





JENESIS SHS SERIES STEAM GENERATORS



Wherever steam is needed ...

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JENESIS PASSPORT

•	Туре	:	SHS/
•	Serial Number	:	
•	Capacity	:	kW/kcal/h
•	Steam Production	:	kg/h
•	Burner	:	
•	Туре	:	
•	Fuel	:	
•	Operation Principle	:	
•	Control Panel	:	ISIEVİ
•	Project Number	:	
•	Power Needed	:	V /Hz /kW
•	Thermostat	:	
•	Thermocouple	:	
•	Feed Pump	:	
•	Туре	:	
•	Drive Motor	:	d/dkW
•	Pressure Switches	:	
•	Safety Valve	:	DN/ PN
•	Main Steam Valve	:	DN/ PN
•	Pressurization Pump	:	

Installation, Operating and Maintenance Instructions, Warranty **Certificate, Operating Principle** Jenesis Steam Generators are delivered with one operating instructions folder.

- \checkmark
- The folder contains the installation instructions, the general operating and maintenance instructions for \checkmark the steam generator, the operating instructions for all parts used on the steam generator (burner, pump, etc.) and the warranty documents.
- Steam Generators are water pipe steam generators that produce fast steam due to the small volume of \checkmark water in them and that do not have a risk of exploding. They are very sensitive to the water used. The water to be used must be well filtered and free of limescale ions.
- Steam generator consists of the main body (smoke channel), coil(serpentine)e (pressure hull), burner, \checkmark electric control panel, feed water pump, separator, condensate tank and smokestack sections.
- As seen in the picture, the "coil(serpentine)" \checkmark consists of two intertwined spirals. The inlet and outlet ports of the spiral are shown on the front cover.
- When installing the steam generator, a space equal \checkmark to the size of the device must be left on the front side, in case of removal of the "coil(serpentine)". Otherwise, the steam generator "coil(serpentine)" cannot be removed.
- \checkmark The water that is purified by the water softening device and ready to use in the condensate tank is pressed in through the coil(serpentine)e inlet port with feed water pumps. When the burner is activated, the water in the coil(serpentine)e evaporates, advances towards the outlet and reaches the separator. Pressure and temperature controls are made with the control devices on the separator and the produced steam is served to the process by opening the main steam valve.



PLACEMENT & CONNECTIONS

✓ WARNING!!! For the commissioning of your steam generator, several assemblies and connections must be made on site. You must send the photos of the gas opening certificate and the installations / connections made on site (steam installation, condensate installation, water installation, electricity installation, blowdown installation and smokestack connection) to our company.

a – Placement of the Vapor Generator

 ✓ The steam generator must be located in a well-ventilated, frost-free enclosure.

✓ The area where the steam generator is located should be a place with good air circulation.

✓ When positioning the steam generator,it must be placed in such a way that thedevice can be intervened on all four sides.



b - Burner Fuel Line Connection

For Burners Functioning with Liquid Fuel

✓ The installation of fuel line system to the indicated parts of the burner.

✓ Use preheating tank in the heater and fuel lines on the Fuel-Oil tank.

 \checkmark Use a heater on the preheating tank.

 \checkmark Use valve and filter on the fuel feed installation.

✓ The fuel tank must be located at a level which is proper to the burner.

✓ Place the fuel tank at least 5 meters away from the device.

✓ Attach the preheating tank vent to the main fuel tank.

 \checkmark Use a thermometer on the fuel tank and preheating tank.

 \checkmark Check whether or not the is a leak on the fuel line.

Fuel-Oil Installation Exemple



For Burners Functioning with Gaseous Fuels

✓ The pressure of the gas being fed to the burner must have an appropriate value. (For the natural gas, this value is 21 millibars or 300 millibars.)

 \checkmark A suitable manometer should be used at a place close to the burner, on the gas inflow line of the burner.

✓ In the gas installation, a valve should be used near the burner.

 \checkmark Gas installation and connections should be checked and the gas should be opened by the gas distribution company.

Exemple Gas Installation



ATTENTION!!! Unless your gas line is verified officially and opened by the gas distribution company, your vapor generator cannot be activated. You must submit your gas opening certificate before activation.

c – Smokestack Connection

 \checkmark In the production of the smokestack, it is necessary to choose the diameter of the smokestack according to the fuel to be used.

✓ Best possible production of the smokestack is necessary for the release of gas waste, for the burner to burn in the effectively and for your vapor generator to function with the highest efficiency.

Measurements of Opening of the Smokestack According to Capacities

Model	SHS	SHS	SHS	SHS	SHS	SHS	SHS	SHS	SHS	SHS	SHS
	250	350	500	750	1000	1250	1500	1700	2000	2500	3000
mm Ø	170	170	280	300	350	350	400	400	400	450	450

 \checkmark When connecting the steam generator smokestack outlet to the smokestack, the connection from the generator to the smokestack must be provided with a 10% slope, which will facilitate the discharge of the exhaust gas.

ÖRNEK BACA BAGLANTISI



✓ When connecting the smokestack flanges, always use a leakproof and non-flammable gasket.

✓ There must be two ½ "size sleeves on the smokestack. The first one is required for smokestack gas temperature thermocouple, which provides value to the smokestack temperature thermostat on the steam generator electrical control panel, and the other is required to use the smokestack gas analysis device.

 ✓ The dimensions of a smokestack depend on variables such as smoke temperature, outside temperature, smokestack load and operating time.
The following formula can be applied for smokestack sizing.

d – Vapor Connection

✓The best quality of the steam produced in the steam generator depends on the quality of the steam installation in the process.

 \checkmark The steam generator steam outlet valve size is given in the table below. The steam installation must always be one dimension above the steam outlet diameter used. For example, if the main steam valve of the steam generator is DN50, the steam installation should be DN65.

Vapor Connection Measurements According to Capacities

Model	SHS 250	SH S 350	SHS 500	SHS 750	SHS 1000	SHS 1250	SHS 1500	SHS 1700	SHS 2000	SHS 2500	SHS 3000
DN	32	40	50	65	65	65	80	80	100	100	125

 \checkmark In cases where more than one point of steam should be taken from steam generator, steam distribution collector should be made.

Collecter Application Exemple



 \checkmark The steam line from the steam generator to the collector must be at least one diameter bigger than the steam generator steam outlet size.

 \checkmark The steam distribution collector must be at least two diameters broader than the steam installation from the steam generator to the collector.

✓The condensate group should be used for the condensate formed in the collector.

 \checkmark In the steam installations, a slope of 5% should be given towards the steam generator. This will prevent the water from the line to advance into the process.

Steam Distribution Connection

Diagram



e – Condensate Return Connection

✓ Attach the condensate return line you are going to use in your process to the indicated entry on the condensate tank, after checking the necessary installation slopes.

✓ Use suitable types and diameters of steam traps on your machine's condensate outlets.

✓ Condensate return diameters should be one diameter less than the diameter of gas installation entering to the unit.

Steam Trap Group Connection Exemple



Condensate Return Connection

Diagram



f – Electricity Connection

✓ Compact electric control panel is used on the steam generator.

✓ All the control elements on the steam generator are connected to the electric control panel.

 \checkmark The process to be performed on-site on the electrical control panel is to connect the mains electricity (380V, 50Hz) to the R, S, T and neutral terminals left in the panel.

 \checkmark When connecting the mains to the electrical control panel, use cables of appropriate crosssection. The total power requirement can be found in the electrical connection section of the metal label on the steam generator.

 \checkmark In addition to the R, S, T, and neutral terminals, an external ground terminal is also provided in the electrical control panel. Electrical control panel and external grounding of the device are made by our factory. All the user has to do is enter the external grounding at the specified point on the electrical control panel.

✓ The electrical connection you make must be at the required voltage to eliminate possible disruptions. (380V, 50Hz)

CAUTION!!! Do not take external grounding as mains neutral. Do not jump from the neutral terminal to the external ground terminal. Make the external grounding as required. ATTENTION!!! Do not interfere with the electrical control panel in any way and do not take external energy for any device operating with electrical energy. The features of the parts used in the control panel are determined and designed considering the power requirements of the equipment on the steam generator.

g – Vent Connection

✓ With the return of the condensate, 10% flash steam is delivered to the condensate tank. If this flash steam generation is not carried out of the condensate tank, it creates pressure in the tank and causes deformation.

 \checkmark At the same time, the flash steam increases the condensate tank water temperature to very high values, in which case overheated water will damage your feed pump. Therefore, the outlet left as a vent on the condensate tank must be carried outside.

Depending on the steam generator capacity, a port for the vent is left on the condensate tank.

✓ The pipe diameter where the vent installation will be made should not be smaller than the connection port diameter left on the condensate tank and must be the same diameter or above.

✓ Vent connection should be made in such a way that the end is opened to outside environment without being connected to any installation.

 \checkmark Do not use the condensate tank vent outlet for any installation connection.

h – Blowdown Connection

✓ Steam generator and condensate tank blowdowns are combined and extended to the bottom of the tank.

 \checkmark The assembly process that is required in place is to take the blowdowns left together to the outside environment.

✓ The blowdown installation must be made above the combined pipe diameter.

 \checkmark It should be remembered that for the vents made under pressure, small diameter pipes will not be sufficient for evacuation.

<u>Vent Connection and Blowdown</u> <u>Connection Diagram</u>



i – Safety Valve Connection

✓ Safety valve is located on the vapor generator vapor outlet separator section.

✓ When the pressure of the vapor generator passes the maximum operating pressure, safety valve discharges the surplus vapor and releases it to outside.

 \checkmark During the process of connections being done in place, safety value should be taken to a dead spot and outside where people cannot be harmed.

✓ Safety valve should be installed without making any links to another installation connections.

 \checkmark If the present location is favorable, safety value installation should be made with a slope towards outside, with a straight pipe.

 \checkmark If the safety value installation cannot be linked to outside with a straight pipe and/or an attachment material similar to elbow is being used; relief value application must be used, as the place in which these components are situated will be filled with water.



j – Water Softening Device Connection

 \checkmark At the entrance of the water softener, there is a sediment filter, value and manometer which are left by the factory.

 \checkmark The on-site connection is to connect the mains water to the valve on the inlet of the water softener.

 \checkmark A pipe fitting must be used when connecting the mains water to the device. A valve should be installed at the outlet of the device to shut off the water if necessary and a sampling tap to take samples from the outlet of the device.

✓ Following the connection of the mains water, the water softener must be fed with water and the pressure fed from the pressure gauge left on the softener should be observed.

✓ Water softening devices require water and water pressure for regeneration. Inlet water pressure must be min. 3 and max. 6 bars.

 \checkmark If the mains water is not at the desired pressure, a storage tank and a booster must be positioned to pressurize the water.

 \checkmark If the water used is supplied from a source other than mains water (such as well water), the water must be subjected to good filtration.

✓ A 220 V socket must be located near the water softener for the electrical supply.

✓ Water softening devices use a 12 V adapter for power supply. (Delivered with device.)

✓ Regeneration process in water softening devices is set at 02:00 at night. For this reason, the
220 V socket positioned for the water softener adapter must be set to provide electricity for 24 hours.

✓ During the regeneration, the water softener discharges the waste water from the outlet at the rear of the device. This outlet should be connected to a drain.

USAGE AND MAINTENANCE INSTRUCTIONS

a – Introduction

✓ Thank you for choosing ISIEVI.

 \checkmark In this brochure, the assembly, usage and maintenance instructions of JENESIS SHS Type Vapor Generators are found, which are produced by ISIEVİ.

✓ If you wish to use your device with high efficiency, comfortably and without any problems, observe the directives in this brochure carefully. To start up, maintain and fix the device, please contact the technical staff. After the assembly and start-up of your device, Technical Staff will inform you about the usage of the device.

b – Warnings

✓ The steam generator must be located in a well-ventilated, frost-free enclosure.

✓ The generator is designed for steam production only. The system operating temperature and pressure must correspond to the label values. The Steam Generator may only be used with liquid or gas fuel systems specified in this manual.

 \checkmark In order to use the steam generator efficiently, burners certified according to EN 676 (Gas Fired) according to the Gas Burners Directive should be used.

✓ Feed water characteristics to be used in steam generators must meet the specified criteria. The use of soft, clean and non-corrosive water is very important for economic operation and system life.

✓ There should be no flammable gas and liquid in the area where the steam generators are located.

✓ Ignition is automatic in liquid or gas burners. There are many additional safety precautions on the system..

 \checkmark Do not touch the flame sight glass, smokestack and smoke box sections and surroundings with bare hands. These areas are hot and can cause injuries.

✓ It is recommended to install an emergency stop switch to cut off the main energy outside the boiler room.

 \checkmark The first controls and commissioning of a newly installed system are carried out by ISIEVİ MAKİNA authorized technical services. In case of a change in fuel in the future, please contact the Technical Service of the device.

✓The manufacturer is not liable for failures arising from revisions made without the knowledge of the manufacturer and in such cases the steam generator shall be excluded from the warranty. ATTENTION!!! In order for your Steam Generator to be commissioned, the installation and connection procedures required on-site must be carried out completely. The pictures of your gas opening certificate and the installations and connections you have made (steam installation, condensate installation, water installation, electrical installation, blowdown installation and smokestack connection) should be sent to our company.

c - Warranty and Service

 \checkmark In order for the warranty to be valid, the 'Warranty Certificate' must be approved by the manufacturer from which you purchased the device. Improper installation, maintenance or usage is not covered by the warranty. The failures caused by the coating of the heat transfer parts of the steam generator with lime and / or similar substances or caused by corrosion and all other water-related failures are not covered by the warranty.

d – General Characteristics

 \checkmark It is a slant type device with water pipes. Generates steam in a very short time. It has a high efficiency, a long life and it is fully automatic. It consists of a spiral curved, intertwined double-row coil (serpentine). The water volume is extremely small. According to TS 2736, Annex 2. Article 2.11, there is no harm in placing it in the building without a separate boiler room. It has a highly advanced security equipment. The body of the steam generator is insulated by covering the static powder coated hair on rock wool.

✓ With JENESIS Steam Generators, high efficiency monoblock burners with widespread service networks which have CE and TSE are preferred. SPECK triplex piston pumps are used as feed water pumps.

✓ Safety valve ensures safe operation of the system by releasing steam at possible pressure increases.

 \checkmark Safety switch allows the system (burner and pump) to stop when the set pressure is reached in case of failure of the operating switch.

 \checkmark In addition to displaying the steam temperature from the digital display during operation, the steam thermostat stops the system if the generator exceeds the **maximum steam temperature** set in case of possible dehydration.

✓ Fe - Const temperature sensing element is used to measure the steam temperature accurately.

 \checkmark The smokestack gas thermostat will display the flue gas temperature from the digital display during operation, and the system will stop and operate if the value exceeds the maximum smokestack gas temperature allowed by the municipality and other public institutions.

 \checkmark Fe - Const elements and special cable are used to measure the smokestack gas temperature as well as the steam temperature.

e – Operating Conditions

✓ Type SHS Vapor Generators are designed to **generate vapor**.

✓ Water should be supplied with appropriate hardness through the feed water inlet.

✓ The feed water inlet hardness value used should be 0 °Fr.

 \checkmark Daily, weekly and monthly controls and maintenance should be carried out according to the instructions for use.

f – Fuel Types to Be Used

 \checkmark SHS type Steam Generators are designed according to the usage of Diesel, Biodiesel, Fuel-Oil fuel types in liquid fuels and Natural Gas (LNG, CNG) and LPG fuel options in gas fuels. Do not, under any circumstances, change the settings of the fuel units of your device other than these types of fuel.

g - **Commissioning** - Controls to be done before commissioning

✓ Perform the hardness analysis of the water to be used, it should be 00 (zero) F.

✓ Check the fuel line for fuel.

✓ Check the condensate tank for water.

✓ Check the supply system for closed valves. (Fuel supply valve, condensate tank filling installation, pump supply installation)

✓ Check the feed pump connections (oil, water) for leaks.

✓ Check that the oil level is within the proper range and that water is not mixed into the oil from the oil pump dipstick.

✓ Change the pump oil every 3 months. Type of oil to be used (SAE 90 GL 4).

h – Feed Water Characteristics

 \checkmark Considering a lime furring of 1 mm. thickness causes a 7% fuel loss; for a long-lasting and efficient operation of your Steam Generator, feed water input hardness value should be 0°Fr hardness.

ANALYZES	SOFT WATER (Collected Sample)	CONDENSATE (Collected Sample)	BOILER (Collected Sample)	BOILER LIMITS
T. HARDNESS Fr ⁰				0 - 1
P – ALKALI ppm				< 1300
рН				10,5 - 12
CONDUCTIVITY Us/cm				< 1000
CHLORIDE ppm				< 500
A. PHOSPHONATE				10 - 15
CF				6 - 12

i – Jenesis Vapor Generator Sections

✓ Generator main body

- ✓ Combustion chamber
- ✓ Front cover refractory
- ✓ Front cover insulation
- ✓ Coil (serpentine)
- ✓ Front mirror
- ✓ Back mirror
- ✓ Smoke cover
- ✓ Body Isolation
- ✓ Smokestack
- ✓ Sight glass
- \checkmark Rear smoke chest

ATTENTION!!! The Steam Generator, steam installation, condensate installation and the process in which the steam will be used may contain various wastes from production; since they are newly manufactured. When the steam generator is put into operation for the first time, sending these wastes out of the system will prevent malfunction of the machine. **Opening by-pass valves in the process** and, if possible, giving the condensate return to the external environment for a period of half to one hour will ensure that these steam-drained wastes are discharged. If the condensate return cannot be given out, it will be beneficial to turn the blowdown valve of the condensate tank to the fully open position and ensure that it is also blown again for the same amount of time.

SAFETY AND CONTROL

Safety measures have been taken in case the used steam exceeds the maximum operating temperature and pressure. These are;

Safety Switch

If the device is single-stage, it has one operating and one safety switch. The safety switch turns the burner on or off according to the pressure it takes from the produced steam. If this operating switch fails to function for any reason, the safety switch is activated. This switch is set 1 bar above the set value of the operating switch. Stops burner when activated.





Safety Valve

The safety valve is set at 1 bar above the working pressure of the safety switch. This process is carried out during the manufacturing stage of the device. When the safety switch does not work, the steam pressure in the generator increases as the burner will continue to burn. When the operating pressure reaches the safety valve setpoint, it relieves excess steam and balances the pressure.

Flow Switch

In SHS type steam generators, flow switch is used to control the water flow on the feed water line. The task of the device is to determine whether there is any water supply to the system due to any failure in the feed water pumps and to stop the system completely.



Steam Thermostat

There is a steam thermostat which continuously measures the steam temperatures during operation. The steam has a corresponding temperature with pressure. The system automatically shuts down when the current steam temperature reaches the limit temperature set on the steam temperature line on the electric control panel.

Smokestack Thermostat

The system automatically stops as soon as the smokestack gas temperature exceeds the set value.

WARRANTY CONDITIONS

Warranty Duration: The steam generator and all its parts are warranted against defects in materials and workmanship for a period of 2 (two) years from the date of delivery.

Maximum Repair Time : 20 (twenty) business days from the notification of the failure in writing.

Out of Warranty Parts : Spare parts and consumables (oil, filters, antifreeze, belts, couplings, pump repair kits, analysis kits) that are worn or need to be changed in accordance with the period of use and operating conditions of the Steam Generator are not covered by the warranty and chargeable for replacement. It is possible to apply to the General Directorate of Consumer and Competition Protection of the T.C. Ministry of Industry and Trade for any problems regarding the guarantee certificate. The use of this Guarantee Certificate is authorized by the T.C. Ministry of Industry and Trade General Directorate of Protection of Consumers and Competition in accordance with the Communiqué on the Principles of Implementation of the Guarantee Certificate enacted on the basis of the Law no. *4077*.

Usage Errors : Failure to follow the instructions in the use and maintenance manual of the steam generator, faults in use, incorrect capacity selection and placement, faulty or incompletely made electrical, water, fuel and steam installations, not using water at the desired standards, disruption of daily, weekly and monthly maintenance; commissioning, repair or modification of the device, use of non-original consumables and spare parts, damage and malfunctions caused by external factors (hitting, impacting, dropping, etc.) upon receipt of the product and accessories and consumables used are out of warranty.

Consumer Rights: In the event of failure of the product due to defects in materials and workmanship within the warranty period; the product will be repaired free of labor cost, replacement part cost or a charge under any other name. If the product fails at least 4 times for the same reason within the warranty period despite the consumer's use of right to repair free of charge, if the maximum time required for repair is exceeded, a report is determined by the manufacturer that repair is not possible; the consumer may request the return of the goods, price reduction in defect rate or replacement of the goods. If the product fails within the warranty period, the period spent in repair is added to the warranty period. The fault is determined by the report issued by the manufacturer. The manufacturer may request that the goods be inspected at the factory when deemed necessary. In case the report is not issued or the consumer does not accept the report within the specified period, the consumer may apply to the arbitral tribunal for the relevant consumer issues and request the determination of the current situation.

Obligations : Invoices issued for the sold goods shall not replace the guarantee certificate. For this reason, it is mandatory for the consumer to declare the warranty certificate of the relevant manufacturer to the service in order to make the repair free of charge within the warranty. In case of any discrepancy about the date of purchase or the date of delivery of the product, the consumer is obliged to prove it. It is possible for the consumer to report the failure by telephone, fax, email, registered letter with advice of receipt etc. However, in case of dispute, the responsibility of proof belongs to the consumer.

Commissioning of the Vapor Generator

NOTE : The operating instructions folder contains a 3-page operating instruction to be hung in the workspace.

A) Controls Which Must Be Done Before Start-Up

<u>1 - Perform the hardness analysis of the water to be used. It must be 0^o F !!!</u>

Before starting the steam generator, hardness analysis of the water must be performed and **0° F** should be seen. The higher the quality of the water you use, the longer the service life of your steam generator will be. When performing hardness analysis;

* Fill the sample cup through the sampling valve to the 5 ml line. (Figure 1)

- * Hold the indicator buffer solution upright, drip 3 drops and shake. (Figure 2)
- * Test is completed when the water in the sample cup is green. (Figure 3)







Figure 1

Figure 2

Figure 3

2 - Check the fuel line for fuel.

* For liquid fuel devices, verify that there is fuel in the fuel tank to which your fuel line coming to the burner is connected.

* For gas-fired appliances, check the gas pressure at the inlet of the burner. (Figure 4)



3 - Check the condensate tank for water.

- * Check that the tank is full from the condensate tank glass level indicator.
- * There should be approximately 20 cm clearance above the tank. (Figure 5)



Figure 5

4 - Check if there is a closed valve on the supply system.

For example, fuel supply valve, condensate tank filling installation, pump supply installation.

Before starting the steam generator, check that the valves on the device are in operational condition. First, the fuel valve must be opened. Valves on the installation that supply water to the condensate tank should be opened. It should be checked whether the valve on the line supplying the feed water pumps from the condensate tank is open. In addition, valves outside the steam generator in the boiler room must be reviewed.

5 - Check the feed pump connections (oil, water) for leaks.

Check that there is no leakage from the pump, such as water, oil, etc. on the base where the feed water pump (Speck) is located. This control before you start the device will allow you to detect a problem that may have occurred in your pump before it grows much further. (*Figure 6*)



Figure 6



6 - Check that the oil level is within the proper range and that water is not mixed into

the oil from the oil level dipstick of the feed water pump.

Before starting the steam generator, the pump oil is checked from the Speck pump dipstick. The pump oil level is normal at the points between the top and bottom paddles of the dipstick. If there is a decrease in the oil level or if water has been mixed into the pump oil, the O-ring repair kits of the pump are damaged and the pump must be serviced. Otherwise, the pump will suffer more damage if continued operation. (Figure 7)





Figure 7

Figure 7

7 - Change the pump oil every 3 months. Type of oil to be used is SAE 90 GL 4 !

Speck pump oil is changed every 3 months. SAE 90 (gear oil 90) GL 4 (refers to the field of application) must be use as pump oil. Remove the yellow blind plugs shown in **Figure 8** and drain the oil in the pump. After the oil is completely filtered, the blind plugs are closed again. Remove the black blind plug shown in **Figure 9** and complete the pump oil. The pump oil level must be checked by the dipstick.







Figure 9

İlk Çalıştırma Vanası (by-pass) Açık Pozisyon

B) Running the Steam Generator

<u>1 – Close the main steam valve.</u>



<u>3 – Switch on the main switch</u> and supply electricity to the system.



<u>2 – Open the steam trap by-pass</u> valve.



<u>4 – Turn on the burner switch</u> on the electrical control panel.



5 – Turn the pump switch on the electrical control panel to the initial operating (MANUEL) position.

<u>6 – Observe the operation of the pump. The</u> pump will start to fill the coil. Continue this process until the first start-up valve (By-Pass) receives water.







Note : The first start valve is kept open to check that the coil is fully loaded. Do not switch on the burner until you see that the water is coming out of the start-up valve fully.

NOTE : Check the pump pressure from the pressure gauge on the pump during the initial filling. The pressure should be between 1-3 bars depending on the steam generator capacity. If higher pressures are encountered, this is a precursor to the formation of blockage in the coil.



the outlet of the trap by-pass valve.



7 – You should see water coming from 8 - Once you have seen the water coming in, set the pump switch on the control panel to the normal operating position (OTOMATIK).



9 – The burner will start operating. Check the burner flame through the sight glass.





10 – Wait until the steam temperature reaches 105 °C and the water from the bypass valve outlet runs out.





Gözetleme Cami

<u>11 – Introduce the steam</u> <u>into the process by</u> <u>slowly opening the main</u> <u>steam valve and then</u> <u>close the bypass valve.</u>

NOTE: It is expected that the sound will decrease when the passage sound of the steam is heard by opening the valve slightly. When the volume decreases, the valve opens a quarter turn and the volume is expected to decrease again. Full opening of the valve without ram stroke, may take 3-15 minutes depending on the length of your installation.



C) Stopping the Steam Generator

<u>1 – Set the</u> pump switch on the electrical control panel to Manual (Manuel).



2 - After the pressure value on the steam manometer is "0",



Close the main steam valve



Open the steam trap by-pass valve



Let the pump run until water comes out of the by-pass valve outlet



3 - When you see water coming out of the by-pass valve outlet, turn the pump control switch off via the electric control panel.



<u>4 - Turn the</u> <u>burner control</u> <u>switch on the</u> <u>electric control</u> <u>panel to the off</u> <u>position.</u>



5 – Cut the power by turning off the main switch.



<u>6 – Close the fuel valve and the trap by-</u> pass valve.



D) Fault Code Descriptions, Causes and Solutions

Failures in the steam generator are indicated by the "failure indicator" on the electrical control panel. Codes are represented by **numbers**.

Operator can come to see the error code of the device, check and eliminate the malfunction, then reset and run the device again.

Failure Indicator Fault Codes

- Fault Nb. 1 : High Pressure
- Fault Nb. 2 : High Vapor Temperature
 - : High Smokestack Temperature
 - : Inverter Malfunction
 - : Pressurization Pump Malfunction
 - : Burner Malfunction
- Fault Nb. 8

Fault Nb. 3

Fault Nb. 5

Fault Nb. 6

Fault Nb. 7

: Flow Switch - No Water Malfunction

Fault #1 - High Pressure

Description : Indicates that the specified operation pressure is exceeded.

Solution

- * The setpoint for which the safety pressure switch is set must be checked.
- * It may be set below the specified operating pressure.
- * The operating pressure switch may fail and the device may rise above the set pressure, reaching the value of the safety pressure switch.
- * Defective pressure switch must be replaced.
- * The safety pressure switch may be structurally defective and must be replaced.
- * Calibration of pressure switches may be broken, they must be calibrated.







Pressure Switch Group

Pressure Switch

Fault Nb. 2 - High Vapor Temperature

Description : Steam generators are devices operated by pressure control. The steam thermostat on the electrical control panel is used to inform the temperature of the steam going into operation and is used for safety. The steam temperature increases according to the set operating pressure. Since the steam generator has a standard working pressure of 10 bars, the corresponding steam temperature (approx. 1900C) has been determined as the setpoint. The fault indicates that the set temperature is exceeded on the steam temperature thermostat and that the device has switched to superheated steam. Generally, it is caused by not feeding the required amount of water into the device.

Çözümü

* The setpoint of the steam temperature thermostat must be checked. The setpoint of **190** ^o**C** might have been decreased. The temperature must be reinstated.

* Make sure that there is no structural problem with the steam temperature thermostat and the temperature sensor PT-100.

* After all these checks have been carried out, the structures must be manually charged and the burner must be commissioned after it is seen that water is coming from the first start valve (bypass).



The condensate tank should be checked for water. If there is no water in the condensate tank, the device must be operated after checking the reason and filling the tank.



Check that the supply valve on the pump supply line is open.

Check that the strainer on the pump supply system is clean.



Check that the pressurization pump in front of the device feed water pump (Speck pump) is operating. The hydrometer at the pump outlet will help you understand whether the pump is working.



Hydrometer



Pressurization Pump

If there is no problem up to this point, if the water comes to the inlet of the feed water pump (speck) but you cannot get water from the feed water pump outlet, the check valves of the piston pump must be cleaned.

1 - First, we remove the 3 blind plugs of the speck pump ,which are situated horizontally.



2 - After removing the blind plugs on the horizontal, we remove the check valve groups inside the opened section by pulling them outwards.





3 - We also remove the springs on the back of each of the check valve groups we have taken out.





4 - After the springs have been removed, the pump supply valve is opened and drained for a short time and any dirt in the pump is thrown out.

5 - The pump check valves removed should also be checked for dirt and cleaned. Subsequently, the disassembled parts are reassembled in the same order. 41

Fault Nb. 3 - High Smokestack Temperature

Description : The smokestack thermostat on the electrical control panel is used for information on the waste smokestack temperature and for safety purposes. The factory setting is 250°C set value. The fault indicates that the set value specified in the smokestack temperature thermostat is exceeded and the device increases to the high smokestack temperature. In general, this fault is caused by the burner combustion settings being distorted or set to high capacities.



Solution

* The setpoint of the smokestack temperature thermostat must be checked. The setpoint of **250** ^o**C** might have been decreased. The temperature must be reinstated.

* Make sure that there is no structural problem with the smokestack temperature thermostat and the temperature sensor PT-100.

- * Burner combustion settings must be checked.
- * The burner capacity should be checked and the device must be operated in accordance with the label values.

Fault Nb. 5 - Inverter Malfunction

Description : The inverter in the electrical control panel is used to operate the Speck pump motor at different speeds. When the inverter fault code (5) is displayed, refer to the inverter's main display. The fault code printed on the inverter main screen must be checked in the inverter fault codes manual in the device operating instructions folder.



Tuş takımı göstergesi	Koruyucu fonksiyonlar	Tanımlar			
	Aşırı Akım	Sürücünün çıkış akımı sürücünün nominal akımından daha fazla aktığında sürücü çıkışını kapatır.			
023	Aşırı Akım2	IGBT'nin kolu kısa devre ve çıkış kısa devre oluştuğunda, sürücü çıkışını kapatır.			
ី ដែក្ រ	Toprak hata akımı	Toprak hatası oluştuğunda ve toprak hata akımı sürücünün dahili ayar değerinden daha fazla olduğunda sürücü çıkışını kapatır.			
	Sürücü Aşırı Yükü	Sürücünün çıkış akımı nominal seviyeden daha fazla aktığında (1 dakika süresince 150%) sürücü çıkışını kapatır.			
	Aşırı Yük hatası	Sürücünün çıkış akımı akım sınır zamanı (1 dak) 'dan fazla süre boyunca sürücü nominal akımının 150% 'sinde akarsa sürücü çıkışını kapatır.			
<u>OHF</u>	Sürücü Aşırı Isınması	Soğutucu hasar görmüş soğutucu fanından veya soğutucu fandaki yabancı cisimden dolayı aşırı ısınır ise sürücü, soğutucunun sıcaklığını algılayarak çıkışını kapatır.			
P 0£	Çıkış Faz kaybı	Bir veya daha fazla çıkış (U, V, W) fazı açık olduğunda sürücü çıkışını kapatır. Sürücü çıkışın faz kaybını denetlemek için çıkış akımını algılar.			
Out	Aşırı gerilim	Motor yavaşlaması esnasında DC bara gerilimi 400 V 'tan daha yükseğe çıkarsa, sürücü çıkışını kapatır. Bu hata güç kaynağı sisteminde ortaya çıkan aşırı gerilimden kaynaklı olarak da meydana gelebilir.			
Lut	Düşük gerilim	DC bara gerilimi 180V altına düşerse sürücü çıkışını kapatır. Çünkü sürücünün giriş gerilimi düştüğünde yetersiz tork veya motorun aşırı ısınması meydana gelebilir.			
EFH	Elektronik ısı	Sürücünün dahili elektronik ısı elemanı motorun aşırı ısınmasını tespit eder. Motor aşırı yüklenirse sürücü çıkışı kapatır. Sürücü, 4 'ten daha fazla kutuba sahip bir motoru veya birden fazla motoru sürerken bu fonksiyon motoru koruyamaz.			
	Giriş faz kaybı	R, S, T 'den birisi açık veya elektrolitik kapasitörün değişmesi gerektiğinde sürücü çıkışı kapatılır.			

Solution

* Solutions may vary according to the fault code that appears on the inverter main screen. It is necessary to determine the cause of the fault and contact the technical service if necessary.

Fault Nb. 6 - Pressurization Pump Malfunction

Description : Thermal failure of the pressurization pump used to increase suction line pressure in front of the feed water pump (Speck pump).









Pressurization Pump

Hydrometer

Pompa Termiği

Fault Code Indicator

Solution

* Install the pressurization pump thermal inside the electrical control panel. The thermal is installed by pressing the blue button as shown in the picture.

- * Make sure the motor of the pressurization pump is functioning.
- * Check the thermal amperage setting according to the pump motor amperage value.
- * Check whether the electrical current to the pump is at sufficient voltage.

Fault Nb. 7 - Burner Malfunction

Description : Gas (Natural Gas, LPG, CNG, LNG etc.) or liquid (Fuel-Oil, diesel etc.) burners are used on the steam generator. Burner failures vary according to the type of fuel you are using. Burner malfunctioned and stopped for some reason.



Natural Gas Burner

Control Box - Brain

Reset

Fault Code Indicator

Solution

* As the burner is in a fault state, fault 7 on the electrical control panel is lit. To eliminate the burner failure, you must first reset it from the panel and then press the control box (brain) reset button on the burner.

* After this reset, the burner must be re-engaged and illuminated after a series of checks. When it fails again, the same process is repeated several more times and the burner is restarted.

* The burner must be checked if it still has not started after these reset operations.

* For gas-fired burners, first check whether there is gas at the required pressure on the gas line. If gas is cut off the line, the cause should be investigated.

- * Check that the dirt catchers on the fuel line are clean.
- * Electrode and nozzle cleanliness of liquid fuel burners should be checked.
- * Fuel-oil burners must be checked for fuel heaters and whether the fuel is sufficiently heated.
- * Contact your burner service if there is no fault in the parts up to this point and your burner does not light up after reset.

Fault Nb. 8 - Flow Switch - No Water Malfunction

Description : Fault related to the Flow Switch located at the output of the feed water pump (Speck Pump). After the pump is activated, the pump flow is controlled by the flow switch. If the flow switch does not feel the passage of water within the specified time, the device switches off with fault number 8.







Flow Switch

Flow Flap Sensor

Fault Code Indicator

Solution

- * There may be no water left in the condensate tank.
- * At the outlet of the condensate tank, the strainer on the pump suction line may be clogged, it must be cleaned.
- * Make sure that the pressurization pump supplies water.
- * The feed pump may not supply water. Speck pump check valves can be contaminated, it should be cleaned.
- * If water is normally coming from the pump outlet but the device is failing, the flow switch must be structurally controlled. Remove the union on the middle part of the flow switch and check whether the flow flap sensor of the flow switch moves freely.
- * When the captor is moved in the direction of the arrow in the upper direction, it must return to the same position automatically. If not, the internal spring mechanism is damaged and the flow switch must be replaced.

PROBLEM	DESCRIPTION	POSSIBLE REASON	SOLUTION
Fault Nb. 1	High Pressure	Indicates that the specified operation pressure is exceeded.	Check whether the safety switch is set to a higher pressure than the operation switch.
Fault Nb. 2	High Vapor Temperature	Buhar sıcaklığının set değerinin üzerine çıktığını gösterir.	The thermostat setpoint, pump flow, condensate tank water level and pump strainer must be checked. This means that the system cannot supply enough water and the device has passed into superheated steam. If the temperature of the condensate tank water rises above 70, it must be lowered. Strictly, the first filling must be done manually, after the water has come out of the first start valve.
Fault Nb. 3	High Smokestack Temperature	Baca sıcaklığının set değerinin üzerine çıktığını gösterir.	The thermostat setpoint must be checked. The burner settings should be reviewed and the capacity reduced if necessary. First filling must be performed manually after it is seen that water is coming from the first operation valve.
Fault Nb. 5	Inverter Malfunction	Indicates the inverter is signaling an error and no power to the pump.	See the inverter error codes in the operating instructions folder.
Fault Nb. 6	Pressurization Pump Malfunction	Indicates that the thermal of the pressurization pump inside the electrical control panel is waste.	Check the electrical voltage to the pressurization pump. Check the thermal setting.
Fault Nb. 7	Burner Malfunction	Indicates that the burner is not operating regularly.	It is necessary to check whether the pump pumps the water in the condensate tank, the amount of water in the condensate tank, the connections of the water flow controller on the feed water installation.
Fault Nb. 8	No feed water.	Means no water can be supplied to the steam generator.	It is necessary to check whether the pump pumps the water in the condensate tank, the amount of water in the condensate tank, the connections of the water flow controller on the feed water installation.
Fault Nb. 0	Speck Pump Thermic Malfunction	Indicates that the speck pump motor thermal inside the electrical control panel is waste.	Check the electrical voltage to the Speck pump motor. Check the thermal setting. (2 pumps)

QUICK START INSTRUCTIONS

Before Operation

- 1 Perform the hardness analysis of the water to be used, it should be $\underline{``0'' \, ^{o}F}$.
- 2 Check the fuel line for fuel.
- 3 Check the condensate tank for water .
- 4 Check the supply system for closed valves. (Fuel supply valve, condensate tank filling installation, pump supply installation)
- 5 Check the feed pump connections (oil, water) for leaks.
- 6 Check that the oil level is within the proper range and that water is not mixed into the oil from the oil pump dipstick.

ATTENTION ! Change the pump oil every 3 months. Type of oil to be used (SAE 90 GL 4).

First Start

- 1 Close the main vapor valve.
- 2 Open the trap bypass valve.
- 3 Switch on the **main switch** and supply electricity to the system.
- 4 Turn on the **burner switch** on the electrical control panel.
- 5 Set the **pump switch** on the electric control panel to the first start (Manuel) position.

6 - Observe the operation of the pump. The pump will start to fill the coil. Continue this process until the water comes in from the **first start-up valve (Bypass)**.

ATTENTION! Check the pump pressure from the **pressure gauge** on the pump during the initial filling. The pressure should be between **1-3 bars** depending on the steam generator capacity. If higher pressures are encountered, this is an indication that the **coil (serpentine)** has started to block.

- 7 You should see water coming from the bypass valve of the traps.
- 8 Set the **pump switch** on the control panel to the normal operating (**Otomatik**) position.
- 9 The burner will start operating. Check the **burner flame** through the sight glass.
- 10 Wait until the temperature is 105 °C on the steam thermometer and close the bypass valve.
- 11 Slowly open the main steam valve and introduce the steam into the process.

ATTENTION!!! The first start value is kept open to check if the steam generator coil is filled with water. Do not activate the burner until you see that water is coming in a full way out of the start-up value.

Stopping

1 - Move the **pump switch** on the electrical control panel from automatic to manual.

2 - After the pressure value is 0, open the trap valve group bypass valve and let the pump run until water comes out of the bypass valve outlet.

- 3 When you see water coming out of the bypass valve outlet, turn the pump control switch off via the electric control panel.
- 4 Turn the burner control switch off via the electric control panel.
- 5 Turn off the main switch and cut the power.
- 6 Close the fuel valve.
- 7 Close the main steam valve and the trap bypass valve.

STEAM GENERATOR DAILY, WEEKLY AND MONTHLY MAINTENANCE

JENESIS SHS SERIES STEAM GENERATOR DAILY CONTROL AND MAINTENANCE

Water Softening Device Salt Tank



1 - Check whether there is sufficient amount of salt in the water softening device salt tank.



2 - Check that water is coming to the water softener inlet.

Water Softening Device Water Inlet Manometer

3 - Perform the hardness analysis of the water to be used. Empty the condensate tank if the water is not at the desired hardness. After manual washing of the softener, fill the water condensate tank when the hardness value is reached.



21 mbars

4 - Check the fuel line for fuel.

Water Softening Device **Manual Regeneration Button**



ATTENTION !!! During the daily controls, when the water temperature of the condensate tank rises above 70 °C, the condensate tank should be ventilated and fresh water should be provided.

JENESIS SHS SERIES STEAM GENERATOR WEEKLY CONTROL AND MAINTENANCE

1 - Check the salt level by opening the lid of the water softener salt tank and add salt if necessary.

Water Softening Device Salt Tank







2 - Open and clean the filter at the inlet of the feed water pump.



3 - The float of the condensate tank must be checked by hand movement. It should be checked whether the float, which is reached by removing the condensate tank cap, cuts off the mains water after the level is reached.

4 – Clean the dirt trap on the fuel line.



Gas Filter

5 - Remove and clean the sight glass. The front nut of the burner flame monitoring device located on the front cover of the steam generator is removed and the glass inside is cleaned and reinstalled.



Liquid Fuel Filter





Inlet Valve

6 - Replace the sediment filter at the water softener inlet. Close the supply valve at the water softener inlet. Relieve the pressure in the filter by loosening the bleed screw and close it again. Unscrew the body nut located in the lower part of the filter in the direction of the screw, discard the filter inside and insert a new one and tighten the body nut. Open the inlet valve again.





Body Nut

Bleeder Screw (Purger)

7 - Clean the trap group dirt catcher. It should be checked when the pressure is zero and the device is cold. The condensate tank is cleaned in the same way as the strainer.

All equipment in the external body of the steam generator, main body, burner, pump, etc. parts need to be cleaned.



JENESIS SHS SERIES STEAM GENERATOR MONTHLY CONTROL AND MAINTENANCE

1 - Perform all weekly control and maintenance operations respectively.

2 - Empty the condensate tank to remove sediment, sludge and other deposits. Refill the condensate tank.



Tank Cover



Tank with cover removed



Tank Blowdown Valve

3 - Clean the salt tank of the water softener. The dissolved in the salt tank causes Water Softening Device Salt Tank salt contamination on the surface of the tank over time. Empty the salt tank before cleaning the tank. To disconnect the salt tank from the system, first remove the valve connection fitting. Remove the salt tank from the system by pulling it towards you. After cleaning the salt tank, make the connection by repeating the same procedure and add enough salt and water to the salt tank.





Valve Connection

CONFORMANCE TO CRITERIA 40 CERTIFICATE

Description of the Mark Markanın Tanımı

TSEK veya / or POBK

010637-TSEK-01/02

29.05.2002 16.01.2020

BELGENIN SON GEÇERLİLİK TARİHİ LICENCE VALID UNTIL BELGE NUMARASI REFERENCE NUMBER OF LICENCE **BELGENIN ILK VERILIŞ TARIHI** DATE OF FIRST ISSUE OF LICENCE

BELGE SAHIBİ KURULUŞUN ADI NAME OF THE LICENCE HOLDER

ISIEVI MAKINA SAN VETIC LTD STI

BELGE SAHIBI KURULUŞUN ADRESI ADRESS OF THE LICENCE HOLDER

ÜRETIM YERİ ADI NAME OF THE MANUFACTURING PLACE

ÜRETIM YERI ADRESI ADRESS OF THE MANUFACTURING PLACE

lkitelli Org. San. Ból. Eskoop San. Sitesi C-7 Blok No : 479 Başakşehir İSTANBUL

ÜBM-00-BK-000 / Kriteri Seçilmemiş Sözleşmeler için / 24.08.2010

İKİTELLİ OSB MAH. ESKOOP C7-4 BLOK SK. ESKOOP C7-4 BLOK NO:477 /477 BAŞAKŞEHİR İSTANBUL

ISIEVİ MAKİNA SANAYİ VE TİCARET LTD. ŞTİ

ILGILI BELGELENDIRME KRITERI RELATED TURKISH STANDARD TESCILLI TICARI MARKASI REGISTERED TRADE MARK

ISIEV

BELGE KAPSAMI SCOPE OF LICENCE

BUHAR JENERATÖRLERI (GAZ VEYA SIVI YAKITLI 1000 kg/h ANMA BUHAR KAPASITESINE KADAR) SH MODELLERI (SH 100, SH 150, SH 250, SH 350, SH 500, SH 750, SH 1000)
2-BUHAR JENERATÖRLERI (GAZ VEYA SIVI YAKITLI, SPIRAL SARIM BORULU, YATAY, 179 kW (250 kg/h) (DAHLI/JDEN, 2093 kW (3000 kg/h) (DAHLL)'E KADAR ANMA ISI KAPASITESINE KADAR OLAN SHS MODELLERI. (SHS 250, SHS 350, SHS 500, SHS 750, SHS 1000, SHS 1250, SHS 1500, SHS 2000, SHS 2500, SHS 3000)



6../01/2019

Belgelendirme Merkezi Başkanı Adına AHMET NURSİ KARTAL

TSE İSTANBUL BELGELENDIRME MÜDÜRÜ

Bubolge beglearding rouchan, rearin rentiumizun belirtadiği şartları karşıladığın da gösterir. 19. bolge beglearding rouchan, rearen vaşa karanı karşıladığı şartları karşıladışı karını və silinti yapılamaz. 19. El STANBLI ELICELENDINE MDDDNLÜÖ' -Adres: Şavarı varşıladışı karanı ÇAYINCOVAGEAZE "Hei. 2827231273 Faks: 2527231606 * Web: * e-mail: 19. El STANBLI ELICELENDINE MDDDNLÜÖ' -Adres: Şavarı varşıladışını van ÇAYINCOVAGEAZE "Hei. 2827231273 Faks: 2527231606 * Web: * e-mail: 19. El STANBLI ELICELENDINE MERKAZEDAŞAVALICİ): Adres: Necatibey Cad. No:112.06100 Bakanlıkar/ANKARA - Tei: 0.312.416.64.87, Faks: 0.312.416.66 17 19. El SECERENDINE MERKAZEDAŞAVALICİ): Adres: Necatibey Cad. No:112.06100 Bakanlıkar/ANKARA - Tei: 0.312.416.64.87, Faks: 0.312.416.66 17

https://evrakkontrol.tse.org.tr/BelgeDogrulama.aspx?p=scnqgxfg adresinden belgenin doğruluğunu ve gøçerliliğini sorgulay





TAJIFILA30 ◆ ODAJIFILA30 ◆ TANNΦNT930 ◆ 售 頭 頭 臨 ◆ 3TAJIFILA30 ◆ TANIFILA32