left arrow key: the numbers of programs is displayed on the screen.

For each program number, the cycle parameters are displayed as a chart:

- C represents temperature (°C), and
- T represents time (minutes).

C01	50.0	C06	0.0	C11	0.0	C16	0.0
T01	150	T06	0	T11	0	T16	0
C02	1550.0	C07	0.0	C12	0.0	C17	0.0
T02	120	T07	0	T12	0	T17	0
C03	1550.0	C08	0.0	C13	0.0	C18	0.0
T03	-121	T08	0	T13	0	T18	0
C04	0.0	C09	0.0	C14	0.0	C19	0.0
T04	0	T09	0	T14	0	T19	0
C05	0.0	C10	0.0	C15	0.0	C20	0.0
T05	0	T10	0	T15	0	T20	0

Program: 10 Save Next page

Each program is two pages: the first page displays the pairs from C01/T01 to C20/T20 and the second page from C21/T21 to C40/T40. The "NEXT PAGE" key switches from the first page to the second page.

6.4.1. CHANGE SETTINGS

When the program number is displayed on the screen, "press" the parameter to be modified. A numeric keypad is displayed to select the desired value.

Enter the new value using the numeric keypad and press "OK" to save.

A confirmation message is displayed:

"Caution: press the Ok key, the data will be saved".

Press "Ok" to confirm or "Cancel" to cancel.

When the desired changes of program have been made, press "SAVE" key to save the complete program. After validation, the "Working interface" displayed on the screen.



6.4.2. PROGRAMMING INSTRUCTIONS

C: Temperature in degrees Celsius (°C)

T: Time in minutes (min)

Temperature 1	Used as the <u>temperature start</u> value (usually set to 50).
Time 1	Total duration of first stage (0 to 9999 minutes).
Temperature 2	Final temperature of first stage and start temperature of second stage. The value must be <u>less than 94°C/min</u> , up to 1 000°C.
Time 2	Total duration of second stage (0 to 9999 minutes).
Temperature 3	Final temperature of second stage and start temperature of third stage. If C3 is less than C2 (<u>temperature decrease</u>).
Time 3	Total duration of third stage (0 to 9999 minutes).
Temperature 4	Final temperature of third stage and start temperature of fourth stage. If necessary, the parameters are programmed as for the previous steps.
Last time "-121"	Indicates the end of program, temperature controller works according to the temperature/time parameters setting. When the program detects a "-121", STOP command is activated with return to the previously selected program. "-121" also indicates correct cycle sequence.

ATTENTION: The operator must setting the temperature/time initial and the temperature/time final for each stage. These data must be calculated from the desired increase/decrease rate, following the recommendations given (see examples below). Never write on the screen the desired speed directly, the software cannot make the calculation and it takes the value as a temperature or a time as is.



ATTENTION: end program with “-121” time, otherwise cycle will not stop.

6.4.2.1. EXAMPLES OF CALCULATION

▪ Calculation time of second stage (T01)

From the initial and final temperature values of the second stage, calculation of the time stage:

$$\left. \begin{array}{l} \text{Temperature 1} \rightarrow \text{C01} = 50^{\circ}\text{C} \\ \text{Temperature 2} \rightarrow \text{C02} = 1000^{\circ}\text{C} \end{array} \right\} \begin{array}{l} \text{Temperature difference:} \\ \text{C02} - \text{C01} = 1000^{\circ}\text{C} - 50^{\circ}\text{C} = 950^{\circ}\text{C} \end{array}$$

Increase rate 47,5°C/minute


$$950^{\circ}\text{C} \text{ at a rate of } 47,5^{\circ}\text{C}/\text{min} \rightarrow 950^{\circ}\text{C} / 47,5^{\circ}\text{C} = 20 \text{ min} \rightarrow \text{T01} = 20 \text{ minutes}$$

▪ Parameters for remain to end temperature (T03) or at a given temperature (intermediate holding stage)

Parameters temperature/time of end stage to obtain remains to the end temperature of 1490°C for 10 minutes:

$$\left. \begin{array}{l} \text{Temperature 2} \rightarrow \text{C02} = 1490^{\circ}\text{C} \\ \text{Temperature 3} \rightarrow \text{C03} = 1490^{\circ}\text{C} \end{array} \right\} \begin{array}{l} \text{Temperature difference} = 0^{\circ}\text{C:} \\ \text{Temperature remains to } 1490^{\circ}\text{C} \end{array}$$

$$\left. \begin{array}{l} \text{Time remains: 10 minutes} \end{array} \right\} \begin{array}{l} \text{Time 03: 10 minutes} \\ \rightarrow \text{T03} = 10 \text{ minutes} \end{array}$$



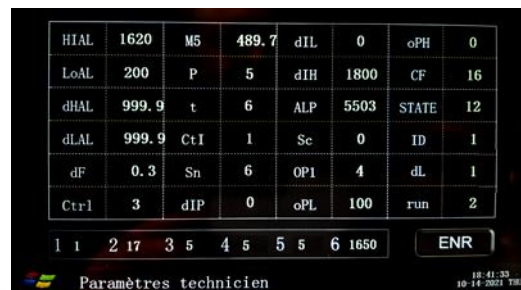
Zirconia **SINTERING TEMPERATURES** are given as indicative by disc manufacturer. If necessary, this one can **be adjusted from -15°C and up to +50°C** around the final temperature recommended. **We recommend adjusting the temperature/time for special work and test to confirm the desired results.**

6.5. PARAMETER SETTING

This interface requires a password to be accessible.

No data may be modified without authorization: risk of damages on the furnace or trigger heating untimely.

The modification of the parameters is therefore **reserved for technicians of customer’s service UGIN DENTAIRE.**



NOTE: even if changes are made to the settings, when saving them, a screen is displayed to insert the password. When no password has been inserted and validation is done with the "Ok" key, the changes made are not saved and the original settings remain applicable.

6.6. PROGRAMS

Four programs are pre-recorded in the furnace: No. 1 is a conventional cycle, No. 2 and No. 3 are a shorts programs, and No. 40 is the decontamination program. Programs No. 1, 2 and 3 are given as an example.



CAUTION: comply with the recommendations of the manufacturer of the zirconia used to verify compatibility with the perform of a short program and the maximum number of elements in short cycle.

*Follow its instructions for programming within the technical limits of the e.ON sinter fast + (the value of the heating rate must be less than 94°C/min up to 1000°C).
Check with the cycle diagram that the furnace follows the requested temperature curve.*

6.6.1. PROGRAM PRE-RECORDED No. 1 (conventional cycle)

C01	50,0	C06	900,0	C11	0,0	C16	0,0
T01	50	T06	-121	T11	0	T16	0
C02	300,0	C07	0,0	C12	0,0	C17	0,0
T02	70	T07	0	T12	0	T17	0
C03	1000,0	C08	0,0	C13	0,0	C18	0,0
T03	150	T08	0	T13	0	T18	0
C04	1530,0	C09	0,0	C14	0,0	C19	0,0
T04	120	T09	0	T14	0	T19	0
C05	1530,0	C10	0,0	C15	0,0	C20	0,0
T05	70	T10	0	T15	0	T20	0

6.6.2. PROGRAM PRE-RECORDED No. 2 (short cycle, for up to 5 single unit)

C01	50,0	C06	1530,0	C11	0,0	C16	0,0
T01	15	T06	20	T11	0	T16	0
C02	300,0	C07	900,0	C12	0,0	C17	0,0
T02	30	T07	-121	T12	0	T17	0
C03	1200,0	C08	0,0	C13	0,0	C18	0,0
T03	15	T08	0	T13	0	T18	0
C04	1400,0	C09	0,0	C14	0,0	C19	0,0
T04	17	T09	0	T14	0	T19	0
C05	1530,0	C10	0,0	C15	0,0	C20	0,0
T05	60	T10	0	T15	0	T20	0

6.6.3. PROGRAM PRE-RECORDED No. 3 (short cycle, for up to 5 single unit)

C01	50,0	C06	1550,0	C11	0,0	C16	0,0
T01	9	T06	15	T11	0	T16	0
C02	900,0	C07	1550,0	C12	0,0	C17	0,0
T02	6	T07	-121	T12	0	T17	0
C03	1100,0	C08	0,0	C13	0,0	C18	0,0
T03	2	T08	0	T13	0	T18	0
C04	1100,0	C09	0,0	C14	0,0	C19	0,0
T04	13	T09	0	T14	0	T19	0
C05	1400,0	C10	0,0	C15	0,0	C20	0,0
T05	14	T10	0	T15	0	T20	0

6.6.4. PROGRAM PRE-RECORDED No. 40 - DECONTAMINATION PROGRAM

C01	50,0	C06	900,0	C11	0,0	C16	0,0
T01	50	T06	-121	T11	0	T16	0
C02	300,0	C07	0,0	C12	0,0	C17	0,0
T02	70	T07	0	T12	0	T17	0
C03	1000,0	C08	0,0	C13	0,0	C18	0,0
T03	180	T08	0	T13	0	T18	0
C04	1620,0	C09	0,0	C14	0,0	C19	0,0
T04	240	T09	0	T14	0	T19	0
C05	1620,0	C10	0,0	C15	0,0	C20	0,0
T05	70	T10	0	T15	0	T20	0

	A DECONTAMINATION PROGRAM MUST BE CARRIED OUT AS A PRECAUTIONARY MEASURE BEFORE THE FIRST USE OF THE FURNACE: start the pre-recorded program number 40.
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If use different types of zirconia, zirconia of different brands or zirconia with different sintering temperatures (even during separate sintering cycles) it may be necessary to carry out **regular decontamination of the furnace e.ON sinter fast +** using the cycle recorded in number 40.

Decontamination before the 10th cycle following the previous one is highly recommended, and after a long period of non-use or at the first signs of contamination on the heating elements (whitish mark).

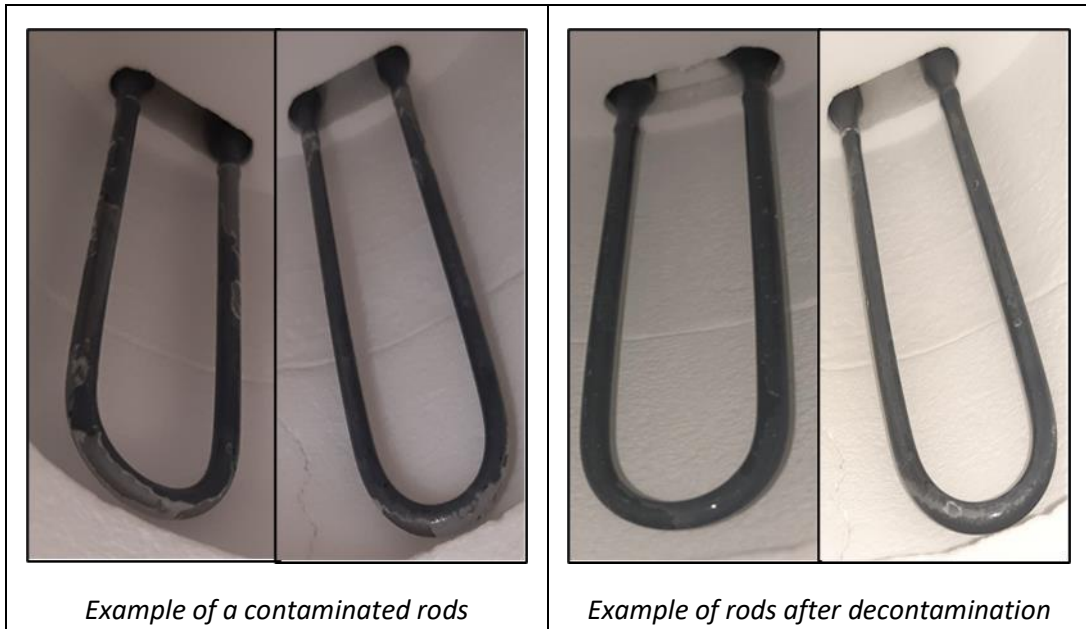
PRECAUTIONS:

- **High translucency zirconia are very sensitives.** To avoid and prevent crossed discoloration with other zirconia brand or type, user must do run more frequent decontamination programs.
- If **liquid shades are used** with staining technic, prosthetics units must be dry and preheated with an infra red lamp or into an oven to prevent pollution into the e.ON sinter fast +, in following zirconia and shades manufacturer recommendations.

- **White clusters can appear on the rods** (heating elements) when different brands or types of zirconia are used. In this case user must clean muffle and rods with a special zirconia cleaner like Nacera Clean* with decontamination program No. 40. Avoid use different zirconias (brands or types) in the same cycle.
- **Always place the support (base + additional raise support) on the platform** during carry out a decontamination cycle.

ADVICE: add in a tray with or without a cover white Zirconia smashed in multiple small pieces (absorption of pollutants) or a powder specially designed to improve the effectiveness of decontamination (for example, powder Nacera Clean*). **After running the program, check the condition of the rods:**

- still whitish traces = still contaminated: repeat a decontamination cycle;
- rods with a grey shiny appearance = ok: furnace ready.




* Nacera clean is a registered trademark.

6.7. POSITIONING THE ELEMENTS AND STARTING THE CYCLE

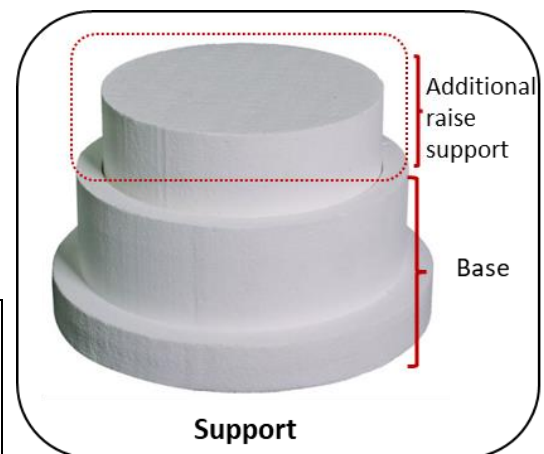
6.7.1. POSITIONING OF SUPPORT

- To use the furnace, **always** place the support on the platform, including for the decontamination program.
- Use only the original support e.ON sinter fast + UGIN DENTAIRE.
- Before use, **check if it is in perfect condition**: presence of dirt or damage.
Clean with a vacuum cleaner if necessary (see chapter 8).
If the support is damaged or cracked, do not use, and replace it.
- It is composed of a base and additional raise support.
- **Always position the two parts (base and additional raise support), whether to position 1 or 2 trays.**
Warning: in short cycle, position only 1 tray (see chapter 6.7.2.2).

<i>NUMBER OF TRAY TO PLACE</i>	<i>SUPPORT TO PLACE</i>
1 tray	base + additional raise support
2 trays	base + additional raise support



IMPORTANT: observe these indications so as not to exceed the maximum height (risk of damage).
Position a maximum of 2 trays for sinterizing.



6.7.2. POSITIONING OF ELEMENTS AND TRAY FOR SINTERIZING

6.7.2.1. TO PERFORM A CONVENTIONAL CYCLE

To perform a conventional cycle, can be use **one or two trays, with cover**.

The capacity is about **40 elements maximum** (depending on the size of the elements, they should not touch each other).

- **Put at least one layer of zirconia pearls** into a tray, to prevent the elements from rubbing on the bottom and sides.
Note: do not exceed two layers of pearls to avoid unrequired mass and therefore thermal inertia.
- **Place the elements on top of the pearls in the tray** (they should not touch each other's nor the side of the tray). Capacity about **40 elements maximum**.
- **Two trays can be stacked**.
- **Always place the cover on the last tray** (only on the last, never between two trays).
- **Place the tray(s) at the center of support, on the base and additional raise support.**

Note: if the zirconia beads are discoloration in yellow colour, they must be replaced.

6.7.2.2. TO PERFORM A SHORT CYCLE

To perform a short cycle, can be use **one tray only**. The capacity is about **20 elements maximum** (depending on the size of the elements, they should not touch each other).



CAUTION: Follow the recommendations of the manufacturer of the zirconia used to check the compatibility with the perform of a fast program and the maximum number of elements in short cycle.

- **Put at least one layer of zirconia pearls** into a tray, to prevent the elements from rubbing on the bottom and sides.
Note: do not exceed two layers of pearls to avoid unrequired mass and therefore thermal inertia.
- **Place the elements on top of the pearls in the tray** (they should not touch each other's nor the side of the tray). Capacity about **20 elements maximum xxx**
- **Place the tray at the center of support, on the base and additional raise support.**

6.7.3. CLOSING THE PLATFORM AND START CYCLE


When the cycle has been selected and elements are in place (*see previous chapters*):

- close the platform: press “arrow key upward”, and start the cycle: press “RUN” key
- or start the cycle directly with the “RUN” key


6.7.4. SEQUENCE START OF CYCLE

- a) Start cycle “RUN”: the furnace starts to rise in temperature,
- b) the platform rises and stays closed 5 to 10 seconds,
- c) the platform goes down partially and holds about 5 min,
- d) the platform rises without closing completely,
- e) when the chamber reaches 500°C, the platform rises and closes completely.

These movements are realized **automatically**: the user does not have to intervene.



IMPORTANT: during the platform’s movements, **DO NOT PRESS BUTTONS**
(hold, stop, arrow key upward and downward): **suspend cycle**



Note: when start the cycle, the noise generated by the power transformer is normal.

7. ADVICES - PRECAUTIONS FOR USE

GENERAL

- During operation and after use, the surface of **the furnace head may become very hot: avoid direct contact** with the skin (*risk of burns*).
- eON sinter fast + is equipped with **heat extractors** to control the temperature of the components and guarantee safety: **do not cover the furnace during use** and **do not place objects** around the furnace or in front of the ventilation openings.

CYCLE START AND CONFIGURATION

- **Do not open the platform during high temperature cycles:** danger of burns and risk of irreversible damage to heating elements and refractories.
- At the end of the cycle, **the temperature must be lower than 300°C before opening the furnace. Do not switch off the power supply**, because heat extractors are stopped and the internal temperature increases and can damage the equipment.
- If the **temperature is above 300°C, it is not possible to start a cycle** (risk of damaging the refractories.) Wait for cooling: temperature displayed on the screen below 300°C.
- When the **temperature is below 200°C, the power supply can be switched off** (switch at the back of furnace).
- At the end of the cycle, the furnace automatically returns to the **standby position**.
- When the **furnace is in standby or off, the platform must be in the high position** to avoid condensation.
- **Do not touch the display during a cycle** to avoid manual interruption of the programme.
- **At the start of the cycle, avoid using an increase rate too fast** to avoid damaging the heating elements. Likewise, **a large difference between two increase rates is not recommended**.
- **Observe the recommendations of the manufacturer of Zirconia** to avoid significant gaseous emissions which may damage the muffle.
- For the first time or after a long time without use, need to **preheat** to eliminate condensation and avoid fractures of the refractory material: **launch a decontamination program (No. 40)**.
- Zirconia sintering temperatures are given as indicative by disc manufacturer. **If necessary, these one can be adjusted from -15°C and up to +50°C around the final temperature recommended**.
- **Comply with the recommendations of the manufacturer of the zirconia used to verify compatibility with the perform of a short program and the maximum number of elements in short cycle.** Follow its instructions for programming within the technical limits of the e.ON sinter fast + (*the value of the heating rate must be less than 94°C /min up to 1000°C*).

HEATING ELEMENTS (RODS)

- Molybdenum silicon rods are very brittle at room temperature: **do not handle them**.
- The **heating elements must not be maintained for long periods between 400°C and 700°C** to avoid their oxidation.

SUPPORT (see chapter 6.7.1 – 6.7.2)

-
- **Place the support on the platform** while the furnace is working.
 - Pearls layers must be replaced in all trays when a yellow **discoloration** appears.
 - **Always place the elements in the tray for sinterizing, with the zirconia beads inside, and:**
 - **Conventional cycle:** use 1 or 2 trays. Place the cover on the last tray (*never between two trays*). Capacity 40 elements maximum.
 - **Short cycle:** use 1 tray, capacity 20 elements maximum. *Follow the recommendations of the manufacturer of the zirconia used.*

DECONTAMINATION PROGRAM (see chapter 6.6)

-
- **Before first sintering, user must launch a decontamination program (No. 40).**
 - **Always place the support (base + additional raise support) on the platform during a decontamination program.**
 - Add in a tray with or without a cover white Zirconia smashed in multiple small pieces or powder Nacera Clean* (absorption of pollutants). **After running the program, check the condition of the rods:**
 - still whitish traces = still contaminated: repeat a decontamination cycle;
 - rods with a grey shiny appearance = ok: furnace ready.

(see rods' examples– chapter 6.6.2)
 - **High translucency zirconia** are very sensitives to crossed discoloration risk: user must do more frequent decontamination programs.
 - If **liquid shades** are used with staining technic, prosthetics units must be dry and preheated with an infra-red lamp or into an oven to prevent pollution into the **e.ON sinter fast +**, in following zirconia and shades manufacturer recommendations.
 - **White spots can appear on the rods** (heating elements) when different brands or types of zirconia are used: user must clean chamber and rods with a special zirconia cleaner like *Nacera Clean** with decontamination program.

Note: observe the instructions set out in chapter 8 – maintenance.

** Nacera clean is a registered trademark.*

8. MAINTENANCE



Before to carry out the maintenance work and/or cleaning, e.ON sinter fast + has to:

- **disconnected from the main power supply** (*switch OFF and unplug to mains socket*).
- **at room temperature: wait the cooling after use** (*risk of burns and/or damage*).



Observe the following recommendations to ensure the longevity of the device:

- Do not use abrasive, solvents or flammables products for cleaning (outside and inside).
- Clean the machine outside with a soft, dry cloth.
- Remove any traces on the **screen** with a soft cloth and a small amount of special glass cleaner. Cleaning wipes for optic products can also be used. For avoid screen damage, do not use a sharp object to operate the touchscreen.
- Remove any pearl of small pieces stuck between the display and the furnace casing.
- In case of dust into the **chamber**: remove it with a vacuum cleaner – do not used compressed air.
- **Visual inspection of the support and the tray** before use.
If necessary, clean with a vacuum cleaner to remove any particles (dust) - do not use compressed air.
If the support is damaged or cracked: do not use and replace-it.
- Regularly check the **electrical contacts** of the heating elements and tighten (every two weeks).
- Lubricate the carriage carrying the tray regularly.






NOTE: do not use compressed air to cleaning: risk of damage to the accessories and the suspension of particles of the refractory material.

8.1. HEATING ELEMENT REPLACEMENT

Observe these conditions for replacing heating elements:

- preferably, be at room temperature (+15°C/+25°C): the heating elements are very sensitive to temperature;
- handle them carefully;
- keep all elements of heating elements: heating elements and cushioning foam pad protecting.

▪ **Steps to heating element replacement**

 <p>1. Open the furnace upper cover (unscrew).</p>	 <p>2. Unscrew the electrical contacts of heating elements with a wrench (<i>supplied as an accessory</i>). Repeat for all the heating elements to replace.</p>
 <p>3. Unscrew the support elements of heating element with a wrench (<i>supplied as an accessory</i>).</p>	 <p>4. Remove carefully the cushioning foam pad protecting heating elements. Lift carefully the heating element with the elements protecting</p>
 <p>5. Place the new heating element. The heating element (black section) must be positioned <u>5 mm above</u> the insulating ceramic blocks. CAUTION: the ends of the heating elements must be separate from the top cover of the furnace to avoid deformation.</p>	
<p>6. Reassemble in the reverse order.</p> <p><i>NOTE: these operations are <u>only for damaged heating element to replace.</u></i></p>	

8.2. TROUBLE-SHOOTING

<i>Problem</i>	<i>Cause</i>	<i>Procedure to followed</i>
The 1818.3 temperature is displayed on the touch screen	Defective thermocouple, (broken or not properly connected)	<ul style="list-style-type: none"> - Do not use the furnace: risk of material damage. - Turn off furnace (<i>switch ON/OFF</i>). - Contact the after-sale service.
The result is not satisfactory	The parameters of the program performed (temperature/time) are not adequate	<ul style="list-style-type: none"> - Check the program parameters: temperature and time. - Adjust sintering temperatures if necessary. (<i>see chapter 6.4</i>)
The furnace does not heat up	It is necessary to test the continuity of the rods	<ul style="list-style-type: none"> - Do not use the furnace: risk of material damage. - Turn off furnace (switch ON/OFF). - Contact the after-sale service for assistance in the procedure.
White clusters visible on the rods	Due to the use of different brands or types zirconia	<ul style="list-style-type: none"> - Clean the chamber using a Nacera Clean type product (registered trademark) and launch several decontamination program (No. 40) successive.
Zirconia pearls have a discoloration in yellow colour	Pearls are polluted	<ul style="list-style-type: none"> - Replace with new sintering beads.

If the failure persists, contact the after-sale service.



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