

Owner's Manual



Renewable
sustainable energy



MODEL: SLIMPEL

**BE SURE TO READ THIS MANUAL AND KEEP IT NEAR THE HEATING
SYSTEM FOR EASY REFERENCE**

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INTRODUCTION

Congratulations on your purchase of a biomassfired heating system from KOZLUSAN HEATING SYSTEMS.

With proper installation and maintenance, your heating system will provide years of non-polluting, low cost heat for your home.

To insure correct installation and safe operation of your KOZLUSAN biomass heating system, you should:

- **Hire a licensed heating contractor** to install the biomass heating system and integrate it with your heating system. This contractor should have experience with installation and operation of gas, oil, and solid fuel heating appliances and be familiar with local building codes, fire codes and other regulations.
- **Read this manual** and learn how to safely operate and maintain your KOZLUSAN biomass heating system.
- **The assembling and start up (setting) of KOZLUSAN biomass boiler has to be carried out by our own customer service or by authorized qualified technicians.**
- Do not use any other fuels than specified below:
 - Ö-Norm M 7135
 - DIN-PLUS Norm
 - SWISSPELLET
 - Diameter: 6 mm Length: 5-30 mm (20% - 45 mm)

Only this way low-emission, economical and reliable operation can be guaranteed. Any disregard of these requisites leads to immediate expiry of warranty.

- The pellets must be stored in dry conditions to enable them to be transported without problems and to achieve trouble-free operation with optimum combustion combined with the greatest possible efficiency.
- We do not assume any liability for unauthorized technical modifications, and resulting damages are not covered by warranty.
- Operational procedures or alterations of any sort, carried out by unauthorized persons, as well as disregarding the general guidelines and the indicated safety instructions as specified here, result in immediate termination of all warranty claims.
- Please read the safety instructions below before operating the system. Disregarding the safety instructions may lead to injuries, perilous situations or damage the pellet boiler.

SAFETY INSTRUCTIONS

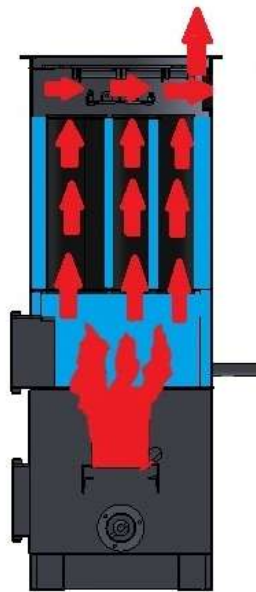
- The pellet heater system may only be operated be in faultless technical condition. Malfunctions and damage which affect or could affect safety must be corrected immediately by our trained personnel.
- The assembly may only be conducted by our customer service, or by a certified specialist. The system is equipped with rotating parts, which move with a relatively large turning movement (crushing hazard).
- Under the casing and in the terminal box there are voltaged components. Do not remove the casing or terminal box.
- Never open the inspection openings of the boiler while in continuous operation, hot exhaust gas and dust may escape.
- The system should be turned off before the implementation of maintenance work. Wait until the pellet boiler has cooled down (check the temperature on the display).
- The boiler needs to be switched off before carrying out the cleaning of the chimney. Wait until the pellets have burned down completely (approx. 20 minutes – danger of explosion through back up of exhaust gas).
- Never pour flammable liquids into the burner.
- Never perform independent repair work on our system, call trained personnel!
- Put a signboard into the heating room that forbids to smoke or to use open light or fire.
- A certified fire extinguisher must be installed in the boiler room.
- Ensure enough air supply in the heating room.
- Secure the boiler room against unauthorized access, especially by children.
- Once a month, test the boiler doors and the water connections for leaks and damage.
- Once a year, test the safety temperature limiter.
- Safety and monitoring devices may not be removed, bypassed or taken out of service in any other way.

- Always wear a dust mask when cleaning the system and when removing ashes to avoid damages to your health.
- When setting the domestic water temperature above 60 °C, you have to ensure that the hot water is mixed with cold water to avoid scald.
- The pellet heater system may only be set up and operated in heating and plant rooms which comply with legal requirements.
- Provide an appropriate air relief valve on top of the boiler.
- Annual control of safety devices by a specialist.
- Regular control of expansion tank by a specialist.
- Regular control of pellet feeding devices, automatic ignition devices and feeding features.
- **Please note that even when the system is turned off, different functions are in operation.** (For example the anti-freeze protective device; pumps and mixers are moved periodically during the night avoid an accumulation of the storings). **To ensure that no electricity runs through the system, take off the system from electricity.**
- Make sure that the return temperature does not drop below 50 °C. Disregarding leads to expiry of warranty!

How the biomass heating system works

The KOZLUSAN biomass heating system produces few emissions and achieves a high level of heating efficiency because of its unique design. The fully automated fuel delivery is '**poured from top**' into an air fed **burn pot** where the fuel is **self ignited** before the full **modulation** control system controls the burn for minimum emissions with maximum heat output.

To understand how the KOZLUSAN heating system works, we need to look at the flow of air, fuel and gases through the heating system and the transfer of heat from the superheated gases to the thermal transfer fluid. We also need to understand some of the terminology used to describe the systems operation;



Air Flow through the Biomass heating system

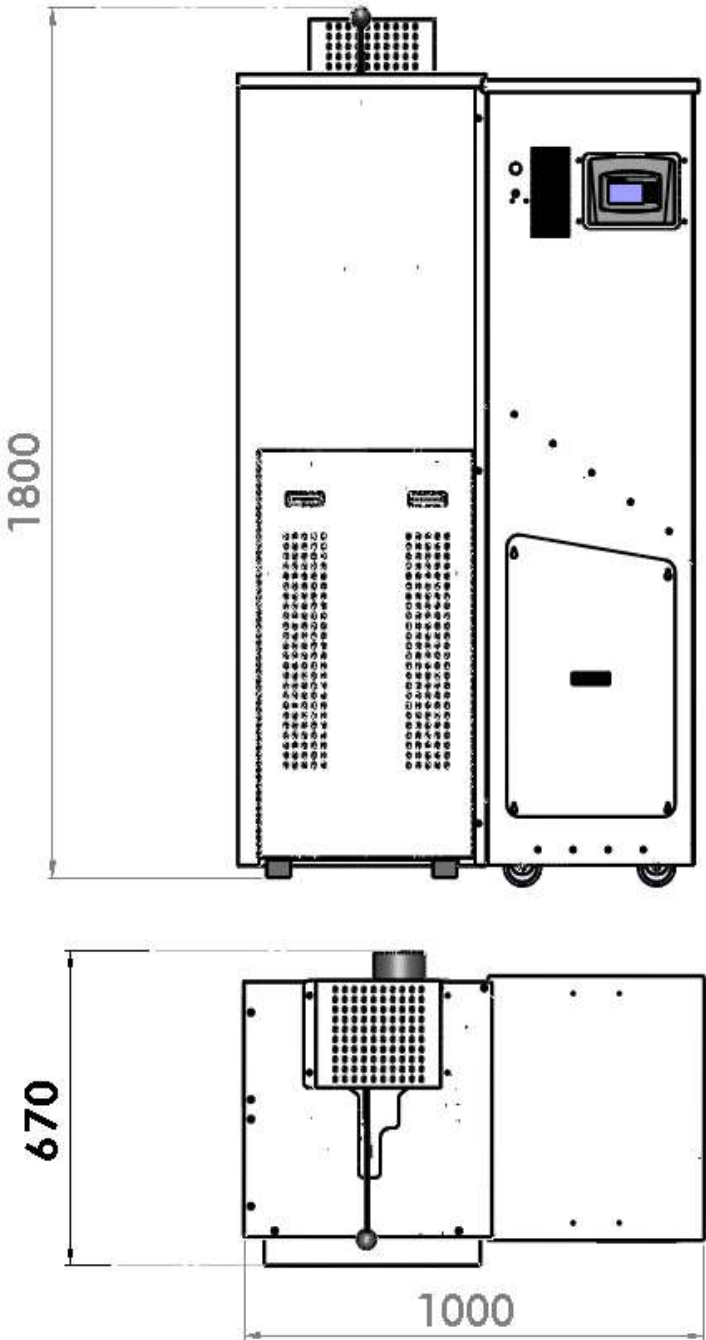
1. Fuel is fed from the fuel store via an auger. The fuel is poured from the top into the cylindrical burn pot to maintain a physical separation between the fuel store and the fuel feed. Heat from the burning fire is force fed air from a variable speed fan. Various sensors measure temperature in the boiler (a thermostat that works in water) a flue gas temperature sensor (probe in the chimney), outside temperature sensor (the weather or room temperature) and a safety cut off temperature sensor to protect against overheating (high limit stat).
2. As air flows through the firebox, its temperature rises to nearly 1000° C.
3. This superheated air rises upwards and then through a series of heat tubes where the heat is transferred into the thermal fluid.
4. By the time the exhaust air reaches the flue, most of its thermal energy has been absorbed. The final temperature of the escaping flue gas is less than 175° C.

Fluid Flow through the Heating system

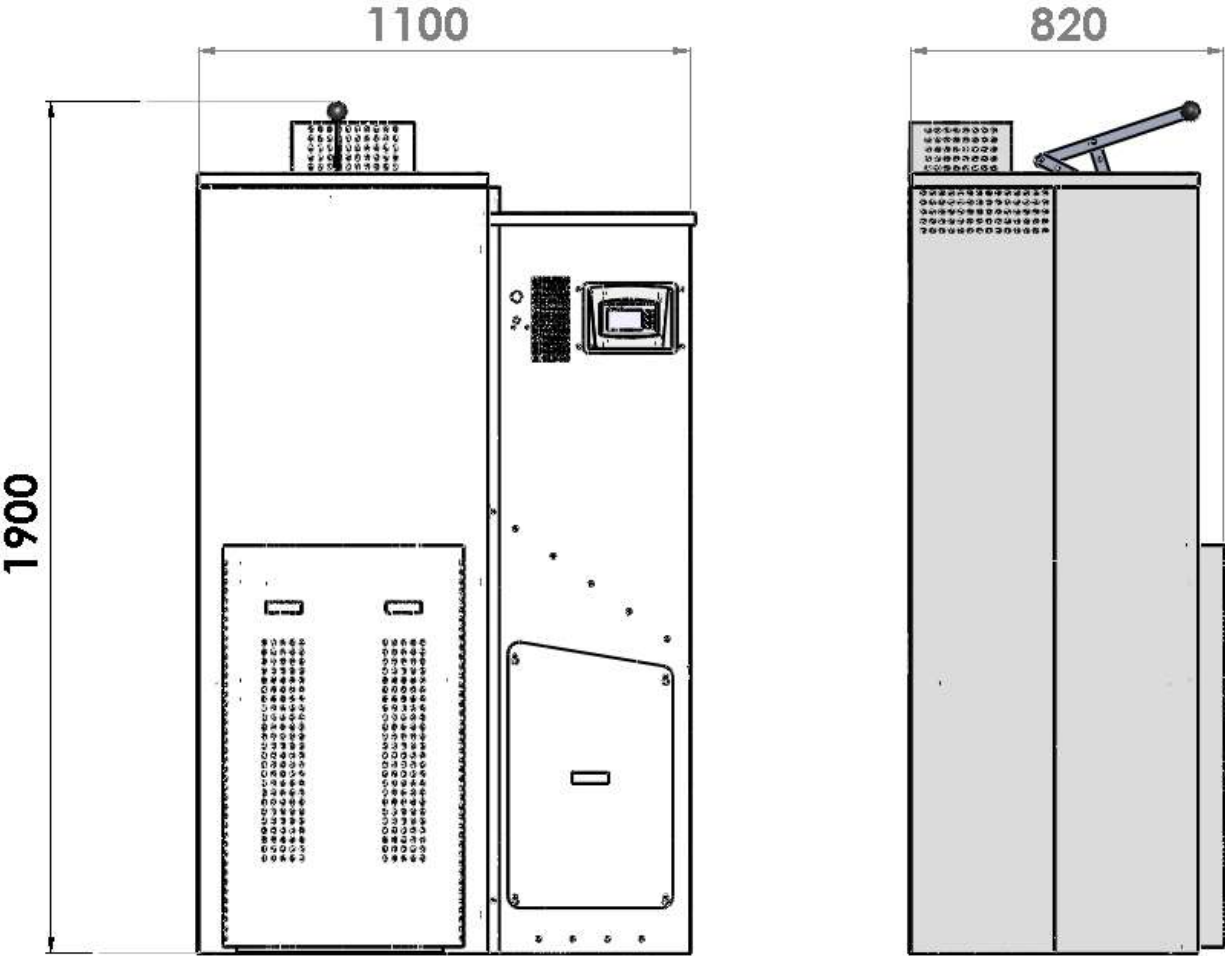
1. KOZLUSAN heating systems recommends a mixture of water and propylene glycol as a heat transfer fluid. Glycol is a non-toxic solution that works like the antifreeze in your car to prevent corrosion and freezing.
2. A pump pushes fluid around the heat transfer jacket which absorbs heat from the combustion gases. The fluid exits the internal manifold at about 80-85° C.
3. The fluid flows past an aquastat (water thermostat) that regulates the burn rate of the heating system in conjunction with the flue gas temperature sensor that measure the temperature in the flue. This information is used to determine the amount of air and fuel being used to ensure efficient heat transfer and to ensure the fan does not simply blow the heat up the flue. The heated fluid is used to transfers the heated fluid to your home system where it provides warmth to your home, garage, basement and other structures; preheats your domestic hot water; heats your pool; and/or melts snow on your driveway.
4. Having transferred the heat to the home system, the fluid exits the external heat exchanger and repeats its path through the internal manifold.

SPECIFICATIONS

SLIMPEL 25



SLIMPEL 40



AIR ELIMINATOR VALVE & BLOW OFF

Safety outlet

Cold water inlet

Mains water inlet

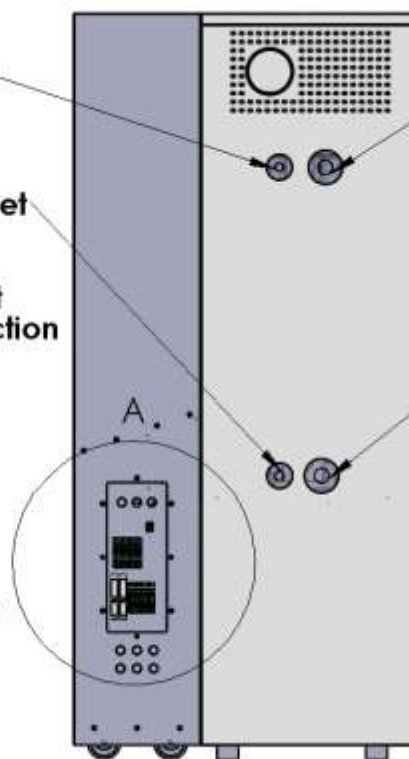
Sensor group

Internet connection

Hot water outlet

Fuse

Pump group



	Slimpel 25	Slimpel 40
Max. Heat Performance(kW)	25	40
Min. Heat Performance (kW)	5	8
Max. Boiler Temperature(°C)	90	90
Max. Utility Water Temperature(°C)	80	80
Max. Operating Pressure (bar)	3	3
Test Pressure	4,3	4,3
Max. Suction Flow Rate Of Flue(m³/h)	60	100
Exhaust Fan sucktion pressure at full load(pascal)	-7	-10
<u>Dimensions</u>		
Total Weight(kg)	300	380
Water Content (lt)	50	90
Bunker Capacity(kg)	120	120
Ash Box-Useable(lt)	-----	-----
<u>Water & Chimney Connections</u>		
Hot Water Outlet	1"	1"
Cold Water Inlet	1"	1"
Safety Outlet	¾"	¾"
Boiler Emptying (Mains Water Inlet)	¾"	¾"
Chimney Diameter(mm)	128	128

INSTALLATION

Your KOZLUSAN heating system should be installed by a qualified heating contractor who is thoroughly familiar with gas, oil, and solid fuel heating appliances. Also, you should be sure to comply with local building codes, fire codes and other regulations when installing the heating system.

Safe Practices

- Hire a licensed contractor with experience in design and installation automated heating systems.
- Comply with local building codes, fire codes and other regulations when installing this heating system.
- Observe minimum clearances to combustible surfaces.
- Make sure to identify sources of make-up air in the room where the heating system is located. The KOZLUSAN Heating System, exhaust fans and other appliances all draw air from the room. Be certain there is an adequate source of fresh air to offset these demands or you may create negative pressure in the room and starve the heating system of combustion and create draft problems in your flue.
- Connect the heating system to a properly installed and operating chimney and vent it to the outside.
- Be sure your chimney is safely constructed and in good repair. Before installation, have the chimney inspected by a qualified inspector.
- Be sure to provide thermal spike protection for the heating system (see Wiring and Controls pg. 30).
- **DO NOT** connect the heating system to an aluminum Type B gas vent.
- **DO NOT** vent the heating system to another room or inside a building.
- **DO NOT** share a chimney flue with another appliance.
- **DO NOT** install the heating system in a mobile home or trailer. Instead, install the heating system outside in a covered enclosure and pipe the hot water into the mobile home.

Chimney Installation

A chimney performs two functions: it removes smoke and flue gases from the heating system, and it provides “draft” for the fire. Draft is the term used to describe the suction that occurs when hot air rises and creates a vacuum in the firebox. That vacuum draws fresh air into the firebox and feeds combustion of the wood. No heating system can operate properly without adequate draft.

Proper installation of the chimney flue is critical to the performance of your KOZLUSAN Heating System. The majority of problems encountered after installation are attributable to a flue that is improperly sized or otherwise provides inadequate draft to the heating system.

You may connect the KOZLUSAN Heating System to an existing flue or chimney subject to the following conditions.

1. A qualified professional has inspected, repaired (if necessary), thoroughly cleaned the chimney and determined it is suitable for use with a residential heating appliance that burns solid fuel.
2. The chimney or flue should be at least 3-4 m tall and sized correctly for the KOZLUSAN Heating System model installed.
3. Do not share a flue with another heating system, appliance or fireplace. Do not use a flue that already provides make-up air to the cellar or basement.
4. Tightly close the cleanout opening in the base of the chimney.

Mount the expansion tank (Optional “Open System” Installation Kit Only)

The heating system is leak-tested at the factory during final assembly, and the heat transfer fluid drained for shipment. The recommended solution is a mix of 30% propylene glycol to 70% water unless you are located in a very cold climate, or you plan to leave the heating system unused for a long period of time. A 30% solution of propylene glycol is adequate to lower the freezing point to -13° C and raise the boiling point to 102° C.



CAUTION: DO NOT use ethylene glycol-based (automotive antifreeze) coolant in your Kozlusan Heating system or in your home’s heating system. Always use **propylene glycol**-based coolants.

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OPERATING THE HEATING SYSTEM

Safe Practices

1. Keep fuel dry.
2. **DO NOT** use chemicals, gasoline, lantern fuel, kerosene, charcoal lighter fluid or other flammable liquids to start or “freshen up” the fire, always let the automatic ignition start the fire.
3. **DO NOT** open the access doors unless system is off.
4. **DO NOT BURN** coal or anything other than pellets in this heating system.



WARNING EXPLOSIVE GASES

Gasses formed during solid-fuel combustion may cause a small explosion when the heating system is refueled. Always use your left hand to open the firebox door. Open the door slowly and keep your face and body well away from the door until it is completely open.

5. Use the tools provided if it is necessary to rake ashes or unburnt fuel from the burnpot
6. **DO NOT** jockey burning fuel in the burnpot.
7. **DO NOT** throw fuel into the burnpot via the access door
8. Keep the access door closed tight except when tending the burnpot.
9. Keep the heating system area clear of combustible materials, gasoline, and other flammable vapors or liquids.
10. **DO NOT** forget to regularly empty the ash collection box.
11. **DO NOT** store fuel or combustibles within the appliance installation clearances or within the space required for fueling, ash removal, and other routine maintenance operations.
12. **DO NOT** allow anyone who is under the influence of drugs or alcohol or is unfamiliar with the correct operation of the heating system to add fuel or otherwise use this heating system.
13. **DO NOT** let children play around the heating system when it is operating. To avoid burns or other injury, alert all persons to the hazards of hot heating system surfaces.
14. **For adjustments of digital control panel, please read the “TCNet Boiler Controller Manual” that is given by the boiler.**

MAINTENANCE OVERVIEW

Safe Practices

1. Check your fuel supply regularly and allow suitable time for deliveries – try not to run out of fuel
2. Check the ash box and empty regularly.
3. Inspect chimney, flue pipes, flue pipe joints, and flue pipe seals regularly to ensure that smoke and flue gases are not drawn into, and circulated by, your home's air circulation system. If you observe rust or smoke escaping, replace the pipe immediately.
4. Exercise the safety relief valve at least once a year.
5. Check the water pressure is between 1 and 2 bar – if too low top up system with more water.
6. **DO NOT** clean heating system surfaces when the unit is hot. Wait until the unit cools and then clean with soap and water.



ATTENTION

This work may only be performed by certified specialists or by KOZLUSAN customer service

Every guarantee / warranty expires with independent maintenance work!

Periodical Maintenance

Brushing Burnpot

- Take out front door cover
- Unloose the star handle of the door and take it out
- Brush inside the burnpot. Remove the flue ashes in the combustion chamber.
- Clean the flue tubes manually by handle. (See below)



ATTENTION

We recommend letting the boiler cool down for at least 2-3 hours later switching off the system before proceeding with these works.

Yearly Maintenance

- Cleaning of the suction fan and the flue tube (See pictures below)
- Inspection of the grate cleaning lever
- Inspection and cleaning of the air-flow sensor in aggregate test
- Inspection of gaskets on the combustion chamber door and ash box
- Operational test of the heat exchanger cleaning
- Cleaning of the exhaust sensor
- Test the igniter tube for residue
- Test upper and lower parts of the burner for damage and leaks
- Test the intervals of the sensors (grate motor, separator)
- Lubrication of the heat exchanger cleaning drive and grate bar
- Exhaust gas measurement



Cleaning of the suction fan and the flue tube

Maintenance every 3 years

Maintenance volume from the yearly maintenance and the following additional work

- Visual check and cleaning of the hoist basket lever for the heat exchanger cleaning:
In addition, remove the boiler cover, vacuum out the existing ashes and check the function of the hoist basket lever.
According to function control, using caulking strip newly caulk the boiler cover and reassemble.
- Cleaning of secondary air channels in burnpot and the base of burnpot.
Detach the hopper tank from the boiler firstly. Then remove the burnpot carefully. (See pictures below)
- Test run of all electrical equipment
- If necessary, exchange the ignition blower (after approx. 500 hours of operation)
- If necessary, exchange the coal for the suction turbines. (after approx. 500 hours of operation)



Cleaning of secondary air channels in burnpot and the base of burnpot.

TROUBLESHOOTING

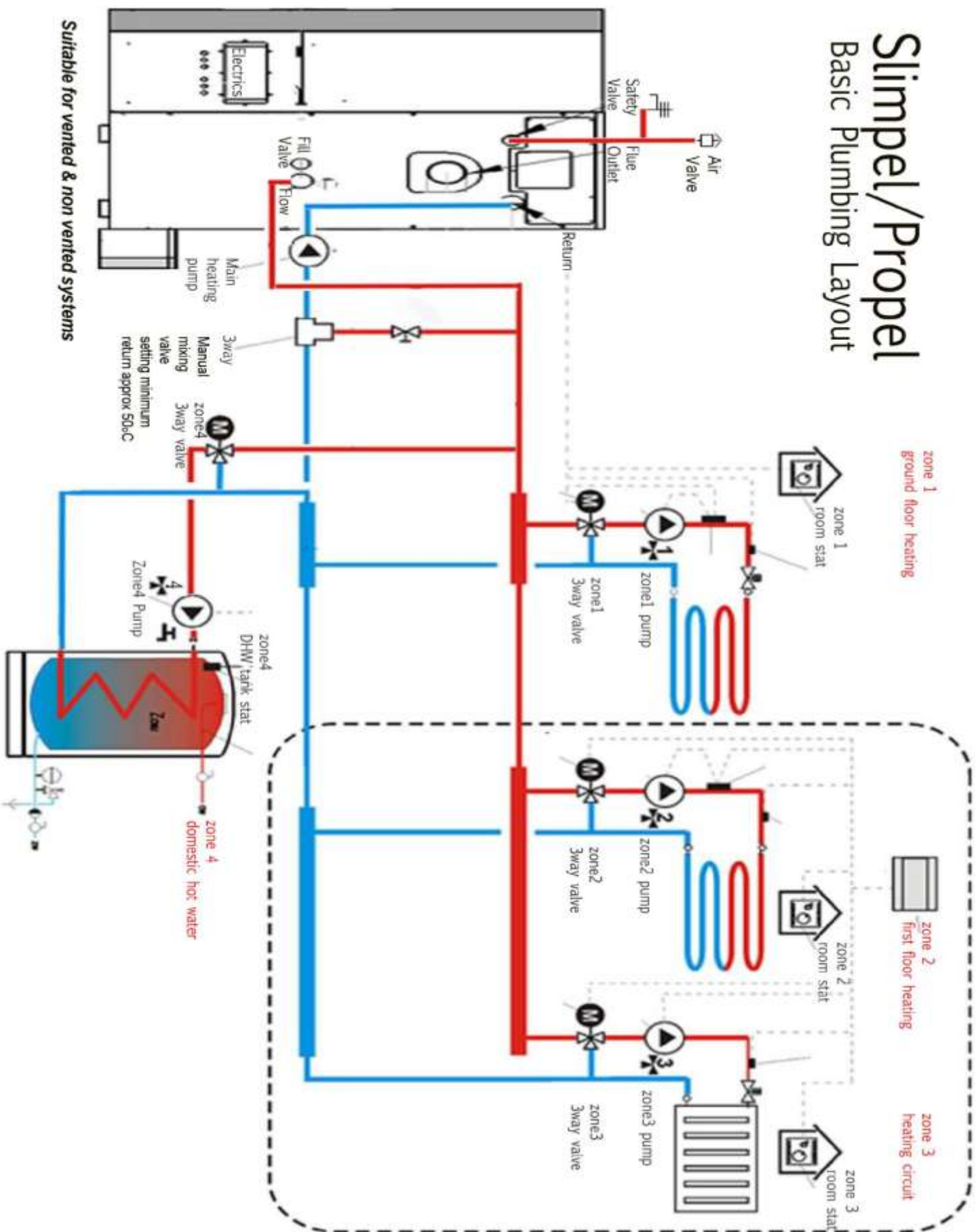
FAILURE	CAUSE	REMEDY
Dark screen	Emergency switch turned OFF	Turn it ON
	Safety Temperature Limiter has relased	Let the boiler cool down to 80 °C
		Reset the Safety Temperature Limiter and search for cause (e.g. Defect pump..)
Error: Out of Pellets	No more pellets in fuel hooper	Refill
	Defective pellet level sensor	> Inform customer service
Error: Ignition failed	Too cold ambient temperature	The ambient temperature should be 0-45 °C for proper working
	Low quality pellets	Change pellets
	Ignition device malfunction	> Inform customer service
	Exhaust fan malfunction	> Inform customer service
Error: Overtemperature detected	Boiler temperature exceed 95 °C	Let the boiler cool down
	Circulation pump malfunction	> Inform customer service
	Defective controlled board	> Inform customer service
	Defective temperature sensor	> Inform customer service
Error: Back burning to auger	The temperature of the auger exceeded the limit thermostat's value	
	Back burning to auger	
	Defective back burning detection thermostat	> Inform customer service
	Lost connectivity between the controller and back burning detection thermostat	> Inform customer service
Error: Memory allocation error	Problem occured in the control panel	Reset controller
	If the problem persists after reset	> Inform customer service
Error: FLASH checksum error	Problem occured in the control panel	Reset controller
	If the problem persists after reset	> Inform customer service
Error: FILESYSTEM error	Problem occured in the control panel	Reset controller
	If the problem persists after reset	> Inform customer service
Error: Sensor malfunction (<i>sensor no</i>)	T3: Boiler - Defective sensor	> Inform customer service
	T2: Weather - Defective sensor	> Inform customer service
	T1: Buffer tank - Defective sensor	> Inform customer service
	Tc1: Exhaust - Defective sensor	> Inform customer service

TROUBLESHOOTING

FAILURE	CAUSE	REMEDY
Burner creaks		Burner is new (wait)
Chimney is sweating	Poor insulation	Insulate the chimney well
	Low exhaust temperature	Increase the minimum power / the boiler temp., it may be necessary to restore the chimney
Pellet boiler is sweating		Check return flow increase at external control
Heating circuits do not work / Heating system is slow to heat up	The boiler is on utility water operation mode	Change operation mode
	Hydraulic problem	Contact installer
	Altered heating curve	Adjust
	Heating circuit pump is defect	Fix it
	Air is in the system	Bleed air from system
	Pumps run on wrong rotation speed	Fix it
High temperature value on screen	No water in boiler	Fill the system
	Circulation pump is not working	Activate / Fix the pump
	Air in the system / boiler	Bleed air from system / from boiler
	Defective boiler temperature sensor	> Inform customer service

Slimpel/Propel

Basic Plumbing Layout



Suitable for vented & non vented systems