

CERTUSS

Steam Generators



THE STATE OF THE ART IN
STEAM GENERATION

COMPANY HISTORY	1
OUR REFERENCES	2
FUNCTIONALITY	3
JUNIOR TC	4
UNIVERSAL TC	6
CVE – CERTUSS VERIFIED EQUIPMENT	8
MODULAR STEAM PLANT	10
CONTAINER	11
FACTSHEETS	12
CHECKLIST	15
CERTIFICATES	16
INSTALLATIONS	17

CERTUSS Company History

W H O W E A R E

CERTUSS was established in 1957 in Krefeld, Germany, when Hans Joachim Schroder set himself the goal of manufacturing **reliable, low-noise, compact** Steam Generators. These Generators were designed to be easy to maintain and applicable for **continuous operation**. Today CERTUSS satisfies customers all around the globe assisted by sustainable, long-term partnerships. Trained and exclusive service partners in 35 countries are ready to assist you **anytime from everywhere**. We are market leaders with more than **60% market share** in Germany, offering high quality **"made in Germany"** products.

After the continuous growth over several decades in the European and Asian Markets, our next target was to establish ourselves in the North American market. CERTUSS America LP was founded in 2014 with its headquarters located in **Philadelphia**. We chose this location for various historical and strategic reasons. Krefeld and Philadelphia's history is entwined by 13 German families, the Original 13, who crossed the Atlantic in 1683 and chose "Germantown" as their new home. On top of that, Philadelphia provides a strategically advantageous infrastructure with a focus on **"green economy"** which fits our energy efficient products and mentality.

Our company's focus lies on a **clearly defined product line, systematic R&D** and a team of **highly trained professionals** enabling equipment production of the **highest standards** complying with ASME and UL regulations, as well as ISO 9001:2015 and PED.

CERTUSS offers Generators which require **little space** with capacities ranging from 5 BHP to 135 BHP and operating pressures of up to 420 psi. To complete the Generator system, we offer our **CVE, CERTUSS Verified Equipment**, modular Package Plant where all associated ancillary items are pre-piped, pre-wired and factory tested. All Generators are equipped with a **touchscreen** simplifying control and operation. The thermal efficiency of CERTUSS Steam Generators is above **87%***. We offer various fuel types, including LPG, natural gas, #2 oil or a dual fuel burner for natural gas and #2 oil for units above 33 BHP. Full spare parts support is provided for each Generator for up to 20 years after commissioning and we hold electronic documentation of every Generator manufactured over the past 30 years.

Why choose CERTUSS? For all our advantages at a glance, check with page 15.

"Our history is the cornerstone that supports our current success, continue growth and allows us to push innovation in the future" Mathias K. Brauner, CEO, CERTUSS Germany



* The amount of steam produced, in lbs/hr, when converting 212 °F water to 212 °F steam at 0 psig (atmospheric pressure)

WHO WE WORK WITH



CERTUSS Steam Generators are applicable in all industries.

Here are some examples of the applications, from over 80 different sectors in which we have gathered experience.



Healthcare & Chemical Sector

- ✓ Hospitals
- ✓ Pharmacies
- ✓ Cosmetics



Plastics



Chemical & Pharmaceutical industries



Mineral oil processing



Food & Beverage Sector



BACARDI



HARDYWOOD



HOFBRÄUHAUS
BUFFALO



PHILADELPHIA'S OWN
YARDS
BREWING COMPANY
EST. 1994



Service & Hospitality Sector

- ✓ Chemical cleaning
- ✓ Disinfecting
- ✓ Laundering



Hilton



Holiday Inn



FOUR SEASONS
Hotels and Resorts

HYATT

Automotive, Construction & Engineering

- ✓ Woodworking
- ✓ Heating
- ✓ Sanitation
- ✓ Ceramics & glass
- ✓ Cement production



Mercedes-Benz

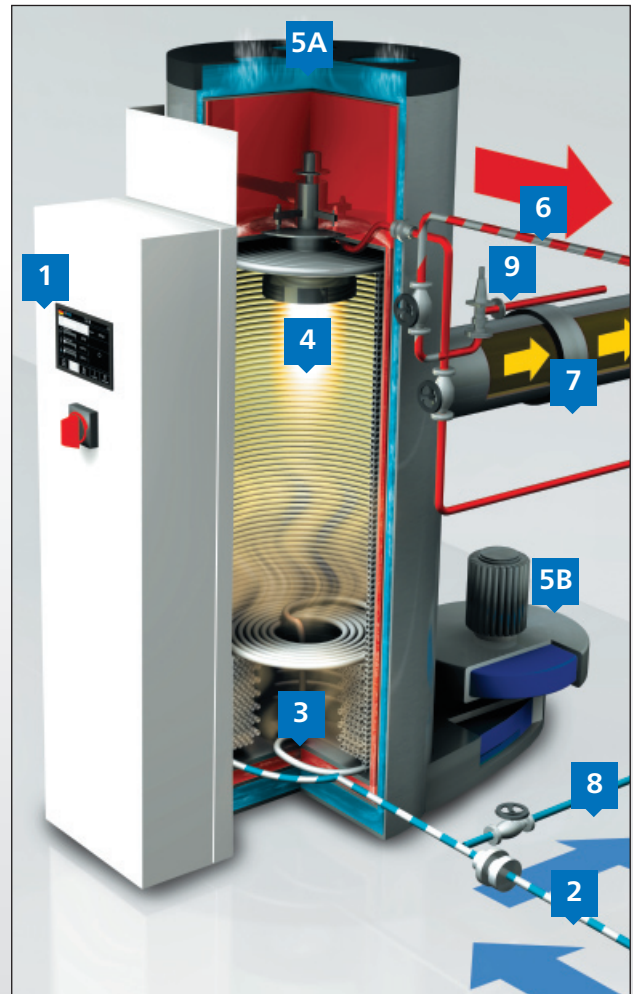


Case studies from different sectors and applications are regularly updated on our website www.certuss-america.com. Check online, see the CERTUSS problem-solving capabilities.

HOW IT WORKS

By using the **water tube boiler** principle, the CERTUSS technology for generating steam offers **maximum safety, reliability and instant availability of high quality steam**.

- 1** The **touch screen control panel** simplifies operation and control of the generator. All configurations and settings of steam pressure are done here.
- 2** The **pre-heated feed water** is delivered to the Generator at approx. 195 to 205 °F. The heat frees the oxygen from water and reduces the risk of oxygen corrosion.
- 3** The **heat exchanger** coil is supplied with water through the feed water inlet. The change of phase from water to steam begins.
- 4** The modulating, **integral burner** with the fastest response time, provides precise steam pressure control down to ¼ psi.
- 5A** Insulation material is made obsolete by guiding the **combustion air** from the top of the Generator through an outer shell, and from there into an inner, secondary shell.
- 5B** The **combustion air intake & fan** draw in warm air through the triplex system to preheat the combustion air and keep the outer jacket cool.
- 6** When the steam has been produced, it leaves the generator through the **steam outlet** and is then ready for use.
- 7** The **flue gas outlet** connects to the chimney with or without an economizer.
- 8** Sediment is flushed out through the **steam generator coil blowdown valve**.
- 9** The **safety relief valve** opens automatically to discharge excess steam when the pressure is too high.

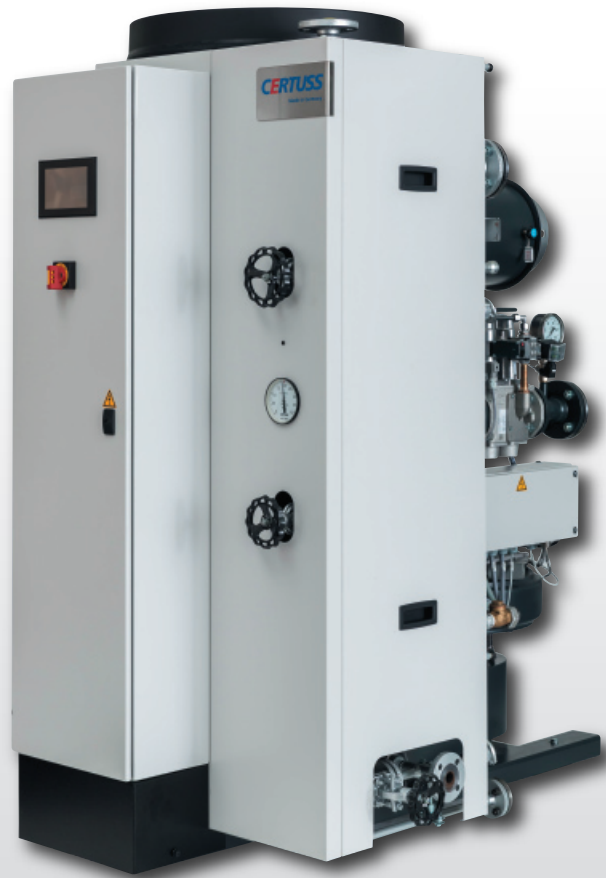


Junior TC 80 – 400

The Junior TC series includes the small-sized Generators for customers who require low amounts of steam. All Junior TC Generators are equipped with an easy to use **touchscreen panel** that simplifies operation. They are our most space saving steam solutions. They can serve constant and fluctuating demands in steam, with steam available in **under 5 minutes**.

F E A T U R E S

- Space saving
- Installation without foundation support
- Robust carbon steel construction
- Triplex air insulation eliminates the need for poured or blanket insulation, within the generator and preheats the combustion air
- Integrated, high turndown 1st stage burner reduces flue gas purge cycle frequency
- Noise and vibration reduction, anti-vibration mountings
- Economical fast energy transfer reducing radiation losses
- Thermal shock proof pressure vessel
- Replaceable evaporation section
- Fully automated operation
- Exemplary customer service and spare parts availability 24 / 7 / 365
- Fuel-to-steam Efficiency > 87 %* (without economizer)
- BMS compatibility with Modbus, BACnet etc.,
- 7" Touch Control (TC) screen

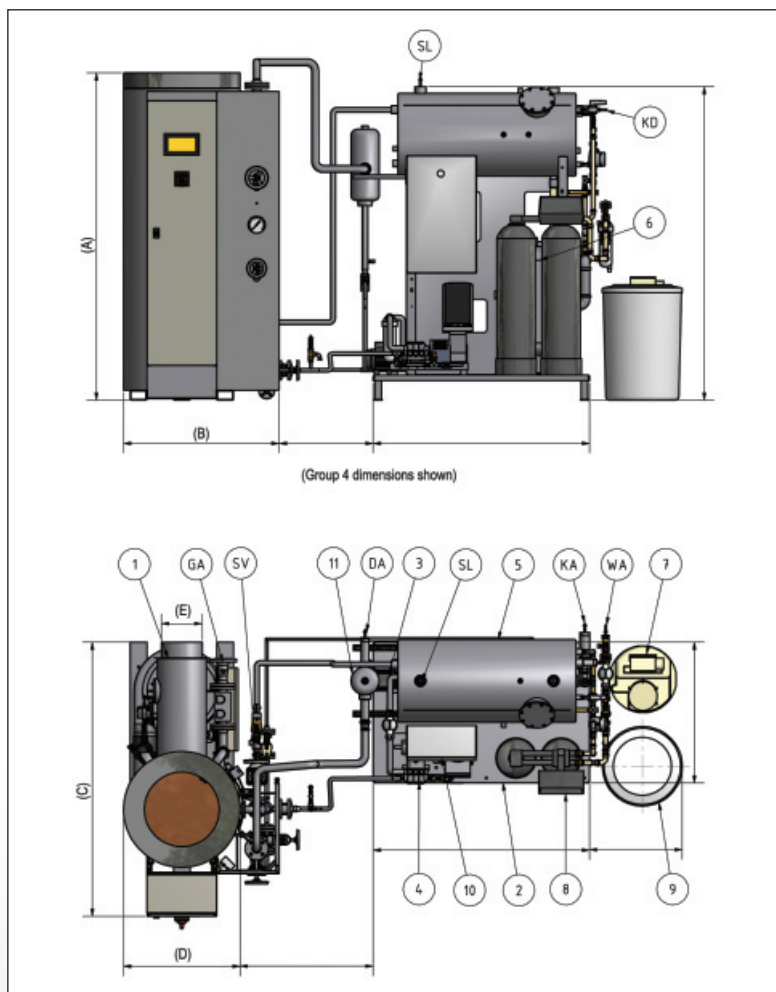


* The amount of steam produced, in lbs/hr, when converting 212 °F water to 212 °F steam at 0 psig (atmospheric pressure)

Specifications

1. Junior TC Steam Generator
2. CVE Feedwater Unit
3. Centrifugal Feedwater Pump
4. Water Volume Control Pump
5. Feed Water Tank
6. Blowdown Vessel
7. Chemical Dosing
8. Water Softening Plant
9. Brine Tank
10. Control Panel
11. Steam Separator
12. Water Filter

- DA. Steam Connection
 WA. Water Connection
 SL. Tank Vent (To Atmos)
 SV. Safety Valve (To Atmos)
 KA. Drain Connection
 KD. Condensate Connection
 BA. Fuel Connection



Model Junior	Ratings			Pressures		Consumption			Dimensions (~ inch)						Weight (~ lb)
	Steam Capacity lbs/hr	Heating Capacity BHP	Output Gross MBtu/hr	Max. operating pressure psi	MAWP psi	# 2 oil GPH	Natural gas CFH	Liquidgas LPG CFH	Height A	Width B	Depth C	Boiler Ø D	Flue gas pipe Ø E	Flue gas (center) F	
80 120	176 265	5.4 8.2	181 273	80 – 420	150 – 460	1.42 2.13	198 298	79 119	60	29	51	20	7	41	705
150 200	331 441	10.2 13.6	341 454	80 – 420	150 – 460	2.66 3.54	372 496	149 198	63	30	58	22	8	44	926
250 300 350 400 480	551 661 772 882 1,058	17.0 20.5 24.0 27.3 32.7	570 686 802 914 1,095	80 – 420	150 – 460	4.43 5.32 6.20 7.09 8.51	620 744 868 992 1,191	248 298 347 397 476	73	34	62	25	10	53	1146

Specifications subject to change without notice

Universal TC 500 – 2000

The Universal TC series is equipped to serve constant, as well as fluctuating, **high steam** demands making these Generators our most high performing solutions. Due to an extremely short heat up time, steam is available after **less than 5 minutes**. The touch screen control panel facilitates operation and gives a bundled overview of current pressures and configurations. Additionally the Generator can easily be operated remotely.

F E A T U R E S

- Space Saving
- Installation without foundation support
- Robust carbon steel construction
- Triplex air insulation eliminates the need for poured or blanket insulation, within the generator and preheats the combustion air
- Integrated, high turndown 1st stage burner reduces flue gas purge cycle frequency
- Noise and vibration reduction, anti-vibration mountings
- Economical fast energy transfer reducing radiation losses
- Thermal shock proof pressure vessel
- Replaceable evaporation section
- Fully automatic operation
- Exemplary customer service and spare parts availability 24 / 7 / 365
- Fuel-to-steam Efficiency > 87 %* (without Economizer)
- Full modulation from 50 % to 100 % (NG, LPG)
- BMS compatibility with Modbus, BACnet etc.,
- 7" Touch Control (TC) screen

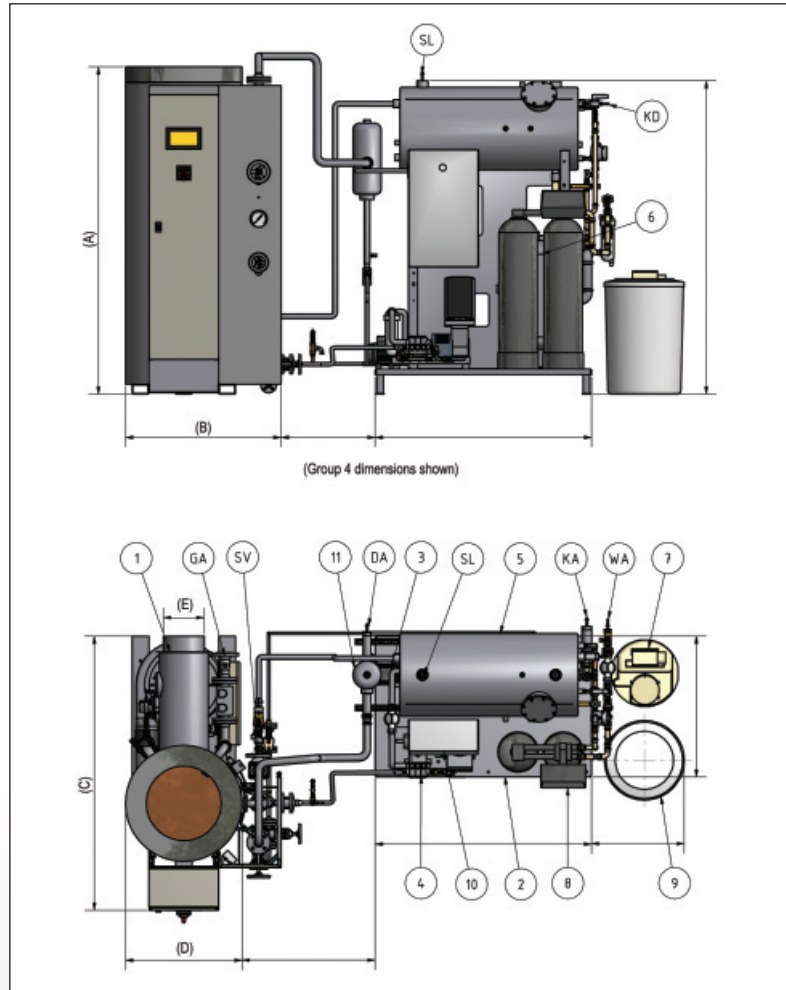


* The amount of steam produced, in lbs/hr, when converting 212 °F water to 212 °F steam at 0 psig (atmospheric pressure)

Specifications

1. Universal TC Steam Generator
2. CVE Feedwater Unit
3. Centrifugal Feedwater Pump
4. Water Volume Control Pump
5. Feed Water Tank
6. Blowdown Vessel
7. Chemical dosing
8. Water softening plant
9. Brine Tank
10. Control panel
11. Steam separator
12. Water filter

- GA. Fuel
SV. Safety Valve
DA. Steam
SL. Tank Vent
KA. Drain
WA. Water
KD. Condensate



Model Universal	Ratings			Levels	Pressures		Consumption			Dimensions (~ inch)						Weight (~ lb)
	Steam Capacity lbs/hr	Heating Capacity BHP	Output Gross MBtu/hr		Max. operating pressure psi	MAWP psi	# 2 oil GPH	Natural gas CFH	Liquid gas LPG CFH	Height A	Width B	Depth C	Boiler Ø D	Flue gas pipe Ø E	Flue gas (center) F	
500 600	1102 1323	34.2 40.9	1143 1368	2	80 – 420	150 – 460	8.86 10.63	1240 1488	496 595	78	38	68	28	10	57	2094
700 750 850 960	1543 1653 1874 2116	47.8 51.1 58.0 65.5	1600 1712 1942 2191	2	80 – 420	150 – 460	12.40 13.29 15.06 17.01	1736 1860 2109 2381	695 744 843 953	90	46	76	34	12	69	2425
1000 1300	2205 2866	68.3 88.8	2286 2972	2	80 – 420	150 – 460	17.72 23.03	2481 3225	992 1290	100	50	84	39	14	76	3307
1500 1800 2000	3307 3968 4409	102.6 122.9 134.6	3433 4115 4504	2	80 – 420	150 – 460	26.58 31.89 35.44	3721 4465 4961	1488 1786 1985	105	56	95	43	20	80	5071

Specifications subject to change without notice

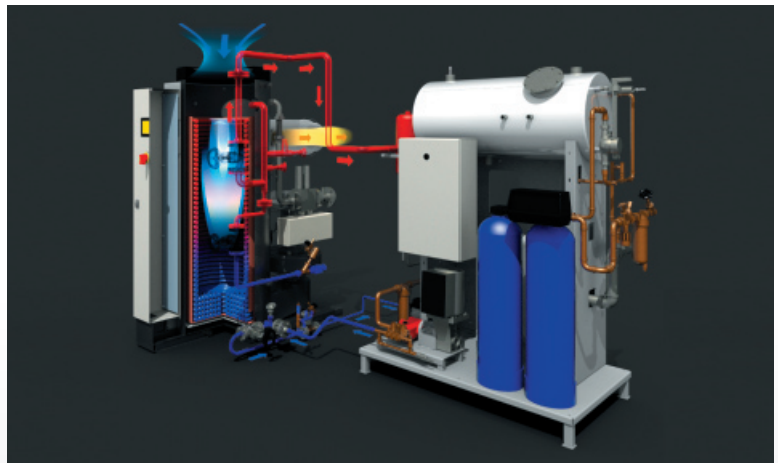
CVE Feedwater Skid

CERTUSS Verified Equipment for Junior & Universal TC

The **CVE** feedwater skid combines all components needed to supply the Steam Generator in one compact body. Instead of combining and installing several single parts, our CVE offers all **necessary add-ons** for water supply and treatment in one. Thereby complex on-site installations are obsolete and factory-tested functional reliability is ensured.

FEATURES

- Duplex water softening plant including automatic chemical dosing pump
- Brine tank
- Feed water tank with pre-heater
- Steam separator
- Blow-Down Vessel with automatic after cooler
- Control Panel
- Blowdown heat recovery system
- Centrifugal Feedwater Pump
- Available feedwater hardness and conductivity monitoring for maximum protection



A D V A N T A G E S

- All supply and water treatment components for CERTUSS Steam Generators are supplied as a single unit and are CERTUSS verified.
- Fast, economical commissioning, ready for operation
- Easy maintenance access
- Enhanced safety due to factory pre-installation of water, steam and electrical connections
- Less space required due to compact design
- Simple on site single point installation
- Complete with electrical sub distribution
- Durable galvanized base frame
- Use of approved, high quality materials
- 3D drawings available for easy design and layout



For Steam Generators with a heating capacity BHP		Dimensions (inch)				Connections									
		Height	Width	Depth	Weight* approx. lbs	Fresh Water NPT	Drain NPT	Rinsing Water (softening) NPT	Vent line NPT	Condensate return line NPT					
Junior	max. 32	77	51	33	3500	1"	2"	1/2"	2"	1 1/4"					
Universal	max. 43								4"	2"					
Universal	max. 134	91	87	47	7000										
Multiple Units	max. 270														
	max. 404														
	max. 540														

* Depends on optional equipment chosen.

Specifications subject to change without notice

Modular Steam Plant

CERTUSS multiple boiler modular steam plant gives you the flexibility of design for both – today and tomorrow.

A D V A N T A G E S

- N+1 redundancy with less installed BHP
- Higher turndown
- Capacity enlargement as required
- Peak time coverage
- Single source accountability
- Smallest footprint



Specifications subject to change without notice

Containerized Package Plant

The CERTUSS **fully equipped container unit** is our solution in case isolation from the rest of your plant is required. It contains all components necessary to operate an entire plant.

After connecting the main services and commissioning, steam is at your disposal in **less than 5 minutes**. The self contained unit is **flexible**, allowing permanent, as well as temporary positioning.

On inquiry we can take over full or partial installation of the steam system. If you choose to contract out to other companies, we can carry out consultation and supervision for your containerized unit.

A D V A N T A G E S

- Weight of the full steam plant
- Maintenance accessibility
- Highest efficiency
- Steam on demand
- Single source accountability
- Permanent or temporarily placement of the entire plant
- Alternative solution to a separate boilerhouse requirement



Specifications subject to change without notice

Fact 1: Safety comes first

Designed from the start to need less than 1/10th of the pressurized cooling water capacity required by a traditional firetube boiler for production of the same capacity of steam, CERTUSS steam generators provide the highest levels of operational safety, while providing you with the reliable, high quality steam your plant needs. In fact, so much so, that in a growing number of jurisdictions, operation of CERTUSS steam generators does not require an operator's license.

Operational Water Volume

100 HP Firetube Boiler	=	600 gal
100 HP CERTUSS Steam Generator	=	53 gal



A Higher Bar for Safe Operation

For CERTUSS, boiler codes and standards are the minimum bar that must be reached for safe boiler design and construction. While safe operation of many high pressure steam boilers is primarily reliant upon controls and safety devices, which are external to the pressure vessel, and must be properly maintained, CERTUSS takes it to the next level with a pressure vessel design that is intrinsically safe to operate on its own. This intrinsically safe pressure vessel design ensures that operating conditions which might result in a site wide catastrophe from traditional boiler designs, would be effectively reduced to a localized equipment failure for CERTUSS.



While high boiler accidents are thankfully rare in most regions today, with tens of thousands of units both in the past, and currently operated by customers globally, CERTUSS steam generators can point to a 60 year history of providing the highest levels of operational boiler safety in the industry.

Fact 2: The smallest footprint in the market

Thanks to our vertical design we can fit the tightest given space, whether a dedicated boiler room or normal working areas (rooftop, basement or mezzanine).

Example illustrating the spacesaving benefits of a CERTUSS modular steam plant in comparison to a traditional steam boiler.

Footprint of a traditional
100 BHP scotch marine boiler
incl. min. clearance: **175 sq.ft.**



Footprint of a **CERTUSS 200 BHP** modular steam plant, consisting of 2 x Universal TC 1500 steam generators incl. CVE package incl. min. clearance: **130 sq.ft.** (N+1 redundancy built-in).

Fact 3: Technology at its utmost

EXCLUSIVE

TOUCH CONTROL

- 7" Touch Control (TC) **Touchscreen**
- clear readout of operating parameters and setpoints
- easy start up / shut down graphic instructions
- pre-programmable automated start / stop capability
- remote access capability via mobile phone or tablet
- multi-lingual control interface
- BMS/Remote Monitoring interface vial LAN, Modbus, BACnet, etc.



* The amount of steam produced, in lbs/hr, when converting 212 °F water to 212 °F steam at 0 psig (atmospheric pressure)

C H E C K L I S T

- ☐ 1. Do you need **quick start-up times** and steam almost **instantaneously**?
- ☐ 2. Do you have a boiler constantly in hot **standby** mode?
- ☐ 3. Do you wish to be more **environmentally friendly**?
- ☐ 4. Do you experience **fluctuations** in steam demand?
- ☐ 5. Do you have **limitations in space** or would like to use your space more **efficiently**?
- ☐ 6. Do you fancy the idea of operating your generator **remotely** without having an operator on site all the time?
- ☐ 7. Do you currently possess an **aging** boiler?
- ☐ 8. Do you face difficulties obtaining **replacement** and **spare parts** for your boiler?
- ☐ 9. Do you have **maintenance** issues with your current boiler?
- ☐ 10. Do you experience efficiency losses due to long **distances** between the **production** and the **use** of steam?
- ☐ 11. Do you prefer a **point of use** steam source?
- ☐ 12. Have you lost confidence in the **quality and reliability** of your existing boiler?

If you replied with a “yes” to **4** or more of the above questions, it is perhaps time to consider buying a new, high efficiency steam generator by **CERTUSS!**

Contact us directly or check online on www.certuss-america.com for our authorized local partner.



Customer Installations



Food & Beverage



Laboratories



Mechanical Engineering



Healthcare



Service Industry



CERTUSS America L.P.

800 Marshall Phelps Road, Building 5 – Unit E

Windsor, CT 06095, USA

Phone: +1-860-288-5656 | www.certuss-america.com | info@certuss-america.com