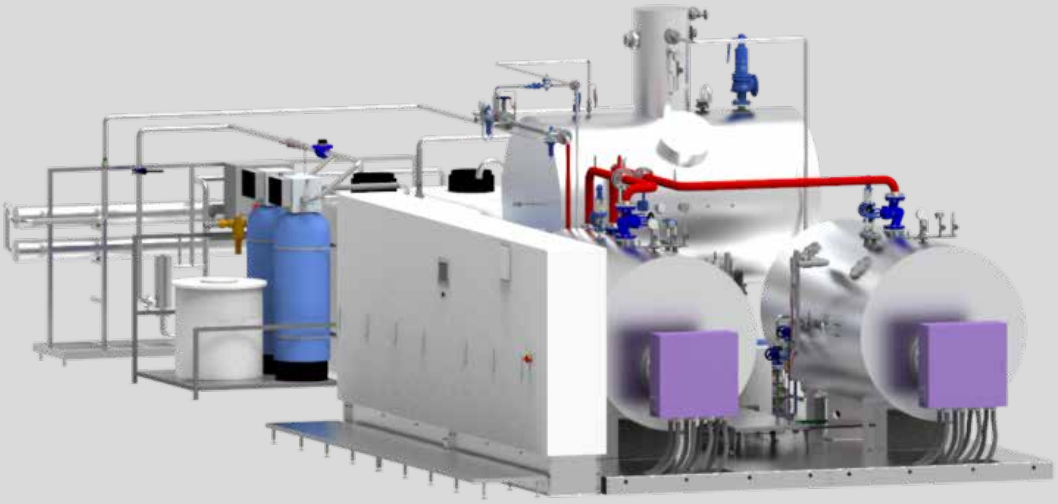
ECOTHERM®
HEAT TRANSFER SOLUTIONS



Electric Clean Steam Generator
250 – 10,000 kg/h

Conventional Clean Steam Generator
250 – 10,000 kg/h

10 Clean Steam Generators

The leading brand for individual hot water, steam & solar systems for hotels, hospitals and industrial applications.

ECOTHERM amazes its customers with „Individual Heat Transfer Solutions“ for hot water and steam generation.
The following advantages mark these solutions:

Individuality
ECOTHERM produces extensive turnkey systems as well as separate components. Each plant is specifically aligned to the customer's individual requirements. The base is our own production facility in Austria and a wide product portfolio, which enables the combination of all relevant energy sources such as oil, gas, electricity and renewable energies.

Premium quality
Amongst others, our High Capacity Water Heaters are made of high quality stainless steel and guarantee a long-life cycle and perfect hygiene. ECOTHERM is certified to ISO 9001 : 2015 with all European standards. Our products fully comply with the requirements of the European Pressure Equipment Directive 2014/68/EC or ASME Sect. VIII Div. 1. Our own test bench assures highest quality and reliability.

Innovation
We are always open to new ideas, we constantly investigate new technologies and we develop path-breaking and future-oriented products. Many patents are the result of the in-house innovation management. With an elaborated 3D visualization and Virtual Reality, ECOTHERM systems can be guided and controlled at all times.

Premium service
Clients benefit from our extensive service at consulting, planning, engineering, supervision and training. ECOTHERM regularly improves the know-how of its partners and clients with selective trainings.

Efficiency
ECOTHERM has slim decision-making structures. Consequent research and development work permanently optimize the energy efficiency and the durability of the products. ECOTHERM turnkey solutions offer an optimal cost-benefit ratio.

Experience
With thousands of installations in the last 30 years in Europe, the Middle East, Asia, North Africa and Central America, ECOTHERM has become the leading brand in technology and innovation for individual hot water, steam and solar solutions. The ECOTHERM team is continuously refreshing their know-how with exceptional trainings and seminars that the ECOTHERM Academy provides.

Reliability
ECOTHERM systems can be monitored all around the clock and can be serviced at low cost, quickly and efficiently with an advanced control panel. Our products and plants have low maintenance requirements.

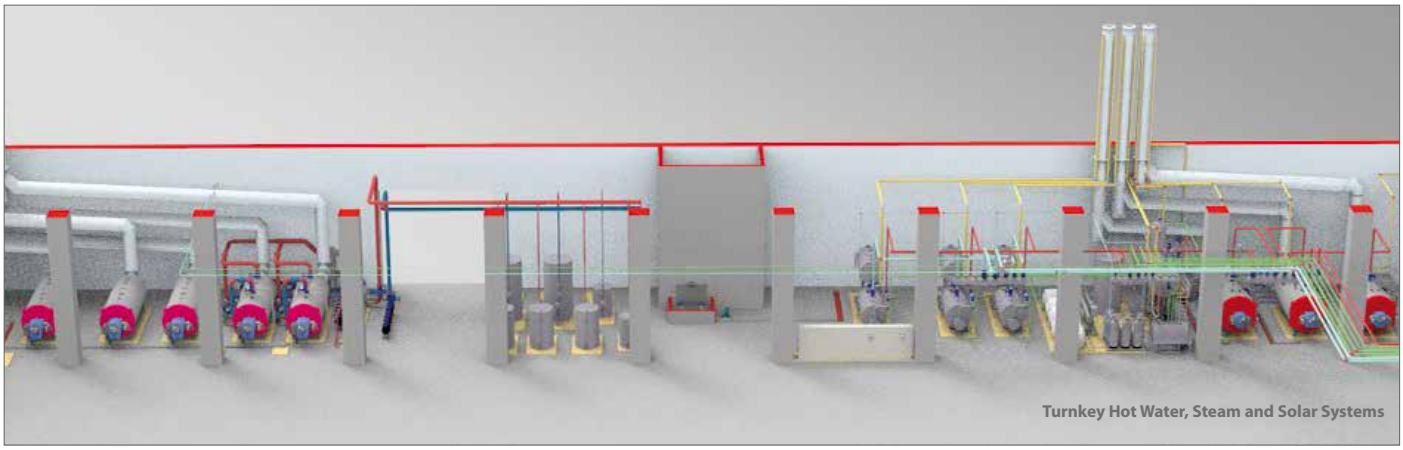
Sustainability
We save valuable resources by using renewable energies. ECOTHERM high-performance plants have minimal space requirements and provide maximum energy savings. When planning new products, ECOTHERM engineers take all the qualitative and economic principles into account in accordance with the ecological principles.

Partnership
We live in a partnership with all our customers, suppliers and employees. This relationship is characterized by honesty, commitment, openness, trust and reliability. The object is a joint long-term success.

Internationality
The international alignment of ECOTHERM with branches in Dubai, Mexico and Hungary and further partners in more than 25 countries is the base for our flexible and efficient project implementation.

ECOTHERM®
Clean Steam Generators

ECOTHERM® Product Overview



Turnkey Hot Water, Steam and Solar Systems

High Capacity Water Heaters

Storage Water Heaters

Electric Water Heaters

Direct Fired Water Heaters

Shell & Tube Heat Exchangers

Spiral Flat Heating Coils

Pressure Vessels

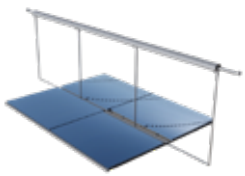
Insulation

Electric Boilers

Clean Steam Generators

Ice Storage

Heat Recovery



Solar Steam &
Solar Process Heating

City Water Cooler

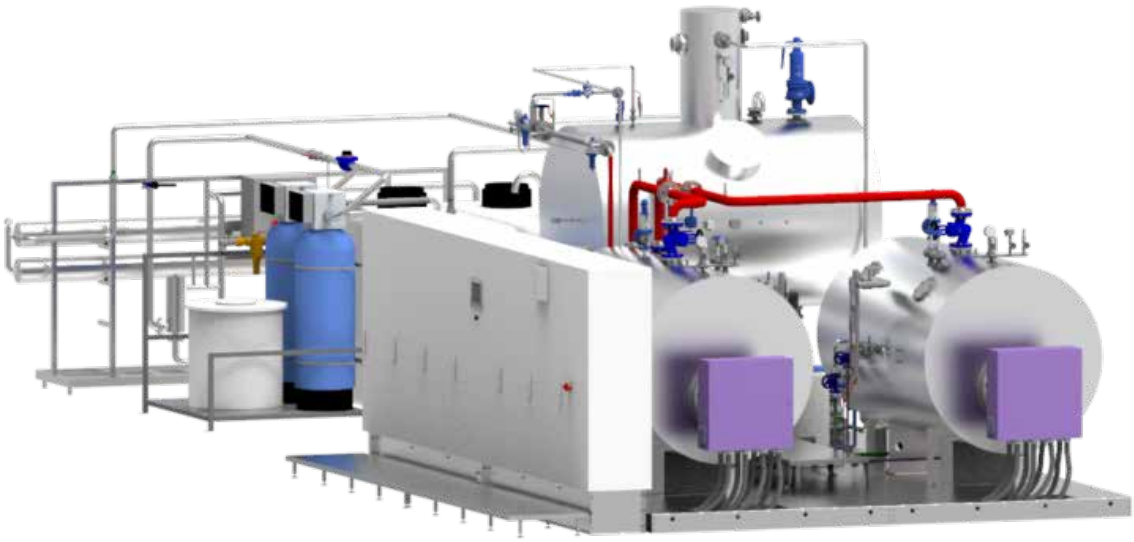
Special Constructions

Accessories

ECOTHERM® Clean Steam Generators

conventional & electric | skid-mounted & pre-assembled

Clean steam generators are used wherever plant steam, generated in fired steam boilers, is not suitable. Due to the necessity of chemical dosing and the black material of the fired steam boilers, plant steam is not applicable for hygienic purposes. The ECOTHERM Clean Steam Generators are entirely made of stainless steel to suit hygienic purposes like sterilizer units in hospitals, for cleaning and sterilization in food and beverage industry or for air humidifiers. ECOTHERM Clean Steam Generators are compact, completely skid mounted and wired, ready for easy installation at site.



Electric Clean Steam Generator
250 – 10,000 kg/h

Conventional Clean Steam Generator
250 – 10,000 kg/h

Conventional Clean Steam Generator

capacities from 250 – 10,000 kg/h as a standard | higher capacities on request

ECOTHERM Conventional Clean Steam Generators require any primary energy source hotter than the desired steam temperature such as plant steam, thermal oil or super-heated water. The heat of the primary energy source is transferred to the clean steam by internal tube bundle heat exchanger. The units are skid-mounted, complete with feedwater tank, water treatment and control panel. The complete factory pre-piping and wiring ensures quick and easy installation on site.

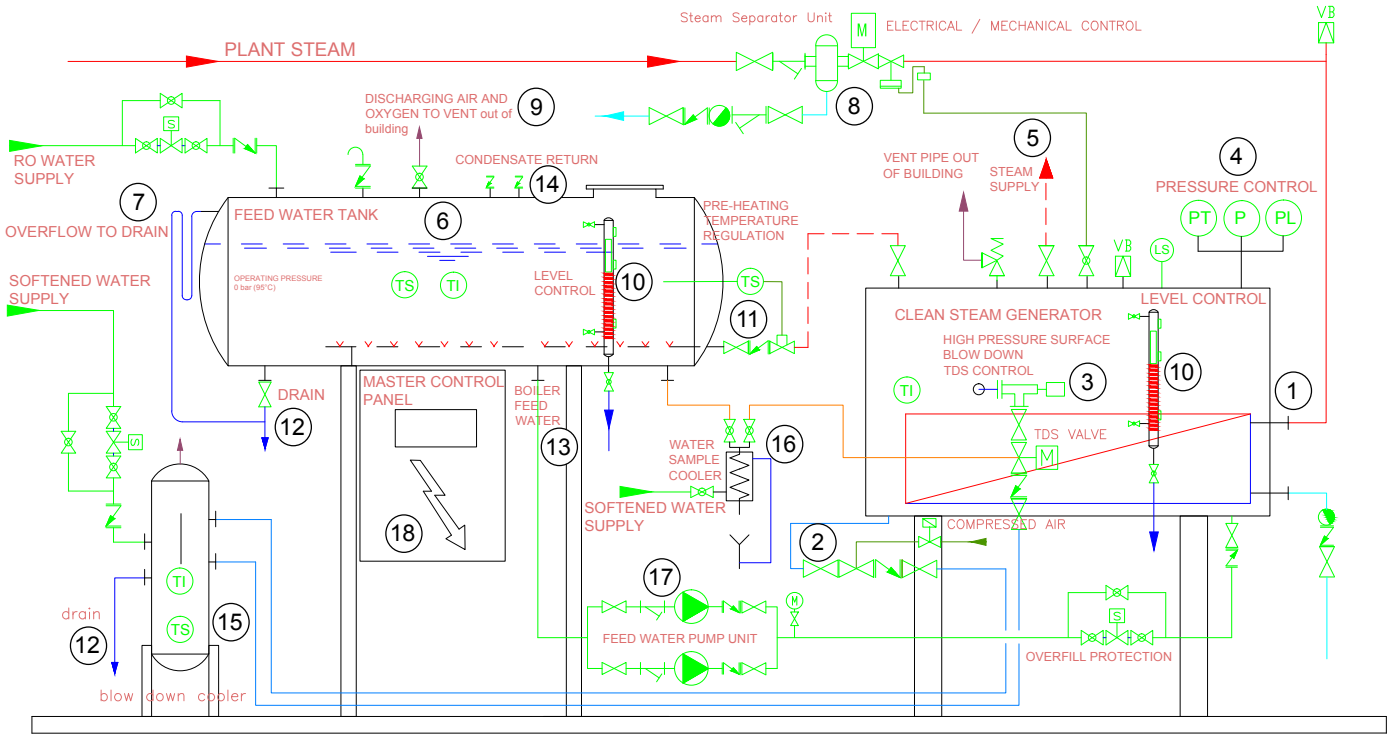
Technical Data

Other/higher capacities and operating pressures are available on request

Model No.	Capacity kg/h	Operating pressure bar	Dimensions w - l - h in mm
ECSG-.-250	250	4/6/8	on request
ECSG-.-500	500	4/6/8	on request
ECSG-.-750	750	4/6/8	on request
ECSG-.-1000	1000	4/6/8	on request
ECSG-.-1500	1500	4/6/8	on request
ECSG-.-2000	2000	4/6/8	on request
ECSG-.-2500	2500	4/6/8	on request
ECSG-.-3000	3000	4/6/8	on request
ECSG-.-4000	4000	4/6/8	on request
ECSG-.-5000	5000	4/6/8	on request

Other/higher capacities available in cascades.

Model No.	Cascade	Operating pressure bar	Dimensions w - l - h in mm
ECSG-.-6000	**2x** ECSG-.-3000	4/6/8	on request
ECSG-.-8000	**2x** ECSG-.-4000	4/6/8	on request
ECSG-.-10000	**2x** ECSG-.-5000	4/6/8	on request



1 Clean Steam Generator: generation of clean, sterile steam by using high quality stainless steel materials. Steam generation by heat exchanger application. Consisting of stainless steel tank, removable heating bundle and all required connections for safety and control.

2 High pressure bottom blown down control: flushing of the boiler bottom where sludge is created by timer controlled blow down valve.

3 High pressure surface blown down control (TDS control) continuous measurement of water conductivity just below the water surface level. If the value is too high, valve opens until the measured value drops below the set point.

4 Pressure control: pressure will be setted mechanical (by mechanical pressure control valve) or electrical by pressure transmitter (control panel) and electrical operated valve.

5 Steam supply: clean steam outlet port from clean steam generator

6 Feed water tank: preparing feed water for steam boilers, collecting condensate, pre-heating of feed water.

7 Overflow: protection against high water

8 Steam separator unit to prevent steam regulation valves from condensate, steam will be separated by using steam separator and draining unit

9 Discharging air and oxygen vent (out of building): removing port of waste gases.

10 Level control: to keep a constant water level in the tank a level control system is required. Also protection against low an high water is installed.

11 Pre-heating of feed water to protect the boiler against to high temperature differences and heat tensions, feed water needs to be pre-heated by steam injection.

12 Drain for draining of the tank

13 Boiler feed water: feed water supply connection to feed water pumps and boilers

14 Condensate return collecting the condensate from different consumers, e. g. steam pipe draining points, heat exchangers, laundry machines.

15 Blown down cooler to cool down the hot water from surface and bottom blow down outlets.

16 Water sample cooler for daily analysis of feed water and boiler water, hot water samples have to be cooled down by water sample cooler.

17 Feed water pump unit vertical multi-stage centrifugal feed water pump which feeds the steam generator with feed water. Pump is designed according to maximum steam pressure and flow capacity of steam boiler.

18 Master Control panel entire independent steam generation regulation and safety devices control

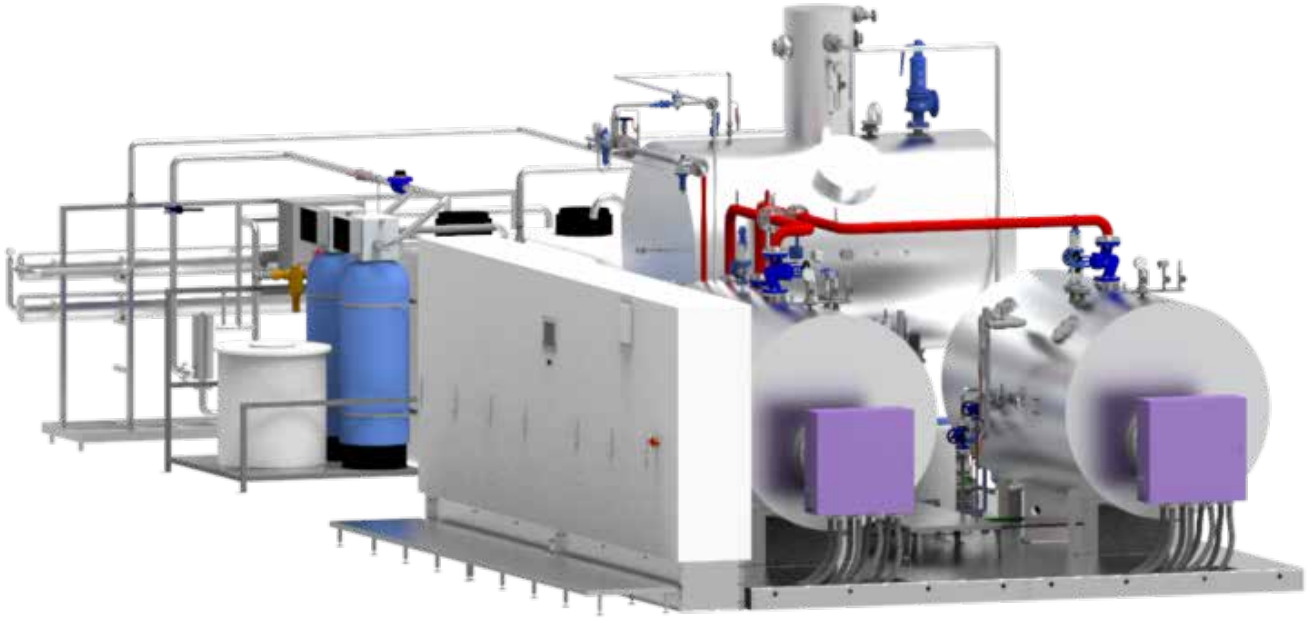
Features

- skid-mounted, pre-assembled and wired for easy on-site installation
- operation by plant steam, thermal oil or superheated water
- control panel with system visualization, several interfaces with existing BMS (Building Management Systems)
- clean steam vessel and piping made of AISI 316 Ti or Duplex Stainless Steel
- design and manufacturing according to PED 2014/68/EC or ASME Sect. VIII Div. 1

Electric Clean Steam Generator

capacities from 250 – 10,000 kg/h as a standard | higher capacities on request

ECOTHERM Electric Clean Steam Generators are used in hospitals or industry when the primary available energy is electricity. The clean steam is generated by an electric resistor heating flange inside the boiler shell. The units are skid-mounted complete with feed water tank water treatment and control panel. The complete factory pre- piping and wiring ensures quick and easy installation on site. The clean steam is generated by electrical energy.



Technical Data

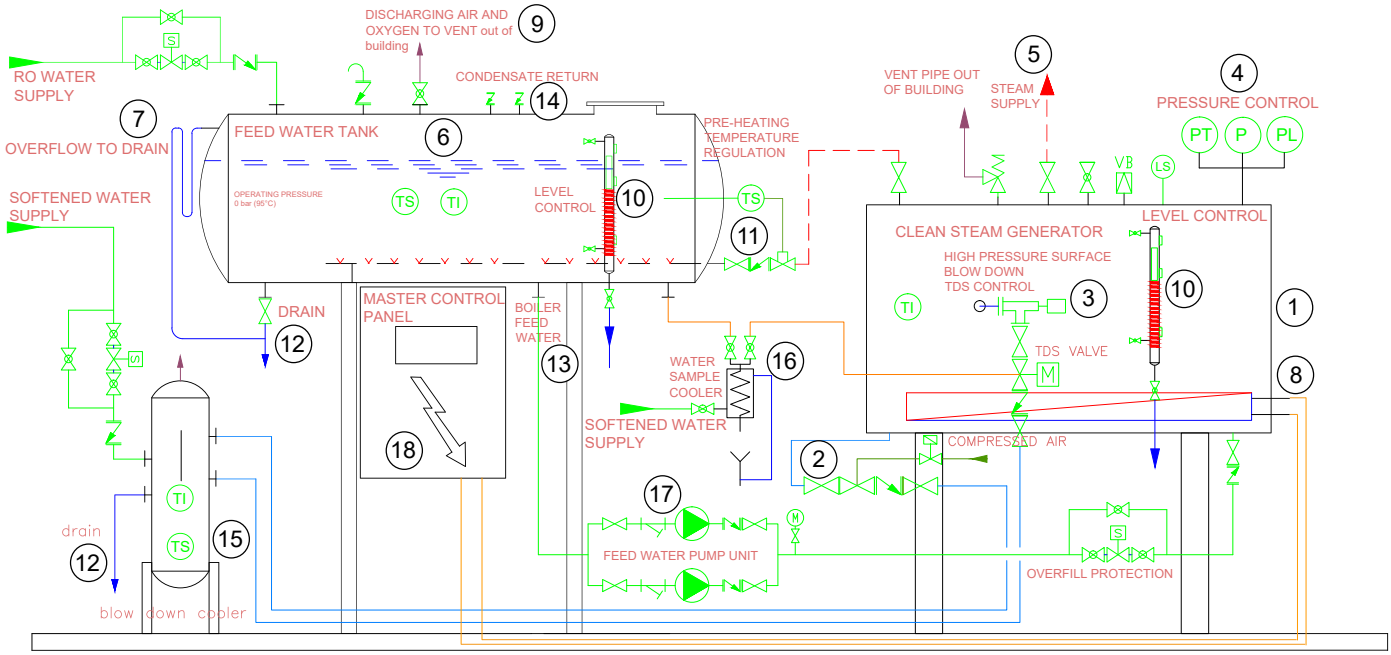
Other/higher capacities and operating pressures are available on request

Model No.	Capacity kg/h	Power rating kW	Operating pressure bar(g)	Approx. Dimensions (L x W x H in mm)	Voltage*
EECSG-250kg/h	250	140	6/10/16	3200 x 1500 x 2000	3 PH 400V 50 Hz
EECSG-500kg/h	500	280	6/10/16	3750 x 1500x 2300	3 PH 400V 50 Hz
EECSG-750kg/h	750	420	6/10/16	4200 x 1500 x 2500	3 PH 400V 50 Hz
EECSG-1000kg/h	1000	560	6/10/16	4500 x 1500 x 2600	3 PH 400V 50 Hz
EECSG-1500kg/h	1500	835	6/10/16	5000 x 1750 x 3200	3 PH 400V 50 Hz
EECSG-2000kg/h	2000	1120	6/10/16	5500 x 1750 x 3500	3 PH 400V 50 Hz
EECSG-2500kg/h	2500	1395	6/10/16	6000 x 2000 x 3800	3 PH 400V 50 Hz

Other/higher capacities available in cascades.

Model No.	Cascade	Power rating kW	Operating pressure bar(g)	Approx. Dimensions (L x W x H in mm)	Voltage*
EECSG-3000kg/h	**2x** EESG-1500kg/h	1670	6/10/16	on request	3 PH 400V 50 Hz
EECSG-4000kg/h	**2x** EESG-2000kg/h	2240	6/10/16	on request	3 PH 400V 50 Hz
EECSG-5000kg/h	**2x** EESG-2500kg/h	2790	6/10/16	on request	3 PH 400V 50 Hz
EECSG-6000kg/h	**3x** EESG-2000kg/h	3360	6/10/16	on request	3 PH 400V 50 Hz
EECSG-7500kg/h	**3x** EESG-2500kg/h	4185	6/10/16	on request	3 PH 400V 50 Hz
EECSG-8000kg/h	**4x** EESG-2000kg/h	4480	6/10/16	on request	3 PH 400V 50 Hz
EECSG-10000kg/h	**4x** EESG-2500kg/h	5580	6/10/16	on request	3 PH 400V 50 Hz

*Voltage for standard models is 3 PH 400V. We recommend higher voltages up to 690V (on request) for bigger capacities.



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- clean steam vessel and piping made of AISI 316 Ti or Duplex Stainless Steel
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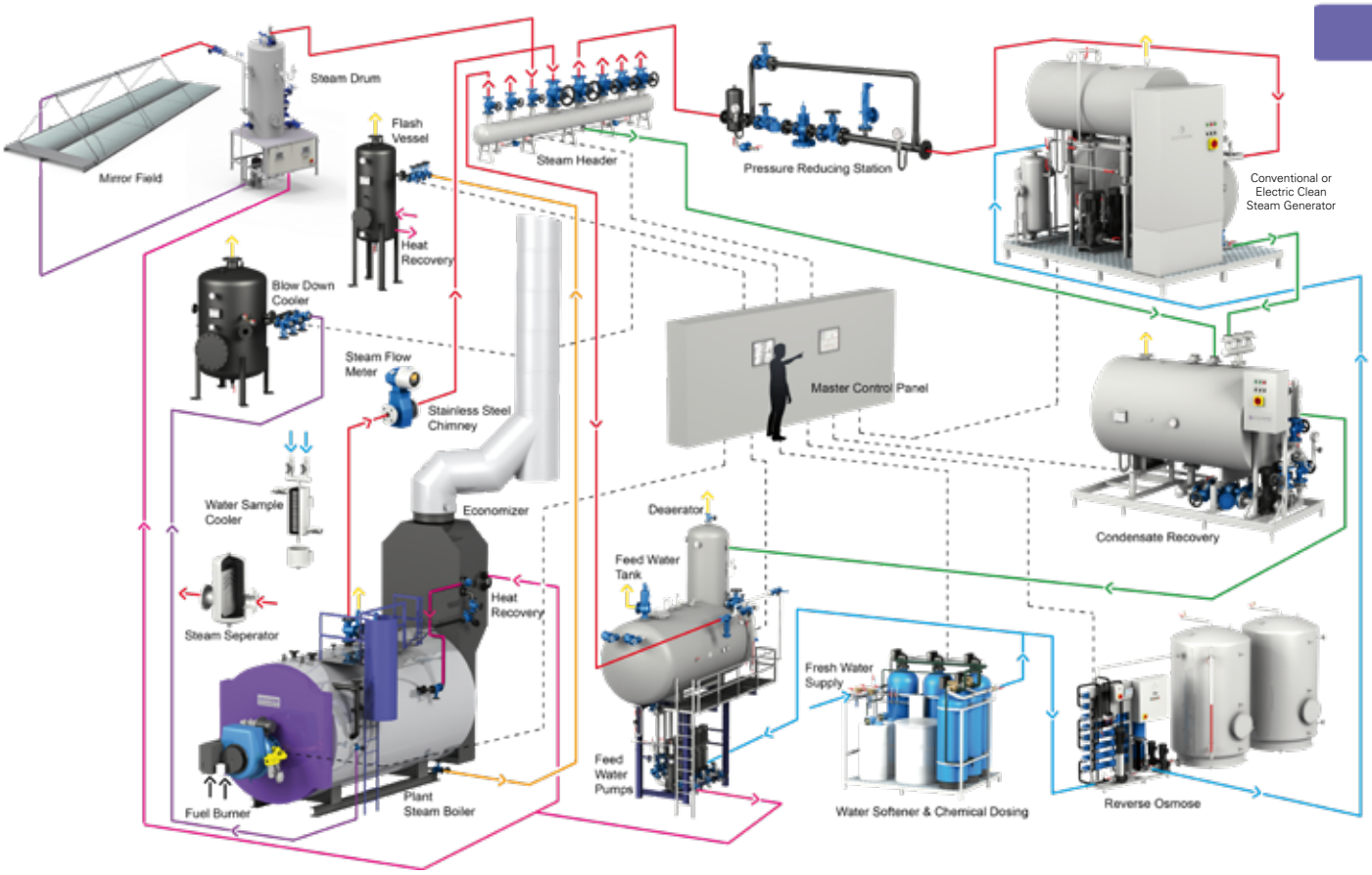
ECOTHERM® Turnkey Clean Steam Solutions

Optional with a ECOTHERM® Solar Steam System



All components are perfectly designed and coordinated with each other. This ensures maximum efficiency and therefore maximum return of investment.

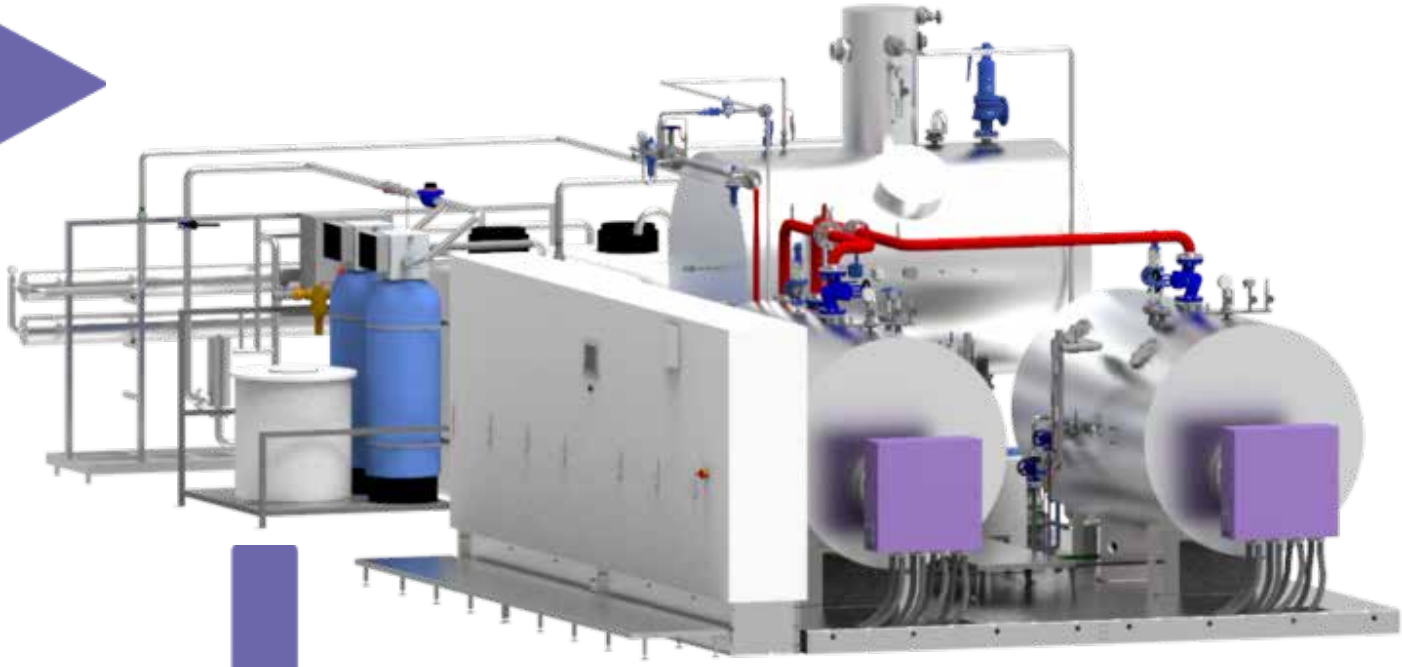
More than 1,000 installed systems in the last decades ensure the right know-how for individually designed turnkey solutions. Steam systems are complex and individual. On the one hand a lot of different components have to be used. All these components need to be optimally coordinated with each other to ensure functionality and perfect efficiency right from day one. On the other hand steam systems operate with high pressures. Thus a failure can really be very dangerous for the staff operating the system as well as for the complete building. Therefore ECOTHERM offers complete individual turnkey solutions.

The services range from design, 3D visualization, project management, over manufacture, pre-assembly, pre-wiring and testing to shipping, commissioning, supervision and maintenance. Experienced ECOTHERM engineers ensure that your system operates stable, save, reaches the desired output and they train your staff how to monitor and control the most important parameters of the system.

Premium quality of the products and premium service during the whole project is the minimum you should claim for your individual steam system.

Your reliable partner

Starting from the design stage, production, factory acceptance test, testing and commissioning to maintenance and after-sales-services.



Skid-mounted, Electric Clean Steam Generator, 2x 2000 kg/h & 16bar, executed completely virtually, from the offer to assembling on-site

ECOTHERM® References

Food & Beverage Factory - Netherlands (2020)

ECOTHERM Electric Clean Steam Generator - 2x 2,000 kg/h

Delivery: ECOTHERM delivered 2 Electric Steam Boilers with 1344kW electrical power, each skid-mounted with a feed water tank (4000L), blow down cooler, steam distributor, control cabinet (8m length), reverse osmosis with 3x 4000L storage tanks, complete piping, wiring and insulation.

The steam plant was built in accordance with all applicable European regulations and approved by TÜV.

Due to the Corona pandemic, all communication took place via telephone, e-mail and online meetings. For the first time ever, such an factory acceptance test was carried out virtually via web cam. In addition, we created a virtual reality model of the plant with live data for our customer. The VR model can be viewed online by scanning the QR code below.

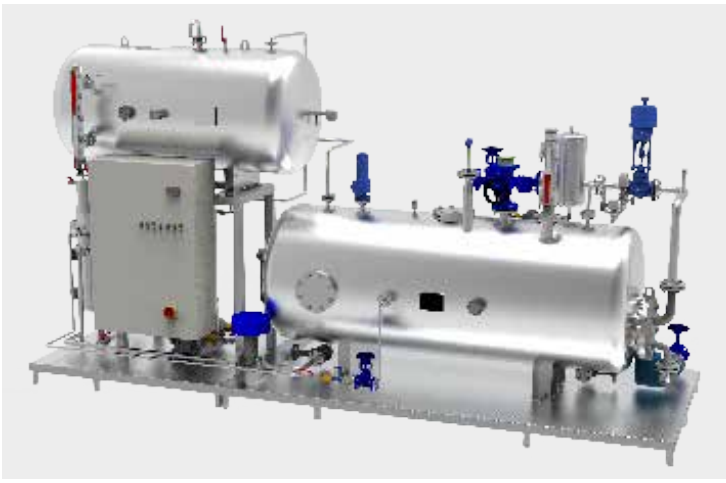
Scan this QR-Code for the Virtual Reality model of the ECOTHERM® Electric Steam System

Maliha Military Hospital - UAE (2011)

ECOTHERM Clean Steam Generator - 750 kg/h

The 221-bed facility is serving the Military and their families. It is in the Kalbaa region of Sharjah in the United Arab Emirates. The new hospitals includes inpatient and outpatient services and accommodations for doctors and nurses.

Delivery: 2x Steam Boilers ESBH-H 2500 kg/h 1x Clean Steam Generator 750 kg/h



New Sabah Hospital - Kuwait (2019)

ECOTHERM Clean Steam Generators - 2x 600 kg/h, 2x 750 kg/h, 2x 1,260 kg/h

The trauma center is designed to provide general and specialized clinical services. It will be the first of its kind, on a total area of 250,000 m2 and 11 floors. The hospital consists of three separate buildings and 617 beds in total.

Delivery: 6x Clean Steam Generators 2x 600 kg/h, 2x 750 kg/h, 2x 1,260 kg/h, 5x Steam Boilers ESBH-H 6000 kg/h 16bar, 2x Feed Water Tank 12.000 ltr. & Feed Water Pumps, 1x water treatment unit with softener 12m /h, 1x flash vessel 2000ltr., 1x steam header, 2x preheating tanks 1000ltr. with circulation pumps, 3x PRV station for calorifier & LTHW, 1x condensate return tank 10.000ltr., 22x High Capacity Water Heaters 60 kW - 3000 kW & 540 litres - 6000 litres

Sheikh Jaber Hospital - Kuwait (2011)

ECOTHERM Clean Steam Generators - 3x 4,500 kg/h

After a 5 year construction period, the Sheikh Jaber Hospital, equipped with 1,168 beds and 36 operating rooms on 13 floors, has become the largest health center in Kuwait and has one of the largest trauma centers in the Middle East.

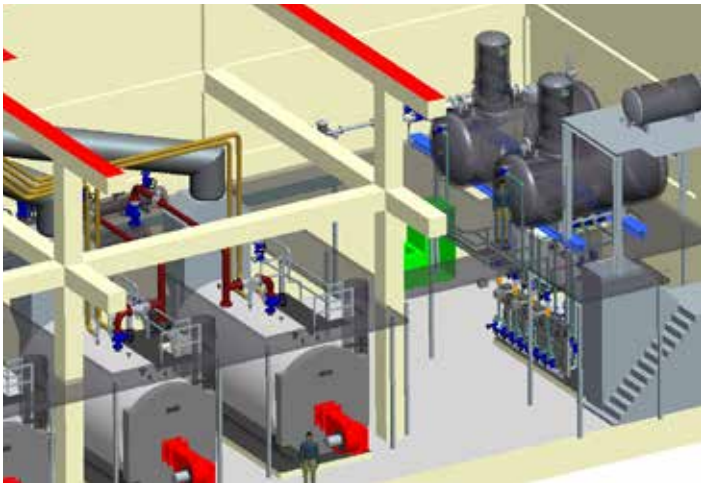
Delivery: Turnkey Steam System with 12 m^3 Feed Water Tank, 3x Steam Boilers (each 7,000 kg/h), 3x Clean Steam Generators (each 4,500 kg/h), 5x Hot Water Boilers (each 6,000 kW), 31x High Capacity Water Heaters (Total Capacity: 6,920 kW), 15x Drinking Water Cooler Stations, Installation, Supervision, Commissioning

Sidra Medical and Research Center - Qatar (2012)

ECOTHERM Clean Steam Generators - 3x 950 kg/h

With its 412 hospital rooms and 400 beds, Sidra Medical & Research Center is truly a landmark development on a total floor space of 130,000 m^2. It is the first academic medical center in the region, designed and planned to have the best international standards in health sciences.

Delivery: 3x Clean Steam Generators, each 950 kg/h, 3x Steam Boilers 15,000 kg/h, 16 bar, 2x Feed Water Tanks 16,000 l/each, 1x Cold Water Tank 2,000 l, Blow Down Tank & Flash Vessel, 3x Condensate Return Stations, 26x ECOTHERM High Capacity EDRE, 6x ECOTHERM High Capacity LTHW Steam to Water Heat Stations, 4x ECOTHERM High Capacity EHRE



Philosophy

Mission
ECOTHERM amazes its customers with individual solutions for hot water, steam and solar systems.

Vision
The leading brand for individual hot water, steam & solar systems for hotels, hospitals & industrial applications.

Values
Quality
Sustainability
Experience
Innovation
Individuality
Partnership

ECOTHERM Hot Water, Steam & Solar Systems

Your partner

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