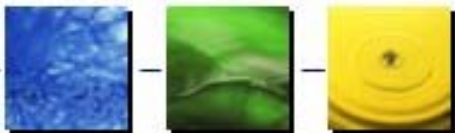




OZAT[®] CFV
Compact
Ozone
Generators



OZAT[®] CFV Compact Ozone Generator Units

The continual success of the compact range of OZAT[®] compact ozone generator units has, once again, prompted Ozonia to apply the same design and price philosophy to a completely new line of ozone generators.

The new range of OZAT[®] CFV ozone generators compliments the CFS units and will set the trend for larger standard units in the future. The CFV units are a perfect blend between the low cost CFS philosophy and the bespoke units typically used in larger plants.

The unit sizes of this new series cover nominal production rates from 1.0 kgO₃/h (52.91 lb O₃/d) to 20.0 kgO₃/h (1058.22 lb O₃/d) at 6 wt% from oxygen or 0.5kgO₃/h (26.46 lb O₃/d) to 9.50 kgO₃/h (502.65 lb O₃/d) at 3 wt% from air.

This development will help overcome the price restrictions encountered in the past and make high-grade ozone units available for even more applications.

This new range of OZAT[®] compact ozone generators reflects years of experience and incorporates the latest technical developments.

In addition to the use of Ozonia's latest version of the Advanced Technology or AT dielectric segments, installed in a vessel instead of individual tubes, this new range incorporates an optimised medium frequency power supply which takes full advantage the very latest application technology and semiconductor products.

The CFV line has the same outstanding features as the other OZAT[®] ranges when it comes to low-cost with high industrial product quality. All of the units in the range are capable of producing ozone with concentrations up to 14 wt% from oxygen and 5 wt% from air. The technical features of the units are exceptional:

- Very compact dimensions
- Integrated controls
- Choice of PLC system
- Optional bus connection
- Simple installation
- Oxygen or air feedgas
- High ozone concentrations
- Robust industrial quality
- High reliability and safety
- Power factor = 0.99 cos φ
- Low harmonic content
- Practically sinus wave mains current

The applications for the new OZAT[®] CFV range are countless. To name but a few:

Potable water plants

Because of the high reliability factor, these CFV units will be of particular interest to clients operating remote, unmanned potable water installations.

Waste treatment facilities

To reduce COD values prior to discharging the effluent to municipal treatment systems.

Fish hatcheries and farms

To protect valuable stocks of fry or fish against water-borne micro-organisms or pollutants and, at the same time, to increase production rates and quality levels.

Water circulation systems

In industry, i.e.: for washing farm products, fish, etc. prior to packing; the recovery of process water, etc.. Ozone in conjunction with filtration is an important means of reducing the COD value enabling reuse.

Influent water treatment

There are many applications where companies treat the incoming water from the municipal source to establish and maintain a consistent quality specification. Ozone, combined with granular activated carbon, results in a perfect treatment step.

Cooling water treatment

Ozone is an excellent replacement for biocide in circulating cooling water systems. The CFV range will be of special interest to operators of medium sized cooling towers who are being put under ever increasing legislative pressure because of undesirable emissions.

Please contact your local Ozonia office or Ozonia product distributor for more specific information regarding application technology

RATING DATA FOR THE CFV RANGE OF OZAT[®] UNITS

OZAT [®] Model Type	NOMINAL Production		OPTIMUM Production		Module Pressure		Oxygen Requirement		Air Requirement		Cooling Water	Mains Power
	Oxygen 6 wt%	Air 3 wt%	Oxygen 10 wt%	Air 4 wt%	Oxygen	Air	for 6 wt%	for 10 wt%	for 3 wt%	for 4 wt%		
Units	kgO ₃ /h lb/d				barg psi		Nm ³ /h scfm				m ³ /h gpm(US)	kW
CFV-01	1.00	0.50	0.80	0.40	1.5	2.5	11.4	5.5	12.7	7.8	1.1	8.6
	52.91	26.46	42.3	21.16	21.75	36.25	7.23	3.49	8.05	4.95	4.84	
CFV-02	1.70	0.80	1.30	0.70	1.5	2.0	19.6	9.1	20.7	13.6	1.9	14.0
	89.95	42.33	68.78	37.04	21.75	36.25	12.43	5.77	13.13	8.62	8.37	
CFV-03	2.50	1.20	1.90	1.00	1.5	2.0	29.1	13.3	30.1	19.4	2.8	20.0
	132.28	63.49	100.53	52.91	21.75	36.25	18.45	8.43	19.09	12.30	12.33	
CFV-04	3.35	1.60	2.50	1.30	1.5	2.0	38.8	17.5	41.2	25.2	3.7	26.0
	177.25	84.66	132.28	68.78	21.75	36.25	24.67	11.10	26.12	15.98	16.29	
CFV-05	5.00	2.40	3.80	2.00	1.5	2.0	58.0	26.4	61.9	38.3	5.5	39.0
	264.55	126.99	201.06	105.82	21.75	36.25	36.78	16.74	39.25	24.29	24.66	
CFV-10	10.00	4.90	7.80	4.00	1.5	2.0	119.4	54.3	126.3	78.7	11.0	78.0
	529.11	259.26	412.71	211.64	21.75	36.25	75.71	34.43	80.09	49.90	50.63	
CFV-20	20.00	9.50	15.20	7.90	1.5	2.0	231.8	105.5	244.9	153.1	22.0	151.0
	1058.22	502.65	804.25	418.00	21.75	36.25	146.98	66.90	155.29	97.08	98.18	

- The nominal production data is based on design criteria and the optimum production data takes operating costs into consideration.
- Ozone production rates based on a cooling water inlet temperature of 12°C (53°F) with a Δt of 5 °C (9°F) and an inlet pressure of 2 to 6 barg (29 to 87 psi).
- Feedgas requirements vary depending on production rate and ozone concentration.
- Feedgas inlet pressure: 3 to 8 barg (43 to 116 psi) for air and 2.5 to 8 barg (36 to 116 psi) for oxygen.
- Feedgas dew-point: -65°C (-85°F) or dryer at atmospheric pressure. See separate specification.
- The given module operating pressure is adjustable within limits. The given pressures have been optimised.
- Models CFV-01 to CFV-04 without fused dielectrics, models CFV-05 to CFV-20 with fused dielectrics.
- Gas volumes: Nm³/h at 0°C, atmospheric pressure; scfm at 70°F, atmospheric pressure.

DIMENSIONS FOR THE CFV RANGE OF OZAT[®] UNITS

Model	Length	Width	Height	Weight
Units	mm	mm	mm	kg
	inch	inch	inch	lb
CFV-01	1300	670	1450	~420
	51.18	26.38	57.09	~955.94
CFV-02	2000	1150	2000	~750
	78.74	45.28	78.74	~1653.47
CFV-03	2000	1150	2000	~850
	78.74	45.28	78.74	~1873.93
CFV-04	2000	1150	2000	~950
	78.74	45.28	78.74	~2094.39
CFV-05	2500	1500	2000	~2000
	98.43	59.06	78.74	~3306.93
CFV-10	2900	1900	2000	~2050
	118.11	74.80	78.74	~5511.56
CFV-20	2900	1900	2000	~3500
	118.11	74.80	78.74	~7716.18

GENERAL DATA FOR THE CFV RANGE OF OZAT® UNITS

Site conditions

- Design altitude : 0 up to 3000 m.a.s.l.
(over 1000masl the power will reduce by 10% per 1000m).
0 up to 9845 feet a.s.l.
(over 3280 feet a.s.l. the power will be reduced by 10% per 3280 feet).
- Ambient temp. : Min.: 5°C (41°F)
Max.: 40°C (104°F)
Av. (24h): 35°C (95°F)
- Humidity : < 65% (yearly average)

Electrical data

- Mains voltage : 3 x 360-440 VAC, 50 Hz
3 x 414-495 VAC, 60 Hz
- Power factor : 0.99 cos φ
- Regulation range : 10 to 100%
- Mains connection : Terminals in cubicle
- Remote control : Terminals in cubicle

Control / signals

- ON / OFF / RESET : Local / remote
- Valves open (purge) : Local / remote
- Output control : Local / remote
- Production stop : Local / remote
- Remote enable : Remote
- Alarm (collective) : Local / remote

Materials

- In contact with ozone: ANSI 316, PTFE, etc.
- In contact with water : ANSI 304/316

Protection class : IP 42

Colour : RAL 1013 (pearl white)

Standards : Ozonia, SN/EN, IEC and ISO

Conformity : CE

CONTROL SYSTEMS

The ozone generator models type OZAT® CFV-02 to CFV-20 are available with either Allen-Bradley or Siemens Simatic PLC systems. The preferred system is to be specified at the time of ordering.

Hardware specification for PLC units:

- Allen-Bradley MicroLogix™ 1200 (1762-L40BXBR)
- Siemens Simatic S7-200™

Signals and control functions:

All of the OZAT® CFV units can be hard-wired for remote control and signalling (standard feature). For clients requiring that the ozone generator unit be controlled via a bus system Ozonia can supply, as an optional extra, a standard kit which will enable the OZAT® CFV-02 to CFV-20 units (not applicable for CFV-01 units), with either the Allen-Bradley or the Siemens Simatic PLC, to be connected to the following protocols:

- Profibus
- Modbus RTU
- Ethernet
- DeviceNet

Other protocols available on request.

Available languages for HMI interface:

- English (EN)
- German (DE)
- French (FR)
- Spanish (ES)

Other languages available on request.

POWER-CUT & LIGHTNING PROTECTION

The standard OZAT® CFV units are designed to switch off immediately as soon as there is a failure of the power supply to the unit - this feature can be undesirable for certain types of service (e.g.: unmanned, remote drinking water stations). In order to over-come this, Ozonia can supply, as an optional extra, additional equipment which will bridge short power failure transients up to 1 second - this equipment also functions as lightning protection.

CONNECTIONS

Model	CFV-01	CFV-02	CFV-03	CFV-04	CFV-05	CFV-10	CFV-20
Mains connection (4 wire)	4 x 2.5mm ²	4 x 6mm ²	4 x 10mm ²	4 x 16mm ²	4 x 25mm ²	4 x 70mm ²	4 x 185mm ²
Control wiring	1.5 mm ²	1.5 mm ²	1.5 mm ²	1.5 mm ²	1.5 mm ²	1.5 mm ²	1.5 mm ²
Feedgas connection	SERTO Pipe O/D 18	Flange DN20/PN16	Flange DN20/PN16	Flange DN25/PN16	Flange DN25/PN16	Flange DN40/PN16	Flange DN50/PN16
Pressure relief connection	SERTO Pipe O/D 18	Flange DN25/PN16	Flange DN25/PN16	Flange DN25/PN16	Flange DN32/PN16	Flange DN50/PN16	Flange DN65/PN16
Ozone gas connection	SERTO Pipe O/D 18	Flange DN20/PN16	Flange DN20/PN16	Flange DN25/PN16	Flange DN32/PN16	Flange DN50/PN16	Flange DN65/PN16
Cooling water connections	SERTO Pipe O/D 18	Flange DN20/PN16	Flange DN20/PN16	Flange DN25/PN16	Flange DN25/PN16	Flange DN40/PN16	Flange DN50/PN16

Materials recommended for the external pipe connections to the OZAT[®] unit.

Ozone : Fluorinated plastics such as PTFE, PVDF. Stainless steels such as ANSI 316L (1.4571, 1.4435, etc.).

Oxygen : Fluorinated plastics such as PTFE, PVDF. Stainless steels such as ANSI 316L (1.4571, 1.4435, etc.). Copper

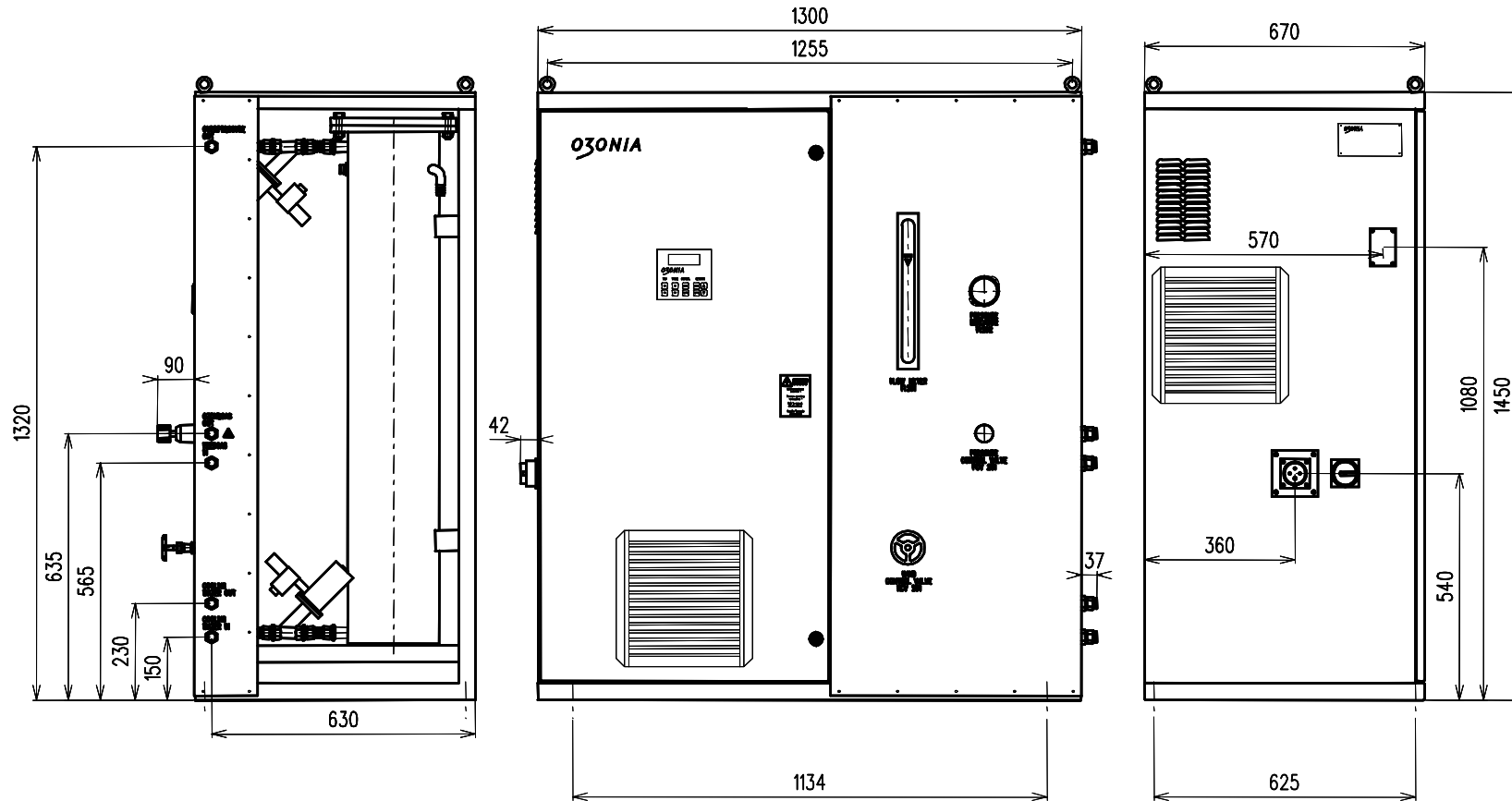
Compressed air : Fluorinated plastics such as PTFE, PVDF. Stainless steels such as ANSI 316L (1.4571, 1.4435, etc.). Copper, brass or galvanized steel

Cooling water : Plastics, such as PVC, PE, PA PTFE, PVDF, copper brass, galvanised steel, etc

N.B.: When oxygen feedgas is used all pipes, fittings, etc, must be suitable for oxygen service as well as oil and grease free.

OZAT[®] Compact Ozone Generator with Vessel

Type CFV-01

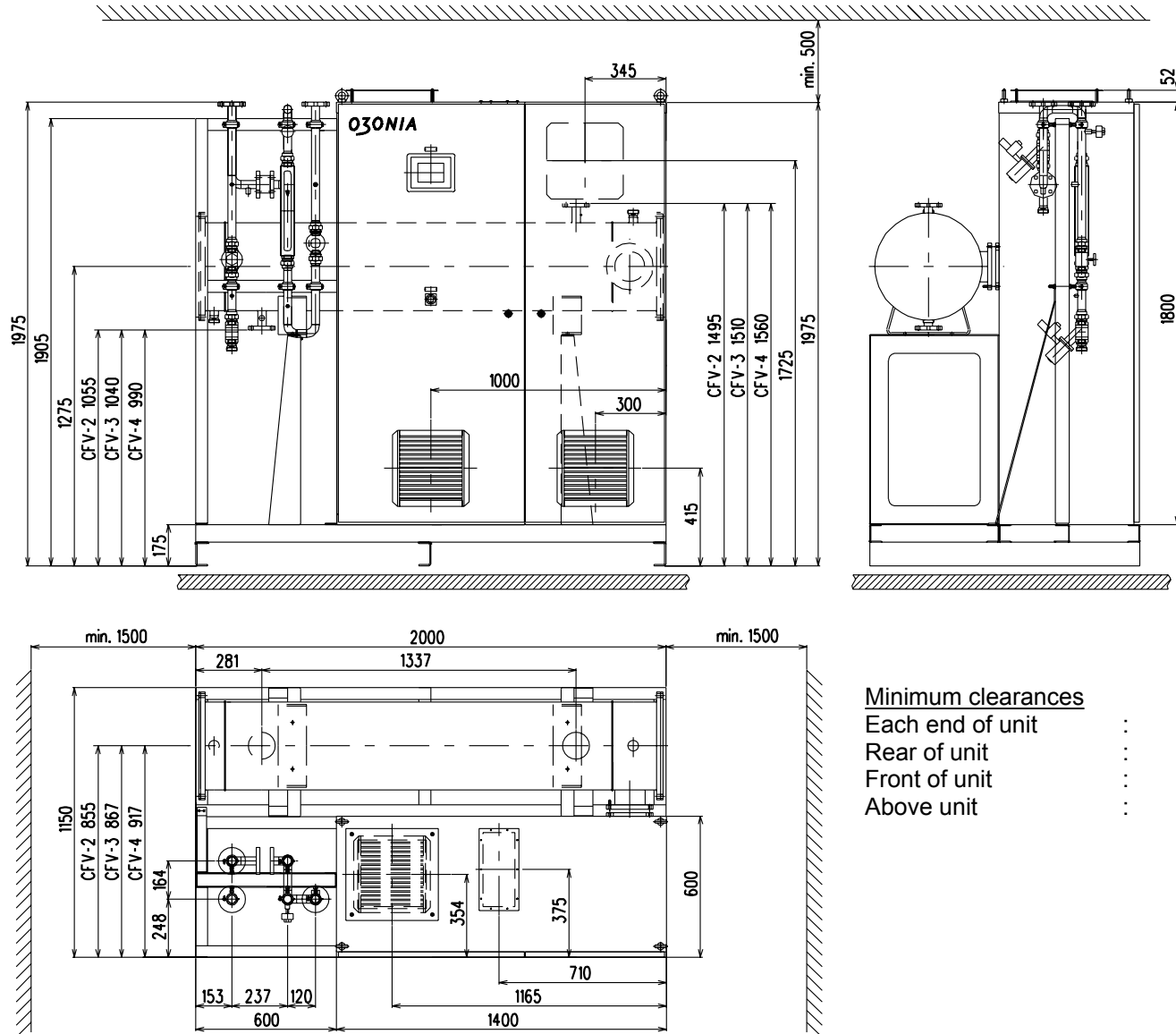


Minimum clearances

Each end of unit	:	500 mm
Rear of unit	:	50 mm
Front of unit	:	1000 mm
Above unit	:	1000 mm

OZAT[®] Compact Ozone Generator with Vessel

Types CFV-02, 03 and 04

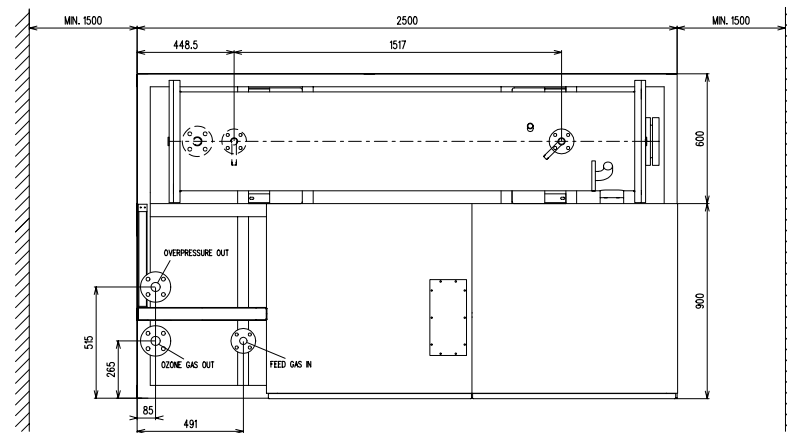
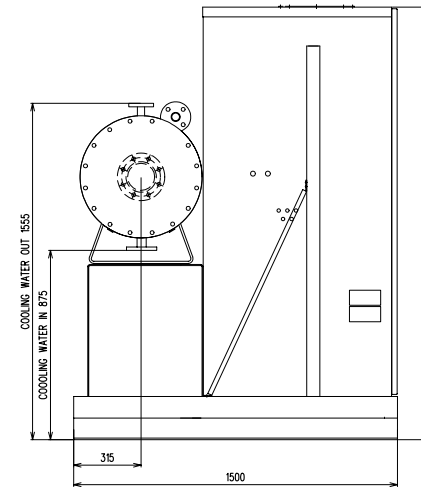
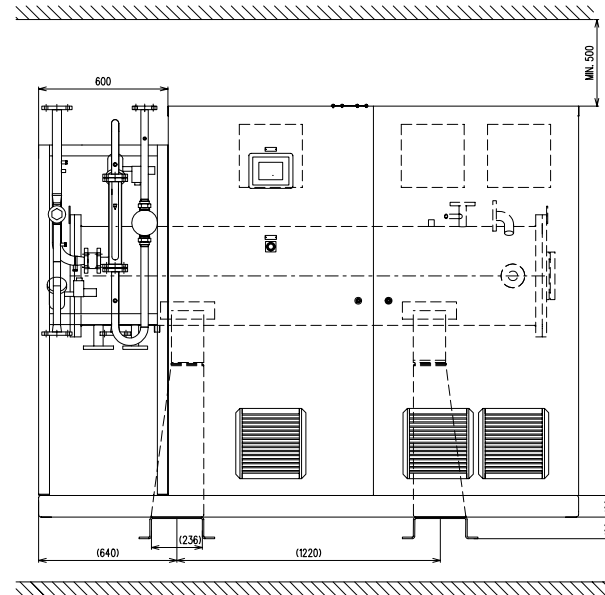


Minimum clearances

Each end of unit	:	1500 mm
Rear of unit	:	500 mm
Front of unit	:	1500 mm
Above unit	:	500 mm

OZAT[®] Compact Ozone Generator with Vessel

Type CFV-05

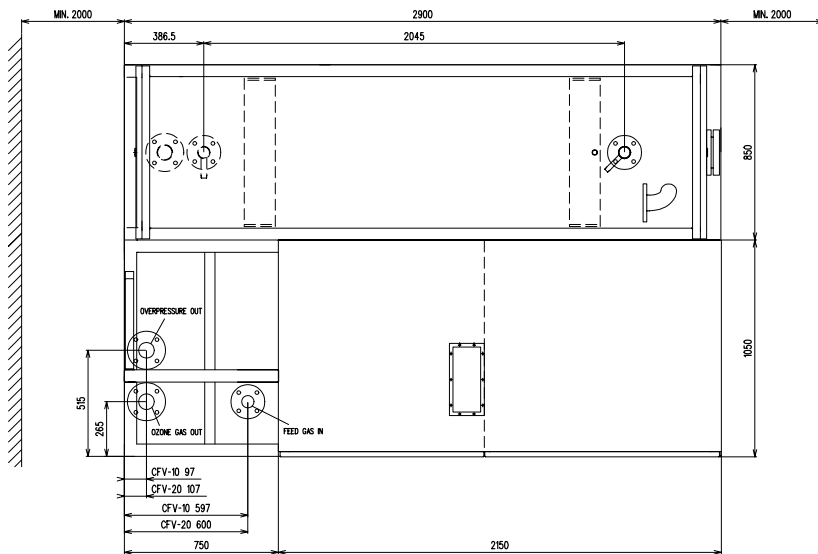
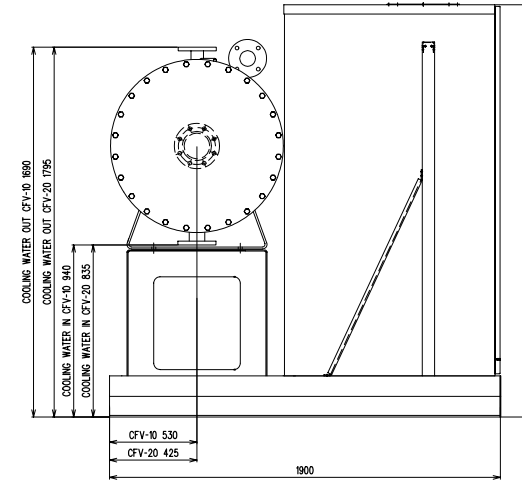
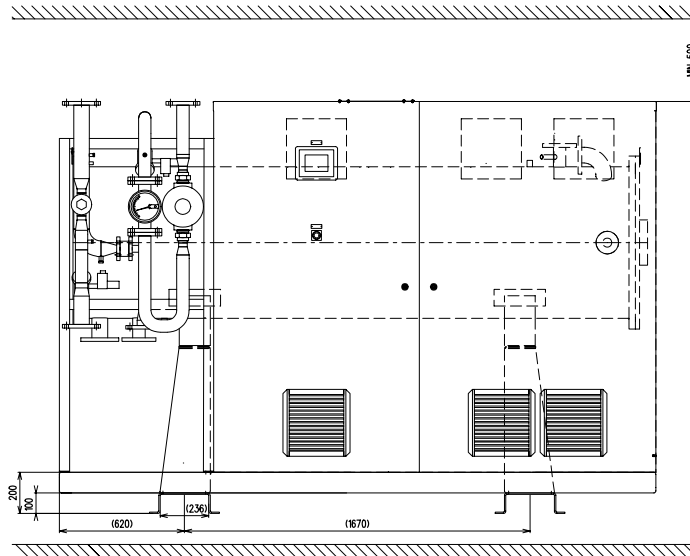


Minimum clearances

Each end of unit	:	1500 mm
Rear of unit	:	500 mm
Front of unit	:	1500 mm
Above unit	:	500 mm

OZAT[®] Compact Ozone Generator with Vessel

Type CFV-10 and 20

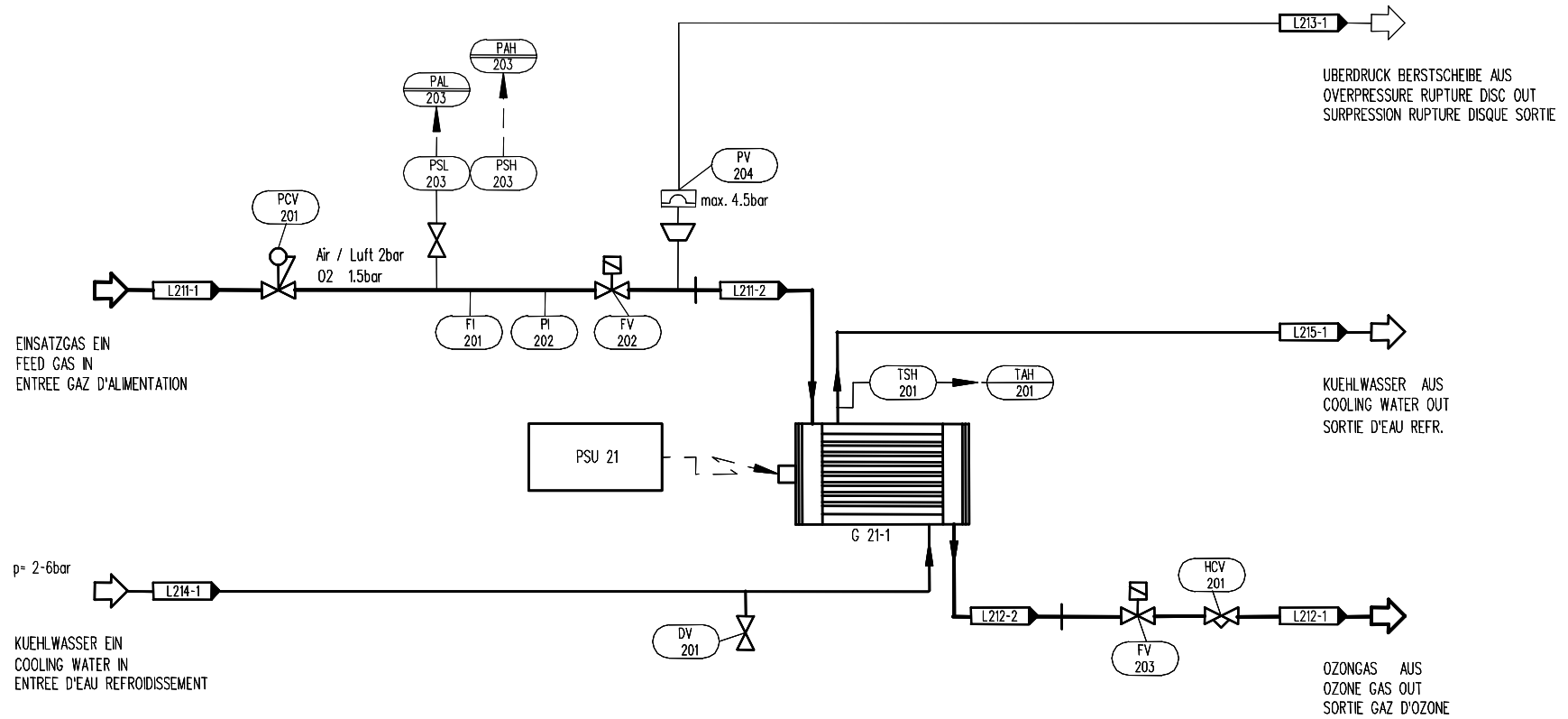


Minimum clearances

Each end of unit	:	2000 mm
Rear of unit	:	500 mm
Front of unit	:	1500 mm
Above unit	:	500 mm

Line Diagram OZAT[®] CFV Series

(N.B. The shown diagram is typical and can vary depending on CFV model)





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