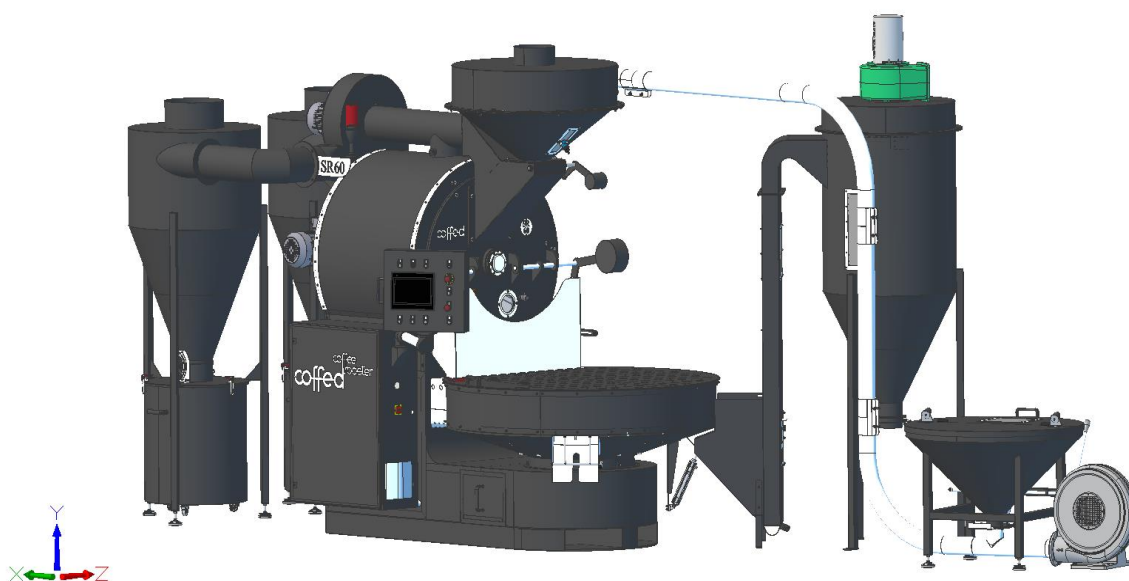




SR 60 Coffee roasting line

Operation Manual



CERTIFICATE OF MANUFACTURE CONFORMITY



Coffed BDH, ul. Ceramiczna 28, 64-920 Piła PL

hereby confirms that the:

Coffee roasting line:

Type: SR60

is in conformity with the following European directives and standards::

- Machinery directive **MD 2006/42/EC**,
- Electromagnetic compatibility directive **EMC 2014/30 / EC**
- Gas appliance directive **GAD 2009/142/EC**

What is equivalent with fulfilling the following standards:

1. PN-EN ISO 12100:2012
2. PN-EN 349+A1:2010
3. PN-EN 60204-1:2010
4. PN-EN 125:2012

And that it has been manufactured according to the technical documentation stored by Coffed BDH

Piła, Poland September 10th, 2018r.

.....
(Damian Elcessor – Coffed BDH owner)

Table of contents

1. GENERAL INFORMATION	4
1.1 Information about the operation manual	4
1.2 Liability and warranty	4
1.3 Safety precautions while operating the equipment	4
1.4 Intended use	5
1.5 Hazard indication symbols on the machine	5
2. INSTALLATION AND COMMISSIONING	5
2.1. General characteristics of the equipment	5
2.2. Technical description	6
2.2.1. Roaster with cooling bin	7
2.2.2. Control panel	8
2.2.3. Pneumatic green coffee loader	8
2.2.4. Destoner	9
2.2.5. Chaff cyclone	9
2.3. Commissioning and connecting to the installations	10
2.3.1. Electrical installation	10
2.3.2. Gas installation	10
2.3.3. Exhaust installation	10
2.3.4. Pneumatic installation	10
2.3.5. Start-up	10
2.3.6. Drum gap setup	11
3. WORKFLOW DESCRIPTION	11
3.1. Control panel screens	11
3.1.1. Operator's password screen	12
3.1.2. Start screen	13
3.1.3. Roasting screen	14
3.1.4. Roast charts screen	17
3.1.5. Recipe selection and edition screen	18
3.1.5.1 Current recipe preview	19
3.1.5.2 Recipe edition	22
3.1.6. Maintenance screen	25
3.1.7. Faults and errors screen	27
3.2. Manual roasting mode	29
3.3. Automatic roasting mode	30
4. SERVICE AND MAINTENANCE	30
5. TROUBLESHOOTING	31
6. REPAIRS	31
7. DISPOSAL AND NEUTRALIZATION	32

1. GENERAL INFORMATION

1.1 Information about the operation manual

This manual is an integral part of the equipment and it needs to be stored in the place where the equipment is being used. The persons installing, providing maintenance, cleaning or using the equipment should have constant access to the manual. The manual should be used by qualified personnel only. The knowledge of and compliance with all safety and operating instructions is essential for safe and proper operation of the equipment. In addition, when using the equipment all the local regulations regarding health and safety precautions should be observed.

1.2 Liability and warranty

Personal injury or property damage liabilities and warranty claims are void if they occur as a result of:

- misuse of the equipment
- wrong installation, commissioning, start-up, maintenance or handling of the equipment
- use of the equipment with damaged or faulty functioning of the protective and safety appliances
- not abiding to the precautions in the manual
- making unauthorized changes (including construction changes) in the equipment
- installing additional parts that have not been tested and authorized by Coffed
- making changes in the gas burner that modify the burner manufacturers - set creation of the flame
- insufficient control of the elements, that can wear
- unprofessional repairs
- using the equipment despite being faulty
- using inappropriate fuel
- defects of the power cords that are not a part of the equipment
- using parts that are not original parts supplied by Coffed

1.3 Safety precautions while operating the equipment

The data referring to the safety of operation are in relation to European Union legislation that was in effect at the date of the equipment's production. If the equipment is used in industrial conditions, the user is obliged to check the accordance of the recommended safety measures with the current regulations and to comply to the newest rules.

If the equipment is used outside the European Union, the user should abide to the health and safety regulations of the place where the equipment is installed. The specific environmental guidelines also need to be respected.

Warning!

- The equipment is not designed to be used by persons (including children) with manual, sensory or mental limitations and by persons without the necessary experience and knowledge.
- The equipment can be used by the above-mentioned persons only under supervision of a qualified and trained person that is responsible for their safety, and has given them all the necessary guidelines how to use the equipment.
- Children need to be under strict supervision, to ensure that they are not playing with the equipment
- This manual needs to be carefully stored. In an event of sharing the machine with other people, the manual needs also to be shared.
- All of the users must abide to the rules and information included in this manual and also to the occupational health and safety regulations.
- The equipment is designed to be used in closed spaces only.

1.4 Intended use

The equipment is working safely only when it is used for its designed purpose.




The SR60 coffee roasting line is designed for coffee roasting only and it is forbidden to use it to process other products. During the roasting process green coffee beans are roasted, the final product are roasted coffee beans.

Warning!

- Using the equipment to process products other than green coffee beans is prohibited and it will be recognized as using the equipment not for its designed purpose.
- Using the equipment not for its designed purpose excludes all the liability claims against the equipment manufacturer.
- The user is solely responsible for the damages and injuries that occurred during the use of the equipment not for its designed purpose.

1.5 Hazard indication symbols on the machine

The following symbols are located on the device in the places where the hazard can occur:

N o	Symbol	Description
1		High voltage – it is prohibited to open the marked door without disconnecting the machine from electricity.
2		Hot surface – it is prohibited to touch the marked surface, when the machine is working and immediately after switching off the machine.
3		Automatic start – extreme caution is advised, as the marked elements might start to move without prior warning.

2. INSTALLATION AND COMMISSIONING

2.1. General characteristics of the equipment

Coffed BDH | ul. Ceramiczna 28 | 64-920 Piła PL | tel+48 67 214 26 29 | www.coffed.pl

The SR60 coffee roasting line has the following parameters:

Efficiency:	up to 240kg of green coffee per hour
Roasting time:	8 – 20 min per batch
Batch size:	30 - 60kg of green coffee

The line needs gas, electric and compressed air supplies in order to work properly, the requirements for the lines:

Fuel:	LPG/G-50 natural gas
Gas pressure:	20 – 50mbar

Gas line diameter:	½ inch
Gas consumption:	1,1 kg/roast batch
Electric voltage:	3 x 400VAC 50Hz / 60Hz
Electric connection type:	3L+N+PE
Maximum power consumption:	32A
Compressed air requirement:	7,5bar of stable pressure
Compressed air line diameter:	10mm
Exhaust chimney diameter:	150mm
Total weight:	2900kg
Space required:	30 m²
Ceiling height:	3m

2.2 Technical description

The SR60 coffee roasting line consists of the following elements:

1. Roaster

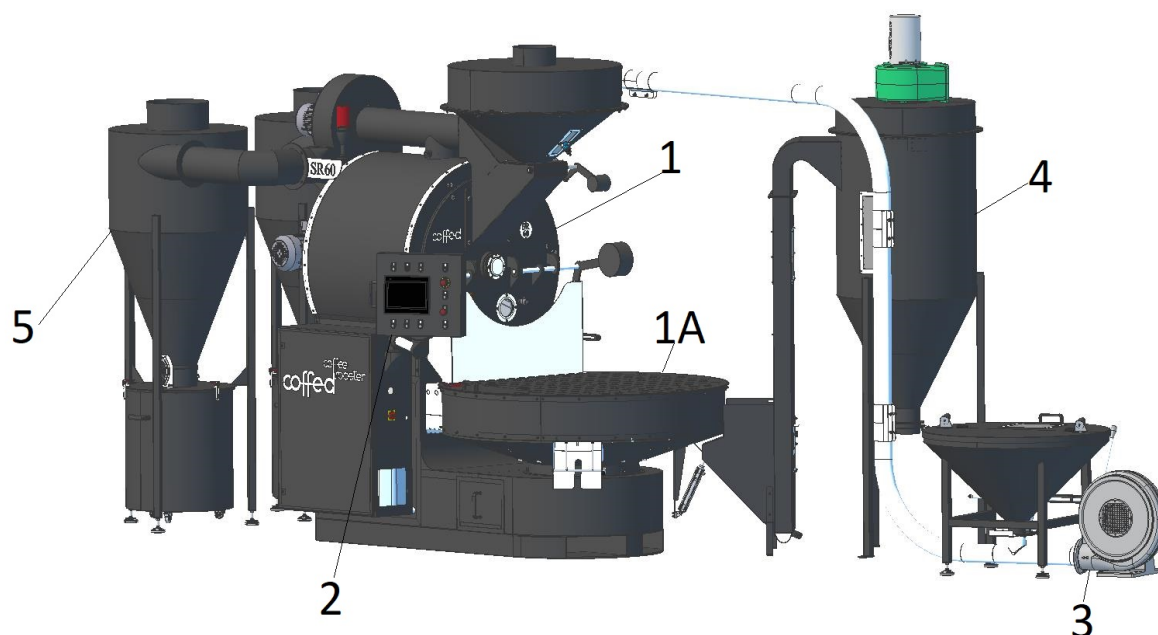
1A. Cooling bin (integrated with the roaster)

2. Control panel:

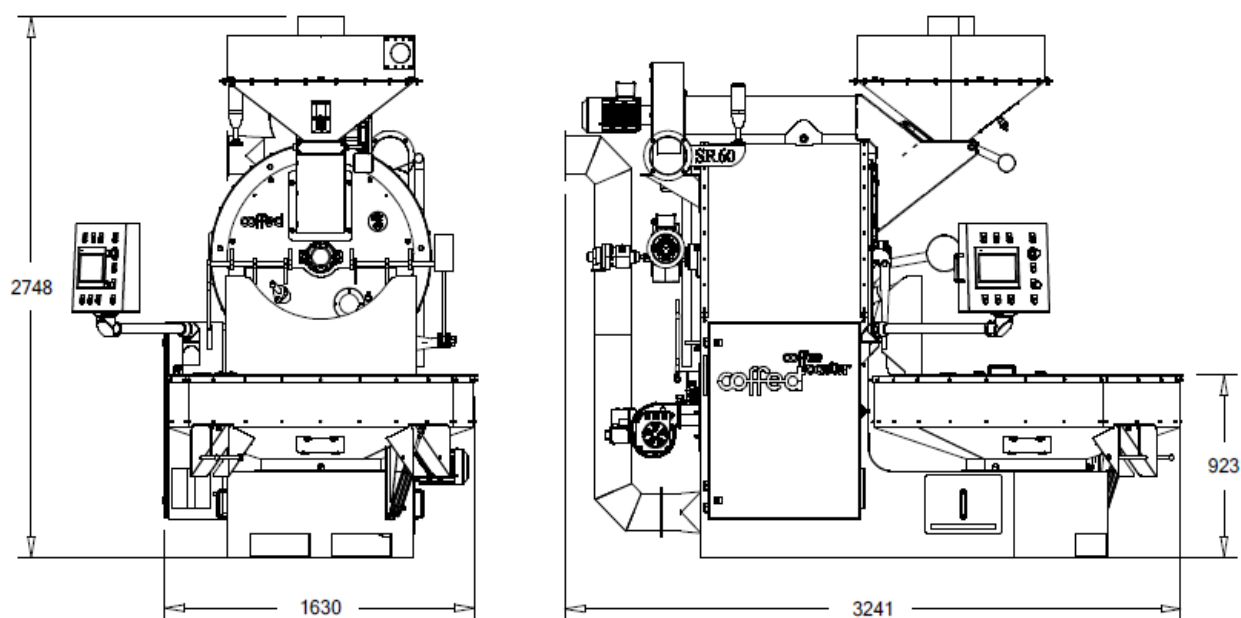
3. Pneumatic green coffee loader

4. Destoner

5. Chaff cyclone



Pic.1 SR60 coffee roasting line general overview



2.2.1 Roaster with cooling bin

Pic.2 Roaster with cooling bin overview

This is the main part of the SR60 coffee roasting line. Green (raw) coffee is processed inside of the roaster. The beans are poured into a metal drum revolving above a gas burner and heated to a certain temperature

(ca. 200°C). In the result of the process roasted coffee beans are produced (the main product), a significant amount of coffee chaff is also released and drawn out of the drum through the exhaust system.

All the media connections (electricity, gas, compressed air) are located at the back of the roaster. The media need to be connected before starting to work with the machine.

The integrated cooling bin is used to rapidly cool down the coffee immediately after finishing the roasting process. The cooling bin is equipped with a separate fan to suck out the hot air and stirring arms, that ensure the coffee is evenly cooled.

Measurements:

Height: 2748mm

Width: 1630mm

Length: 3241mm

Weight: 2500kg

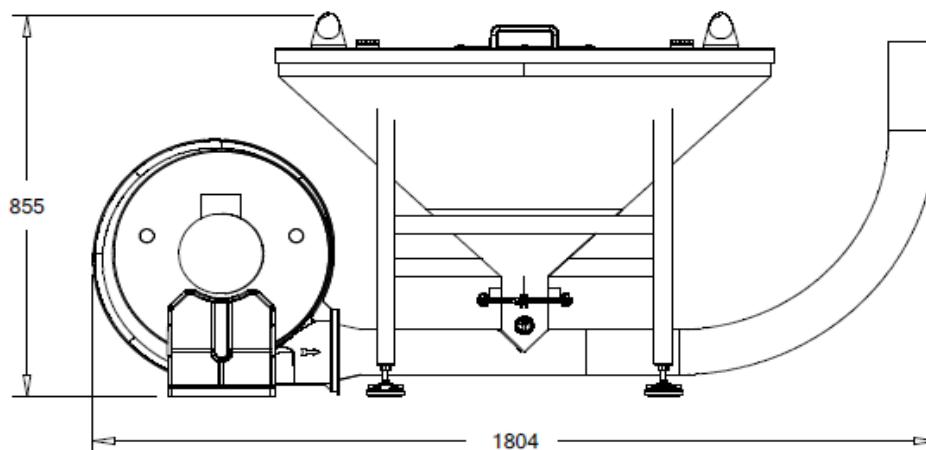
2.2.2. Control panel:



Pic.3 Control panel overview

The control panel is equipped with a 10 inch touchscreen, that enables the operator to control all the functions of the roasting line. The installed software and PLC enable automatic roasting mode, profiling and recipe storage

2.2.3. Pneumatic green coffee loader



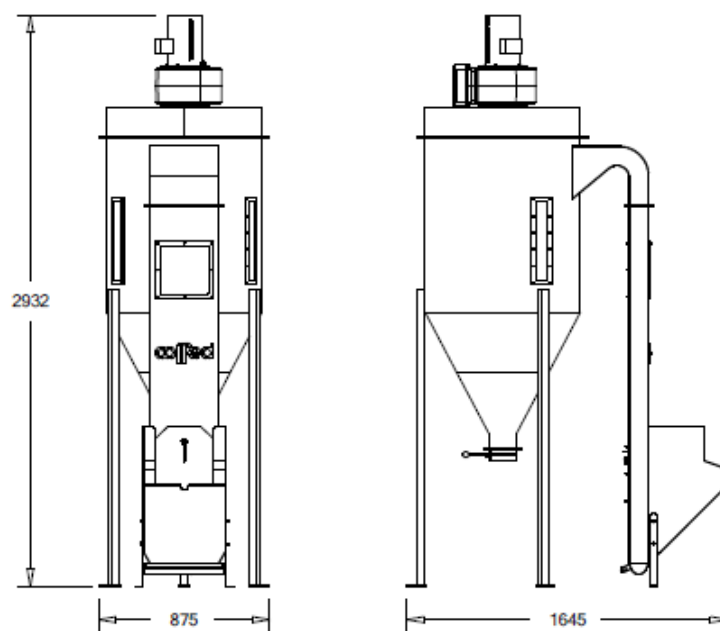
Pic.4 Pneumatic green coffee loader overview

The pneumatic green coffee loader is used to push coffee into the loading hopper located on the top of the roaster. It consists of a cone shaped hopper standing on the floor, a fan and stainless steel pipes that connect it to the top hopper.

Measurements:

Height: 855mm
Length: 1804mm
Weight: 100kg

2.2.4. Destoner



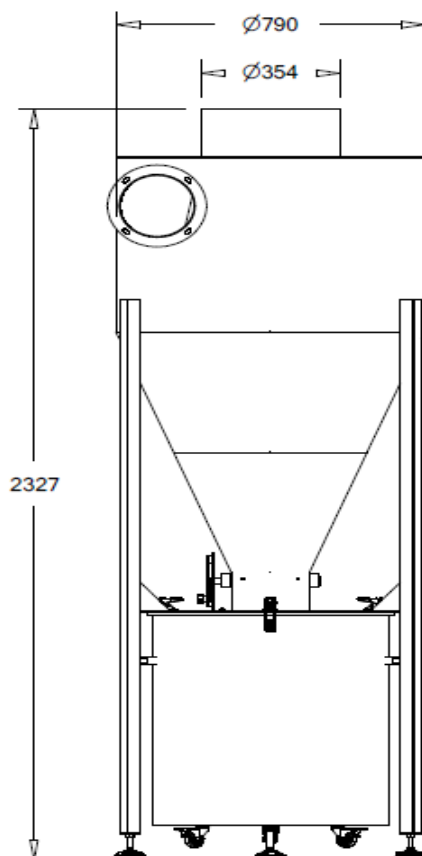
Pic.5 Destoner overview

The destoner gravitationally separates stones from the roasted coffee. Stones are present in the roasted coffee due to the green coffee production process. The appliance is made out of stainless steel. It consists of a roasted coffee hopper, under which is a basket used to collect stones and a roasted coffee silo. The coffee is sucked into the silo thanks to the drag induced by the top fan.

Measurements:

Height: 2932mm
Width: 875mm
Length: 1645mm
Weight: 180kg

2.2.5. Chaff cyclone



Pic.6 Chaff cyclone overview

The chaff cyclone which is connected with the roaster's exhaust system, separates the chaff from the exhaust fumes and collects it into a wheeled bin underneath it. The chaff can be then disposed of, and the fumes are directed into the chimney duct.

Measurements:

Height: 2327mm
Width: 790mm
Length: 790mm
Weight: 120kg

2.3. Commissioning and connecting to the installations

The commissioning of the SR60 coffee roasting line usually takes place at the customer's premises, after COFFED technicians install and assemble the line. The coffee for the commissioning needs to be supplied by the final user, unless stated otherwise in the purchase agreement. The commissioning test encompasses a mechanic test (that checks all the mechanical parts and their controls) and a technological test. The technological test covers roasting one batch of green coffee under production conditions.

2.3.1. Electrical installation

The SR60 coffee roasting line is equipped with a five-wire main power cable (three phases, neutral and ground). The voltage is 400V, 50Hz / 60Hz,
If the local regulations require electric measurements to be made, they need to be performed by authorized personnel with the necessary qualifications.

2.3.2. Gas installation

In order for the SR60 coffee roasting line to work properly, LPG or natural gas source needs to be connected. The gas train diameter is ½ inch.

2.3.3. Exhaust installation

The final user is obliged to connect the SR60 coffee roasting line to an exhaust installation according to the guidelines provided by the line's manufacturer. An additional COx detector needs to be installed if the local regulations require that. The chimney diameter is 15cm.

2.3.4. Pneumatic installation

Compressed air needs to be connected to operate the SR60 coffee roasting line. The pneumatic installation should deliver at least 7.5 bar of constant, stable pressure. Quick fit connectors are used to connect the air, the diameter of the pipe is 10mm.

2.3.5. Start-up

After all the above media (points 2.3.1. – 2.3.4. are connected) the SR60 coffee roasting line can be started. The main power switch is located on the left back side of the machine (when facing it).



Pic. 7 Main power switch



Pic.8. Main power switch location

2.3.6. Drum gap setup

The delivered machine has the drum gap set up for roasting coffee.

A wrench used for setting up the gap between the drum and the front cast iron mold is delivered with the roaster (turning it right widens the gap, turning it left closes it). When the roaster is cold, and green coffee is poured into the drum, particles smaller than 2mm may fall underneath it. This should stop after the roaster is warmed up.

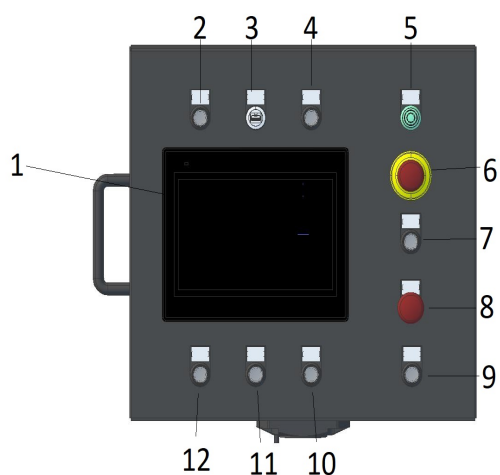
Warning!

The gap should not be smaller than 2mm when the roaster is cold, as it may result in damaging the transmission.

3. WORKFLOW DESCRIPTION

3.1. Control panel screens

The SR60 coffee roasting line is controlled via a control panel (pic.3). All of the control elements are located on the console (pic. 9). The functions and information regarding the operation and workflow of the machine are displayed on the 10 inch touch panel display using respective screens.

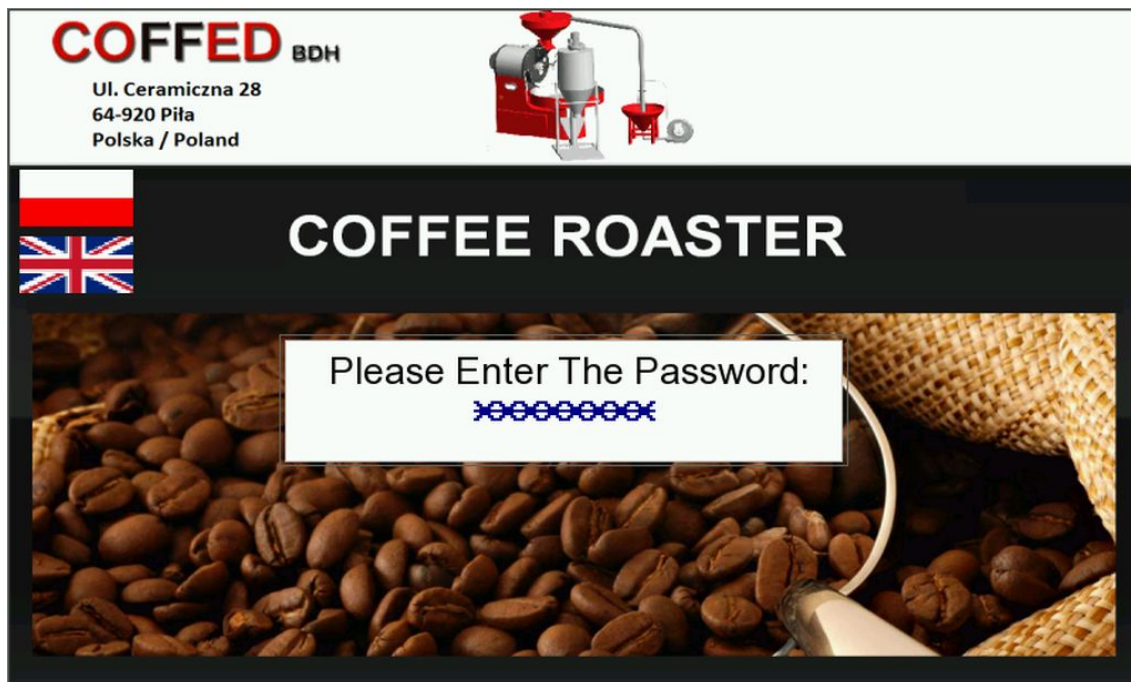


LEGEND:

- 1. TOUCH PANEL DISPLAY
- 2. EMERGENCY DRUM OPENING
- 3. USB SLOT
- 4. ERROR RESET
- 5. BUZZER
- 6. MAIN EMERGENCY SWITCH
- 7. SAFETY CIRCUIT RESET
- 8. COOLING BIN EMERGENCY SWITCH
- 9. WATER
- 10. STEER/DESTONER FLAP
- 11. DRUM OPEN
- 12. INLET FLAP

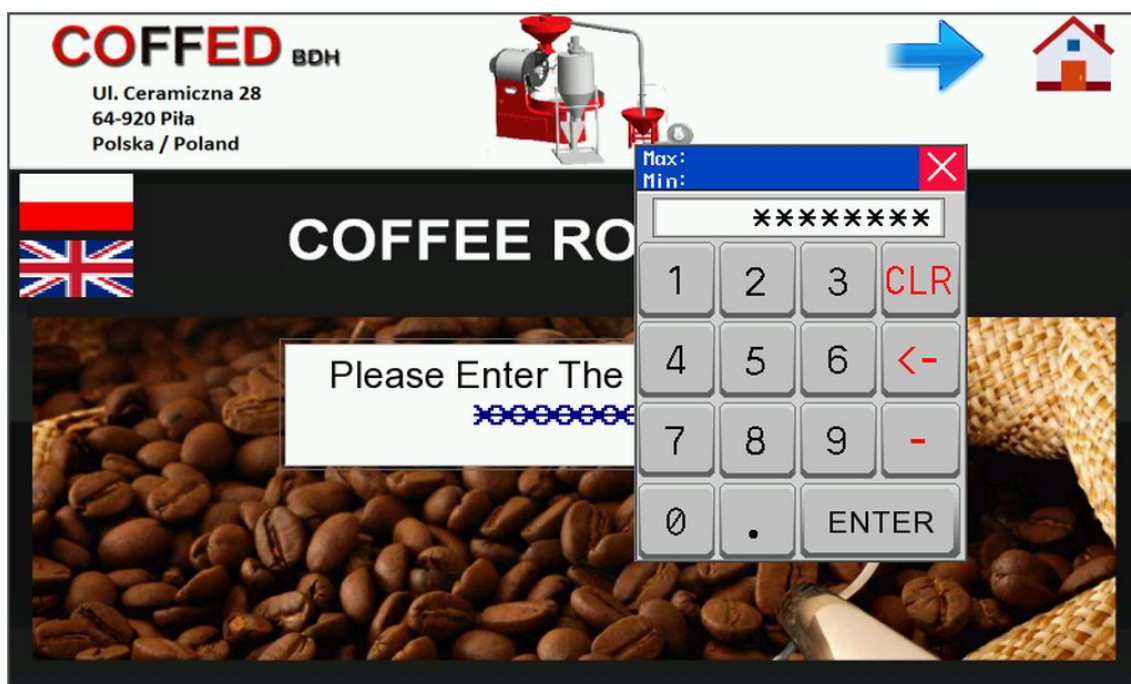
Pic.9 Console

3.1.1. Operator's password screen



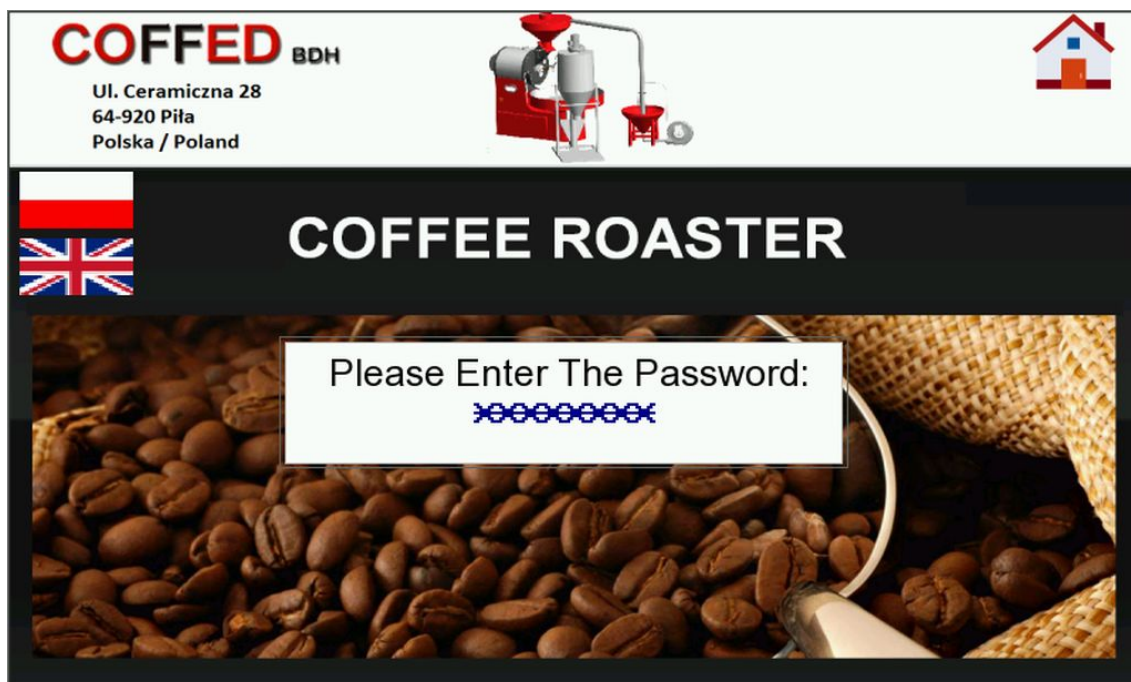
Pic.10 Operator's password screen

The operator's password screen is visible after turning the machine on. The operator needs to insert a four letter password in order to start working with the appliance. The password should not be given to unauthorized personnel.



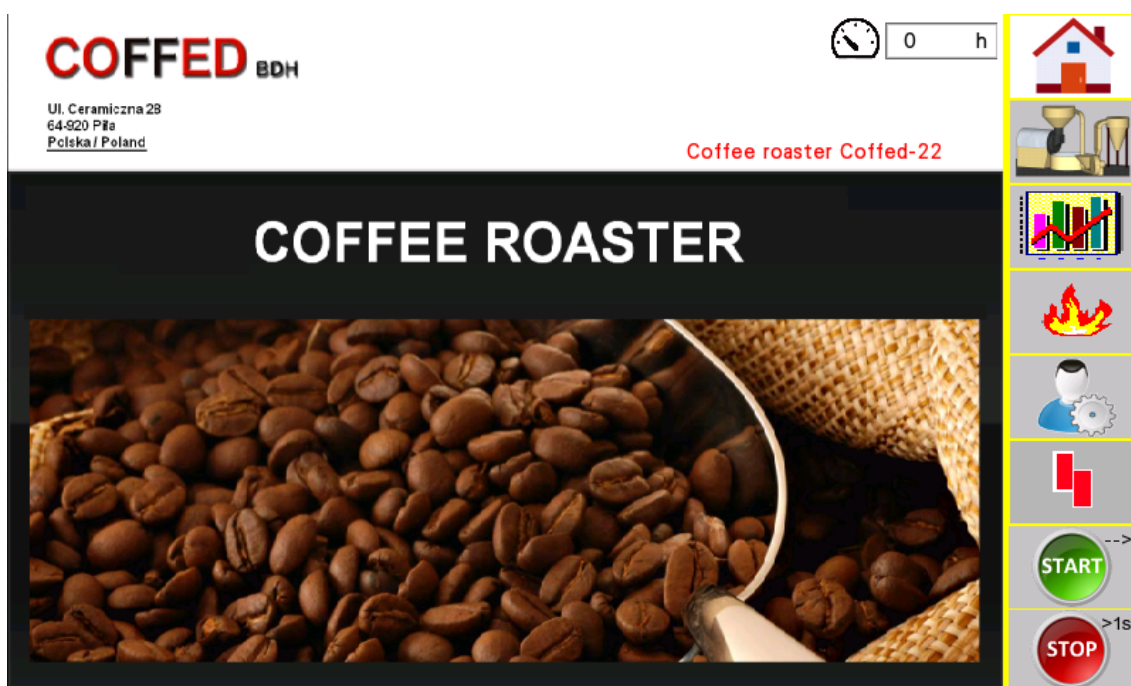
Pic.11 Operator's password screen – inserting the password

After the correct password is inserted → 🏠 icons will show up in the right top corner of the screen. After pressing the 🏠 icon, the coffee line's start screen will be displayed. The operator's password screen will not be accessible until the next startup of the line.




Pic.12 Operator's password screen after the correct password has been inserted

3.1.2. Start screen



Pic.13 Start screen

The manufacturer's details, name, type and serial number of the machine are visible on the start screen. The number of workhours is displayed by the  icon – it is the number of hours when the burner of the machine was working.

Eight buttons are visible on the right side of the screen. Their functions are the same for all of the screens, on which they are displayed:



– go to the start screen



– go to the roasting screen



– go to the roast charts screen



– go to the recipe selection and edition screen



– go to the service screen



– go to the faults and errors screen



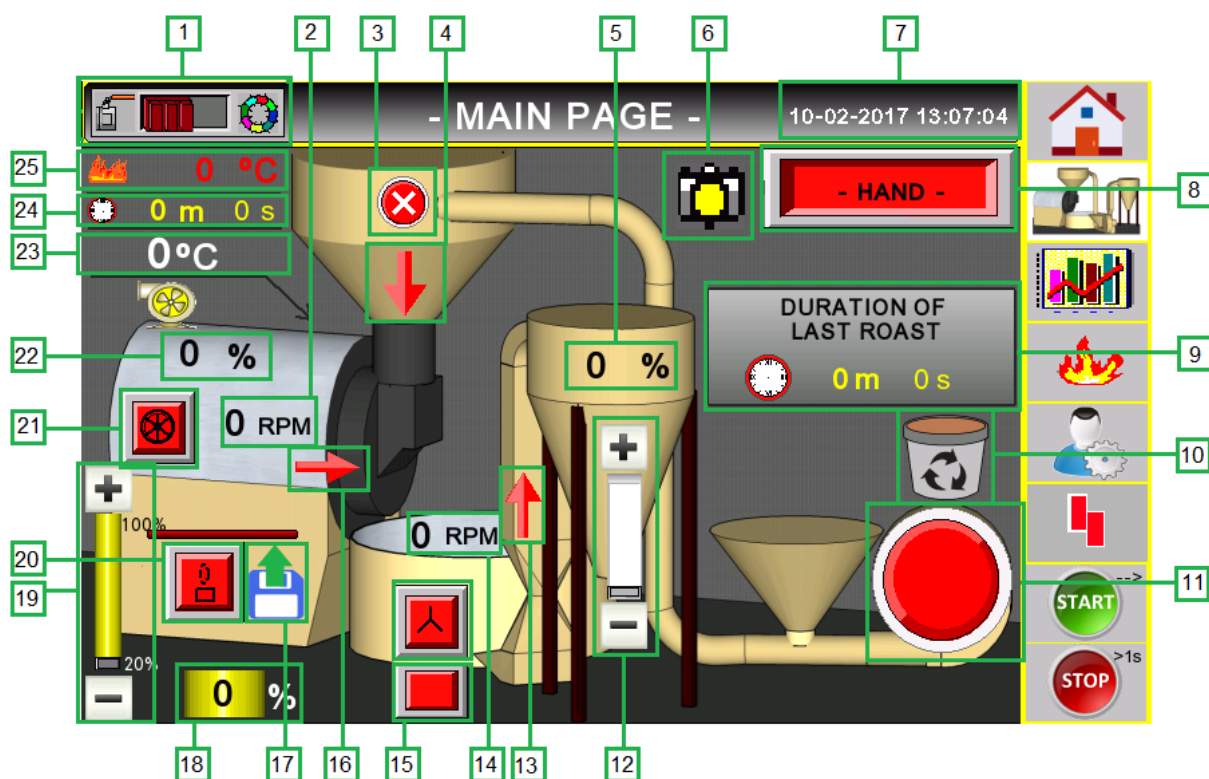
– start roasting in automatic mode

– open drum in automatic mode (hold for one second)



– stop roasting in automatic mode (hold for one second)








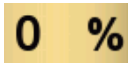









3.1.3. Roasting screen



Pic.14 Roasting screen

The roasting screen allows the operator to control all the functions of the SR60 coffee roasting line in order to do the coffee roasting process. The displayed information include the status of the burner, motors, flaps and the work mode (manual automatic). The full roasting process can be carried out using this screen only.

The displayed information:

No.	Icon	Description / function
1.		Roasting mode selection. When the slider -  is at the  side, then the machine works in manual mode, when it is on the  side, the machine works in automatic mode
2.		Drum revolutions per minute (range 35-52)
3.		Automatic release of the coffee from the hopper into the roaster on/off
4.		Hopper flap open/closed
5.		Destoner's fan power
6.		Screenshot saved into the memory (a flash drive needs to be inserted into the slot on the console)
7.		Current date and hour
8.		Current roasting mode
9.		Last roast time
10.		Chaff bin emptying mode
11.		Pneumatic green coffee loader on/off
12.		Destoner fan power controls
13.		Destoner on/off, cooling bin flap open/closed. Pulsating arrow indicates that the destoner is starting.
14.		Cooling bin arms revolutions per minute (range 7-12)



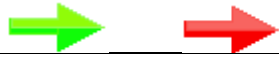









15.	 	Colling bin arms on/off Cooling fan on/off
16.		Drum door open/closed
17.		1. Save the current roast into the flash memory 2. Roasting from the selected recipe/profile
18.		Burner power (range 20%-100%)
19.		Burner power controls
20.		Burner on/off
21.		Drum and exhaust fan on/off
22.		Exhaust fan power (range 60%-100%)
23.		Coffee temperature inside the drum (°C)
24.		Current roast time (mm:ss)
25.		Exhaust fumes temperature (°C)

Table.1 Roaster controls functions list

3.1.4. Roast charts screen



Pic.15 Roast charts screen

This screen enables to monitor the different parameters of the roasting process. The following data about the current roast is displayed in relation to the time that has passed since putting the green coffee into the drum:

No.	Line color	Parameter
1.	white	Coffee temperature
2.	yellow	Burner power
3.	red	Exhaust fumes temperature
4.	blue	Exhaust fan power

Table.2 Roast chart parameters list

The following buttons, that allow to control the roasting process are also on this screen

No.	Icon	Description / function
1.		Pressing this button for the first time, allows to indicate the start of the “first crack” phase on the chart, pressing it for the second time indicates the end of this phase.
2.		Pressing this button for the first time, allows to indicate the start of the “second crack” phase on the chart, pressing it for the second time indicates the end of this phase.




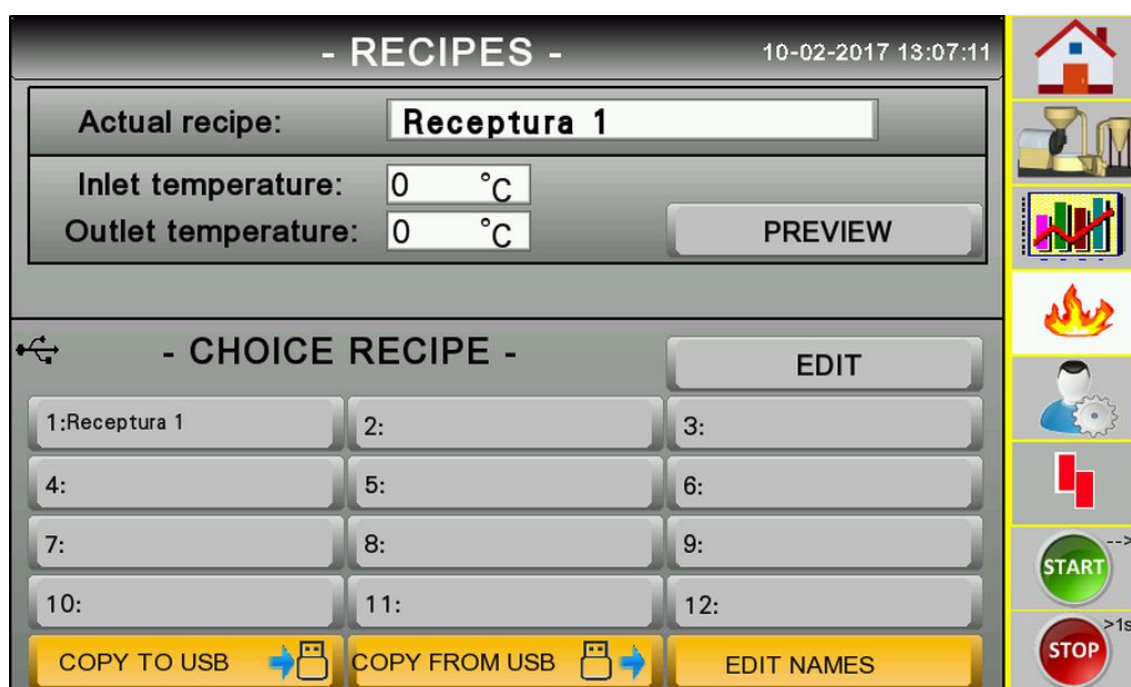
3.		Burner power controls: Pressing the „+” increases the power by 5%, pressing the „-” decreases it by 5%
4.		Exhaust fan power controls: Pressing the „+” increases the power by 5%, pressing the „-” decreases it by 5%
5.		Zoom of the charts on Zoom of the charts off

Table 3. Roast chart screen buttons list

3.1.5. Recipe selection and edition screen



Pic.16 Recipe selection screen

The recipe selection screen allows the operator to select and view one of the previously saved recipes for the automatic roasting mode. The recipes are saved on the flash drive that needs to be connected to the control panel. The following buttons are on the screen:






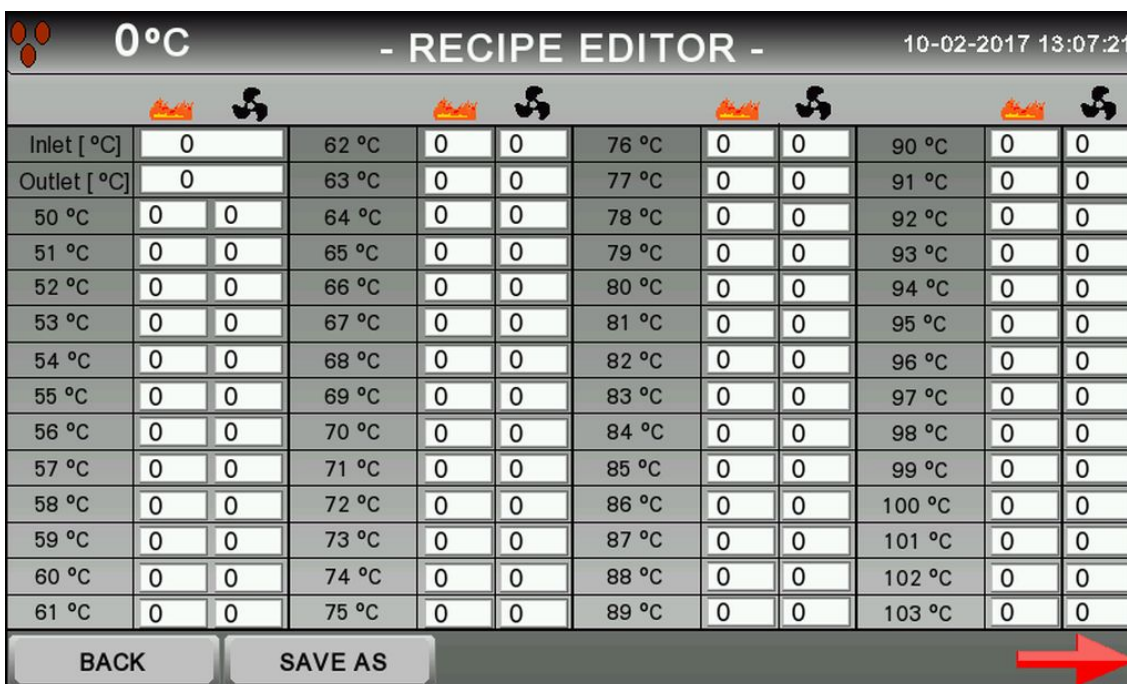
No.	Icon	Description / function
1.		View the current recipe
2.		Edit the selected recipe
3.		Save the recipes from the PLC to the flash drive
4.		Load the recipes from the flash drive to the PLC
5.		Edit the names of the recipes

Table 4. List of the recipe selection screen

3.1.5.1 Current recipe preview

Pressing the  opens the recipe preview screens



0°C - RECIPE EDITOR - 10-02-2017 13:07:21

Inlet [°C]	0	62 °C	0	0	76 °C	0	0	90 °C	0	0	
Outlet [°C]	0	63 °C	0	0	77 °C	0	0	91 °C	0	0	
50 °C	0	0	64 °C	0	0	78 °C	0	0	92 °C	0	0
51 °C	0	0	65 °C	0	0	79 °C	0	0	93 °C	0	0
52 °C	0	0	66 °C	0	0	80 °C	0	0	94 °C	0	0
53 °C	0	0	67 °C	0	0	81 °C	0	0	95 °C	0	0
54 °C	0	0	68 °C	0	0	82 °C	0	0	96 °C	0	0
55 °C	0	0	69 °C	0	0	83 °C	0	0	97 °C	0	0
56 °C	0	0	70 °C	0	0	84 °C	0	0	98 °C	0	0
57 °C	0	0	71 °C	0	0	85 °C	0	0	99 °C	0	0
58 °C	0	0	72 °C	0	0	86 °C	0	0	100 °C	0	0
59 °C	0	0	73 °C	0	0	87 °C	0	0	101 °C	0	0
60 °C	0	0	74 °C	0	0	88 °C	0	0	102 °C	0	0
61 °C	0	0	75 °C	0	0	89 °C	0	0	103 °C	0	0

BACK SAVE AS

Pic.17 Recipe preview screen 1

0°C

- RECIPE EDITOR -

10-02-2017 13:07:23

104 °C	0	0	118 °C	0	0	132 °C	0	0	146 °C	0	0
105 °C	0	0	119 °C	0	0	133 °C	0	0	147 °C	0	0
106 °C	0	0	120 °C	0	0	134 °C	0	0	148 °C	0	0
107 °C	0	0	121 °C	0	0	135 °C	0	0	149 °C	0	0
108 °C	0	0	122 °C	0	0	136 °C	0	0	150 °C	0	0
109 °C	0	0	123 °C	0	0	137 °C	0	0	151 °C	0	0
110 °C	0	0	124 °C	0	0	138 °C	0	0	152 °C	0	0
111 °C	0	0	125 °C	0	0	139 °C	0	0	153 °C	0	0
112 °C	0	0	126 °C	0	0	140 °C	0	0	154 °C	0	0
113 °C	0	0	127 °C	0	0	141 °C	0	0	155 °C	0	0
114 °C	0	0	128 °C	0	0	142 °C	0	0	156 °C	0	0
115 °C	0	0	129 °C	0	0	143 °C	0	0	157 °C	0	0
116 °C	0	0	130 °C	0	0	144 °C	0	0	158 °C	0	0
117 °C	0	0	131 °C	0	0	145 °C	0	0	159 °C	0	0

BACK

SAVE AS

Pic.18 Recipe preview screen 2

0°C

- RECIPE EDITOR -

10-02-2017 13:07:26

160 °C	0	0	174 °C	0	0	188 °C	0	0	202 °C	0	0
161 °C	0	0	175 °C	0	0	189 °C	0	0	203 °C	0	0
162 °C	0	0	176 °C	0	0	190 °C	0	0	204 °C	0	0
163 °C	0	0	177 °C	0	0	191 °C	0	0	205 °C	0	0
164 °C	0	0	178 °C	0	0	192 °C	0	0	206 °C	0	0
165 °C	0	0	179 °C	0	0	193 °C	0	0	207 °C	0	0
166 °C	0	0	180 °C	0	0	194 °C	0	0	208 °C	0	0
167 °C	0	0	181 °C	0	0	195 °C	0	0	209 °C	0	0
168 °C	0	0	182 °C	0	0	196 °C	0	0	210 °C	0	0
169 °C	0	0	183 °C	0	0	197 °C	0	0	211 °C	0	0
170 °C	0	0	184 °C	0	0	198 °C	0	0	212 °C	0	0
171 °C	0	0	185 °C	0	0	199 °C	0	0	213 °C	0	0
172 °C	0	0	186 °C	0	0	200 °C	0	0	214 °C	0	0
173 °C	0	0	187 °C	0	0	201 °C	0	0	215 °C	0	0

BACK

SAVE AS

Pic.19 Recipe preview screen 3

0°C - **RECIPE EDITOR** - 10-02-2017 13:07:29



216 °C	0	0	230 °C	0	0	244 °C	0	0
217 °C	0	0	231 °C	0	0	245 °C	0	0
218 °C	0	0	232 °C	0	0	246 °C	0	0
219 °C	0	0	233 °C	0	0	247 °C	0	0
220 °C	0	0	234 °C	0	0	248 °C	0	0
221 °C	0	0	235 °C	0	0	249 °C	0	0
222 °C	0	0	236 °C	0	0			
223 °C	0	0	237 °C	0	0			
224 °C	0	0	238 °C	0	0			
225 °C	0	0	239 °C	0	0			
226 °C	0	0	240 °C	0	0			
227 °C	0	0	241 °C	0	0			
228 °C	0	0	242 °C	0	0			
229 °C	0	0	243 °C	0	0			

From 0 °C to 0 °C = 0 0

SAVE

BACK **SAVE AS**

Pic.20 Recipe preview screen 4

The arrows   allow the operator to switch between the screens

BACK

– opens the recipe selection screen

SAVE AS

– saves the recipe under a selected name

- RECIPE EDITOR - 10-02-2017 13:07:34

1:Receptura 1	2:	3:
4:	5:	6:
7:	8:	9:
10:	11:	12:

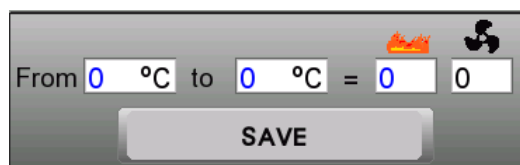
EDIT NAMES

BACK



Pic.21 Recipe saving screen

In order to change the power of the burner and exhaust fan for the selected temperature the operator needs to press the appropriate field and enter the requested value.

The Collective edition field, that is located on the Recipe preview screen 4 helps to speed up making of the changes.



Pic.22 Collective edition field

The Collective edition field allows the operator to make changes in the recipe in the selected range of temperatures. First the operator needs to input the range of the temperatures in which the changes should be made, then the desired values of the burner power  and the exhaust fan power  need to be input in the fields under the mentioned symbols. After that, the **ZAPISZ** button needs to be pressed in order to save the changes.

3.1.5.2 Recipe edition

After pressing the Edit button on the Recipe selection screen, the Recipe editor start screen will open



Pic.23 Recipe editor start screen

10-02-2017 13:07:37

- RECIPE EDITOR -

Inlet [°C]	0	62 °C	0	0	76 °C	0	0	90 °C	0	0	
Outlet [°C]	0	63 °C	0	0	77 °C	0	0	91 °C	0	0	
50 °C	0	0	64 °C	0	0	78 °C	0	0	92 °C	0	0
51 °C	0	0	65 °C	0	0	79 °C	0	0	93 °C	0	0
52 °C	0	0	66 °C	0	0	80 °C	0	0	94 °C	0	0
53 °C	0	0	67 °C	0	0	81 °C	0	0	95 °C	0	0
54 °C	0	0	68 °C	0	0	82 °C	0	0	96 °C	0	0
55 °C	0	0	69 °C	0	0	83 °C	0	0	97 °C	0	0
56 °C	0	0	70 °C	0	0	84 °C	0	0	98 °C	0	0
57 °C	0	0	71 °C	0	0	85 °C	0	0	99 °C	0	0
58 °C	0	0	72 °C	0	0	86 °C	0	0	100 °C	0	0
59 °C	0	0	73 °C	0	0	87 °C	0	0	101 °C	0	0
60 °C	0	0	74 °C	0	0	88 °C	0	0	102 °C	0	0
61 °C	0	0	75 °C	0	0	89 °C	0	0	103 °C	0	0

BACK

➔

Pic.24 Recipe edition screen 1

10-02-2017 13:07:39

- RECIPE EDITOR -

104 °C	0	0	118 °C	0	0	132 °C	0	0	146 °C	0	0
105 °C	0	0	119 °C	0	0	133 °C	0	0	147 °C	0	0
106 °C	0	0	120 °C	0	0	134 °C	0	0	148 °C	0	0
107 °C	0	0	121 °C	0	0	135 °C	0	0	149 °C	0	0
108 °C	0	0	122 °C	0	0	136 °C	0	0	150 °C	0	0
109 °C	0	0	123 °C	0	0	137 °C	0	0	151 °C	0	0
110 °C	0	0	124 °C	0	0	138 °C	0	0	152 °C	0	0
111 °C	0	0	125 °C	0	0	139 °C	0	0	153 °C	0	0
112 °C	0	0	126 °C	0	0	140 °C	0	0	154 °C	0	0
113 °C	0	0	127 °C	0	0	141 °C	0	0	155 °C	0	0
114 °C	0	0	128 °C	0	0	142 °C	0	0	156 °C	0	0
115 °C	0	0	129 °C	0	0	143 °C	0	0	157 °C	0	0
116 °C	0	0	130 °C	0	0	144 °C	0	0	158 °C	0	0
117 °C	0	0	131 °C	0	0	145 °C	0	0	159 °C	0	0

BACK

⬅ ➔

Pic.25 Recipe edition screen 2

10-02-2017 13:07:42

- RECIPE EDITOR -

160 °C	0	0	174 °C	0	0	188 °C	0	0	202 °C	0	0
161 °C	0	0	175 °C	0	0	189 °C	0	0	203 °C	0	0
162 °C	0	0	176 °C	0	0	190 °C	0	0	204 °C	0	0
163 °C	0	0	177 °C	0	0	191 °C	0	0	205 °C	0	0
164 °C	0	0	178 °C	0	0	192 °C	0	0	206 °C	0	0
165 °C	0	0	179 °C	0	0	193 °C	0	0	207 °C	0	0
166 °C	0	0	180 °C	0	0	194 °C	0	0	208 °C	0	0
167 °C	0	0	181 °C	0	0	195 °C	0	0	209 °C	0	0
168 °C	0	0	182 °C	0	0	196 °C	0	0	210 °C	0	0
169 °C	0	0	183 °C	0	0	197 °C	0	0	211 °C	0	0
170 °C	0	0	184 °C	0	0	198 °C	0	0	212 °C	0	0
171 °C	0	0	185 °C	0	0	199 °C	0	0	213 °C	0	0
172 °C	0	0	186 °C	0	0	200 °C	0	0	214 °C	0	0
173 °C	0	0	187 °C	0	0	201 °C	0	0	215 °C	0	0

BACK

← →

Pic.26 Recipe edition screen 3

10-02-2017 13:07:44

- RECIPE EDITOR -

216 °C	0	0	230 °C	0	0	244 °C	0	0
217 °C	0	0	231 °C	0	0	245 °C	0	0
218 °C	0	0	232 °C	0	0	246 °C	0	0
219 °C	0	0	233 °C	0	0	247 °C	0	0
220 °C	0	0	234 °C	0	0	248 °C	0	0
221 °C	0	0	235 °C	0	0	249 °C	0	0
222 °C	0	0	236 °C	0	0			
223 °C	0	0	237 °C	0	0			
224 °C	0	0	238 °C	0	0			
225 °C	0	0	239 °C	0	0			
226 °C	0	0	240 °C	0	0			
227 °C	0	0	241 °C	0	0			
228 °C	0	0	242 °C	0	0			
229 °C	0	0	243 °C	0	0			

From °C to °C =

SAVE

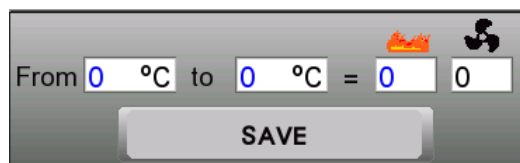
BACK

←

Pic.27 Recipe edition screen 4

In order to change the power of the burner and exhaust fan for the selected temperature the operator needs to press the appropriate field and enter the requested value.



The Collective edition field, that is located on the Recipe preview screen 4 helps to speed up making of the changes.



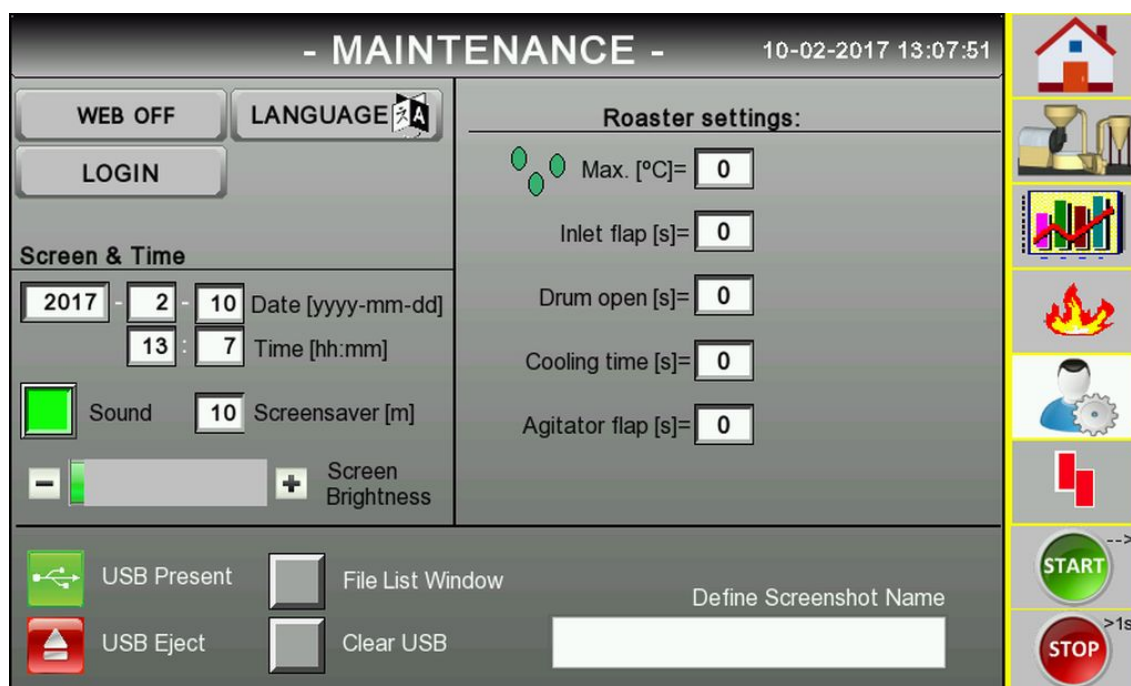
From 0 °C to 0 °C = 0 0

SAVE


Pic.28 Collective edition field

The Collective edition field allows the operator to make changes in the recipe in the selected range of temperatures. First the operator needs to input the range of the temperatures in which the changes should be made, than the desired values of the burner power  and the exhaust fan power  need to be input in the fields under the mentioned symbols. After that, the **ZAPISZ** button needs to be pressed in order to save the changes.

3.1.6. Maintenance screen




- MAINTENANCE - 10-02-2017 13:07:51


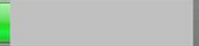

WEB OFF LANGUAGE 

LOGIN


Screen & Time

2017 - 2 - 10 Date [yyyy-mm-dd]
13 : 7 Time [hh:mm]

 Sound 10 Screensaver [m]

   Screen Brightness

Roaster settings:


 Max. [°C]= 0


Inlet flap [s]= 0



Drum open [s]= 0

Cooling time [s]= 0

Agitator flap [s]= 0


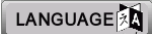
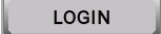





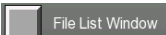
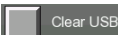
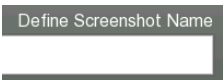
USB Present  File List Window Define Screenshot Name

USB Eject  Clear USB

Pic.29 Maintenance screen

The maintenance screen allows the operator to use the following functions:

No	Icon	Description / function
1.		
2.		Language selection (pic. 30)
3.		Service mode, not available to the user (only available for the authorized service)
4.		Change time and date by pressing the selected field and inputing the data
5.		Sound – switch the sound signal on/off
6.		Screen brightness slider – allows to change the backlight power
7.		USB active/USB inactive – informs about the activity of the connected flash drive
8.		Remove USB – allows to safely disconnect the flash drive
9.		File list window – shows the list of the files on the flash drive
10.		Clear USB – deletes all of the files on the flash drive
11.		Define screenshot name – allows the screenshot name change and input

The following roaster settings can be edited on the Maintenance screen:

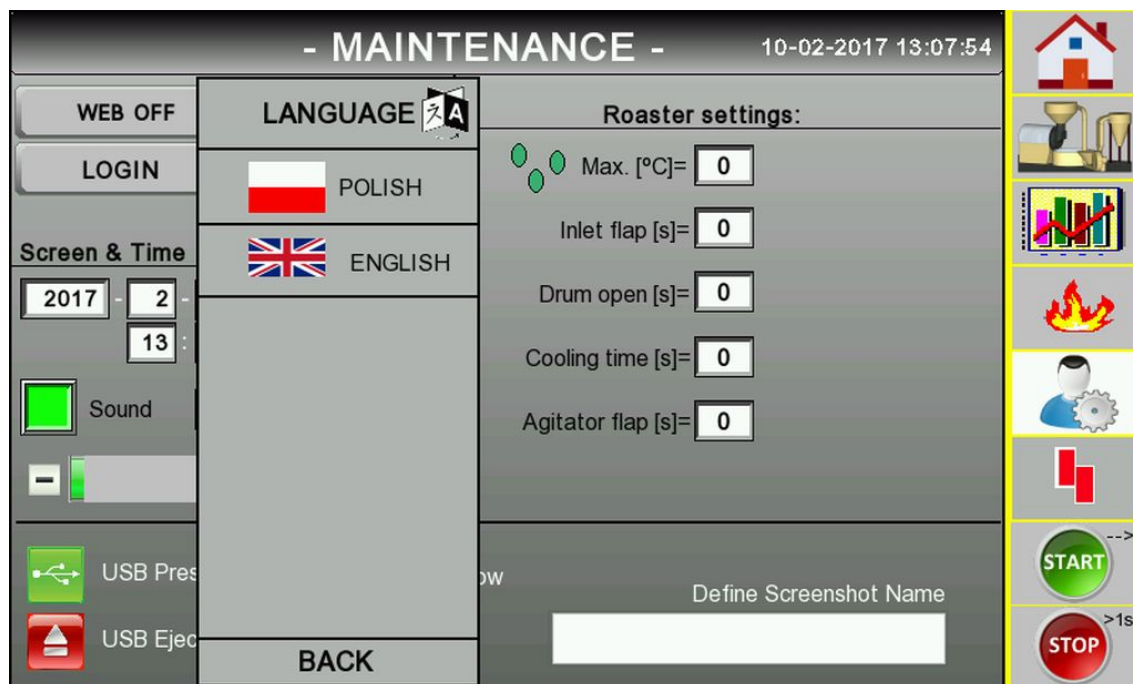
Max – the coffee temperature at which the burner switches off automatically in order to prevent the coffee beans from burning (max 250°C)

Inlet flap – the amount of time that the green coffee hopper inlet flap will remain opened in automatic mode

Drum open - the amount of time that the drum door will remain open in automatic mode

Cooling time – the amount of time in which coffee will be cooled down on the cooling bin before opening the agitator flap and releasing the coffee into the destoner in automatic mode

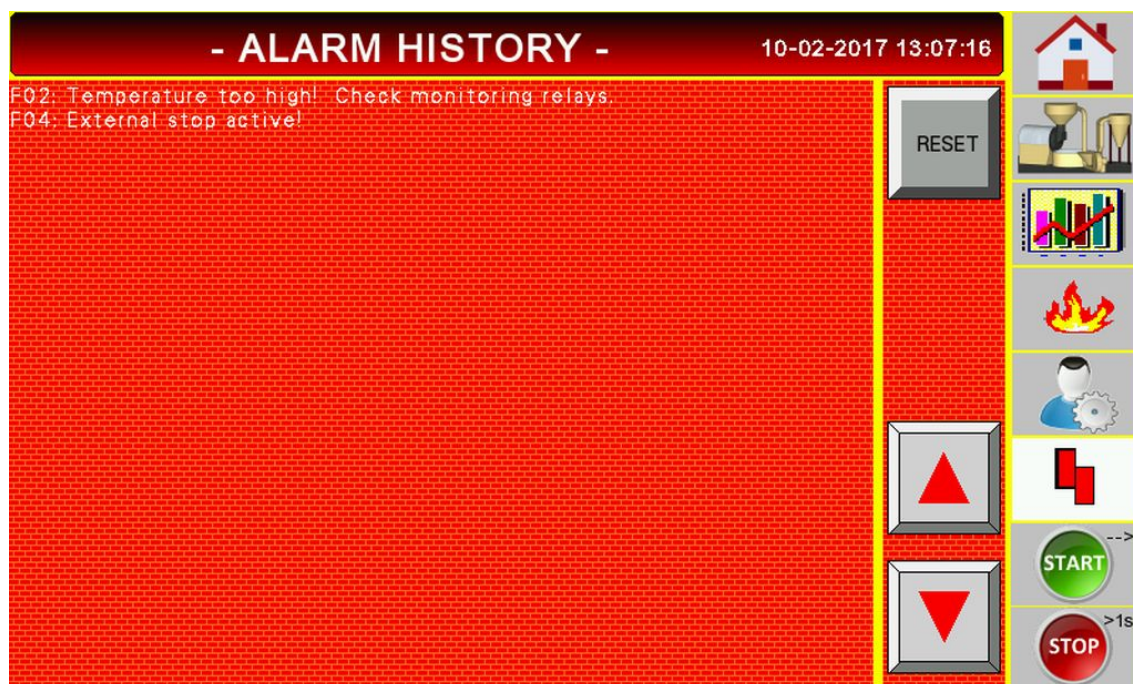
Agitator flap – the amount of time that the agitator flap will remain opened in automatic mode



Pic.30 Maintenance screen – choosing the operation language

In order to change the operation language, the appropriate flag needs to be pressed.

3.1.7. Faults and errors screen



Pic..31 Faults and errors screen

The Faults and errors screen shows messages related with faults and errors, that cause the SR coffee roasting line to work incorrectly. On the screen there are the following buttons:




- reset the message after the fault or error has been removed



- go to the previous message



- go to the next message

Code	Message	Solution
F00	Emergency stop!	Check the emergency switch. Press the safety circuit reset button
F01	Drum not rotating!	Check the 4M1 motor.
F02	Temperature too high! Check monitoring relays.	<p>Check the 10A1 relay.</p>  <p>In the event of the surpassing the exhaust fumes temperature, the relay needs to be reset by the indicated button</p>
F03	Cooling bin/stirflex stop switch active!	Check the emergency switch on the cooling bin.
F04	External stop active!	Check the external appliances
F05	Burner failure!	Check the 11F1 fuse.
F06	Air pressure to low!	Check the air pressure.
F07	Stirflex emergency stop!	Check the stirflex emergency stop on the control panel.
F10	Temperature coffee or exhaust too high!	Check the temperature monitoring relays.
F11	Destoner blower fault!	Check the 7U1 inverter and the 7F1 fuse.
F12	Exhaust blower failure!	Check the 5U1 inverter and the 5F1 fuse.
F13	Cooling motor failure!	Check the 8Q1 fuse.
F14	Main motor failure!	Check the 4U1 inverter and the 4F1 fuse.
F15	Agitator motor failure!	Check the 6U1 inverter and the 6F1 fuse.
F16	Inlet blower failure!	Check the 8Q2 fuse.
F21	Inlet flap failure!	Check the inlet flap actuator position.

F22	Drum flap failure!	Check the drum flap actuator position.
F23	Agitator flap failure!	Check the agitator flap actuator position.
F24	"Escape" active!	Press the error reset button on the control panel
F25	Inverter fault.	Check the 4U1, 5U1, 6U1, 7U1 inverters









Table 4. List of faults and errors

3.2. Manual roasting mode

The SR60 coffee roasting line is operated using the the control panel.




All the control elements are located on the Console (Pic.9).


The following steps need to be undertaken in order to produce roasted coffee in manual mode:

1. Switch on the power by turning the main power switch into the "I" position.
2. Switch the roaster's drum and exhaust fan by pressing the  button.
3. Start the burner by pressing the  button.
4. Heat up the roaster to the desired temperature of ca. 200 °C – the temperature of the drum is showed on the Manual roasting screen. In order to speed up this process, the exhaust fan speed needs to be lowered.
5. Weigh the desired amount of green coffee (15-25kg) and pour it into the green coffee loader hopper (the hopper needs to be closed).
6. Transport the coffee using the green coffee loader to the top hopper on the roaster. First press the  button in order to switch the fan on, after the fan is working manually move the lever on the hopper into the open position. The loading time is ca. 3 minutes.
7. When the temperature inside of the drum reaches the desired level press the  button to open the inlet flap and release the green coffee into the roaster's drum.
8. Roast the coffee, the speed of the process is related with the burner power, drum speed and the exhaust fan speed – adjust them accordingly. The target temperature of the coffee should be ca. 210-215 °C depending on the green coffee beans type and the desired color level/taste of the coffee. During the roasting phase the next batch of green coffee can be already transported to the top hopper (as in points 5-6).
9. When the coffee is close to the desired roast outcome, switch the cooling bin arms and fan on by pressing the  button.
10. Dump the coffee into the cooling bin by pressing the  button.
11. The cooling of the coffee takes up ca. 5 minutes. During the cooling phase the next batch can be put inside of the roaster's drum to be roasted (as in points 7-8).
- 12 After the roasted coffee beans cool down, they need to be released into the destoner using the  button.
13. When all of the coffee is transported into the destoner, switch it off by pressing the  button.
14. Prepare a container and open the destoner in order to release the roasted coffee from the destoner.


3.3. Automatic roasting mode


The following steps need to be undertaken in order to produce roasted coffee in automatic mode:

1. Switch on the power by turning the main power switch into the "I" position.
2. Move the  slider into the automatic mode position
3. Set the roaster work parameters on the Maintenance screen  (if they have not been set previously).
4. Press the  button



5. Start the burner by pressing the  button.

6. Select the desired recipe in the Recipe selection screen 


7. Transport the coffee using the green coffee loader to the top hopper on the roaster. First press the  button in order to switch the fan on, after the fan is working manually move the lever on the hopper into the open position. The loading time is ca. 3 minutes.

8. After the green coffee is inside of the top hopper, indicate that the roaster is ready to be working by changing the button on the hopper to  on the Roasting screen.

9. The roasting process will run automatically according to the process.

10. In order to finish the process the  button needs to be selected, then after the roasting is finished, the burner needs to be switched off, and the  button needs to be pressed for one second.

Warning!

The SR60 coffee roasting line has not got a proximity sensor on the top hopper. Indicating that the roaster is ready to work in automatic mode by the  button may result in starting the process even without green coffee present.

4. SERVICE AND MAINTENANCE

The following service and maintenance steps need to be undertaken, in order to ensure a fault free workflow of the SR60 coffee roasting line.

Every 80 hours

Checking the transmission elements

Checking if the flaps and other moving elements are working properly

Cleaning and greasing the moving elements

Every 160 hours

Checking that the emergency stop buttons work properly

Controlling the temperature indication elements

Checking and cleaning the green coffee loader

Visual control of the electrical cabinet

Installation check

Activities performed by persons with the required qualifications and if the regulations do not specify exactly the time period, not less often than once a year

Electrical installation - checking the short circuit loop and insulation resistance of the power cord

Gas installation - checking the gas system's tightness and correct functioning of the flame control and ignition system

Lubrication of moving parts

Main bearing should be greased with special temperature resistant grease. After removing the front cover of the bearing the operator should grease the bearing and then put the cover back in its place.

5. TROUBLESHOOTING

The SR60 coffee roasting line will not work due to the emergency switch being pressed, a defect or inappropriate regulation.

The machine has stopped

The safety devices included are two EMERGENCY STOP buttons and a MAIN SWITCH. Each of them allows the machine to be shut down at any time during operation.

If the machine has stopped, check if the EMERGENCY STOP button has not been pressed or that the power supply has not been interrupted.

Stopping of one of the motors and / or lack of response to the control system

After determining which motor has stopped or cannot be switched on, check the safety devices. They are located in the electrical cabinet.

Check whether any of the overcurrent switches (Q) and / or the thermal triggers have tripped. If you have not noticed any problems with the above mentioned electrical devices, check the control system and diagnose the cause of the fault.

WARNING!

All work carried out on components powered by 400V AC must be performed by a qualified person.

The burner does not ignite

Check if the gas flows into the system and then whether the ignition system is working properly or not.

The burner flame keeps fading

This can be a sign of gas interruptions, insufficient pressure or malfunction of the flame control system. First check the gas supply of the burner.

Perceptible gas smell

As soon as the personnel handling the appliance smells the gas, immediately switch off the appliance with a main switch and ventilate the room. In the event that these actions do not work, close the main gas valve on the power supply of the device and call the person having the required authority and equipment to check the gas system tightness.

Abnormal sounds in the mechanical system

Determine where the sounds come from during operation, and then check that there are no malfunctions requiring immediate intervention.

6. REPAIRS

Before any interference in the device, turn off the power. Repairs should be carried out by personnel of the appropriate knowledge and, if required authorisations. When replacing used items, new parts must be used. It is permissible to use alternatives of other manufacturers, where they are identical parts in principle of operation and dimensions.

WARNING!

It is unacceptable to perform any modifications on the SR60 coffee roasting line.

Any modification of the device will result in the loss of warranty and liability of Coffed BDH.

7. DISPOSAL AND NEUTRALIZATION

At the end of its service life, the old appliance must be disposed of in accordance with the applicable national regulations. We recommend contacting a specialist company or contacting the disposal unit in the municipality.

WARNING!

To prevent possible misuse and related hazards, ensure that the SR60 coffee roasting line can be used again before disposal. To do this, disconnect the device from the power supply and cut off the power cord.

TIP!