ASCO Atmospheric CO_2 Vaporizer

The atmospheric ASCO CO_2 vaporizer was developed to drastically reduce the costs of CO_2 vaporization. It uses the existing ambient air for this purpose. The fans are temperature-controlled and only operate when a consumer is in use. This enables energy savings of over 95% compared to electric vaporizers. Installation can be completed in a matter of minutes, as each vaporizer is delivered fully piped and wired. A frame for floor mounting is included.

Benefits:

- Energy efficient
- Easy installation
- High process reliability
- Robust construction
- Various capacities

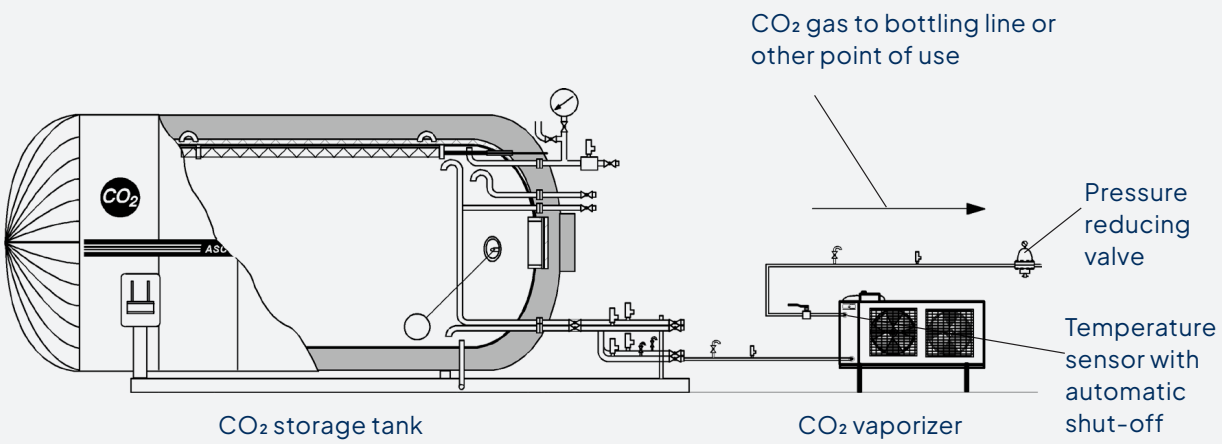
Advantages of the atmospheric ASCO CO_2 Vaporizer:

- External control cabinet with 10 m connection cable for flexible installation and operation (including control cabinet heating)
- The evaporator and control cabinet are conveniently connected via a plug connection
- 25 times less energy compared with electrically heated vaporizers
- Built-in temperature sensors PT1000 to prevent liquid CO_2 from flowing through
- 2 coil system to ensure safe defrosting with built in solenoid valves
- With temperature-controlled start/stop device for intelligent power control
- Simple and fast installation
- Integrated condensate collection system with connection point

Specifications:

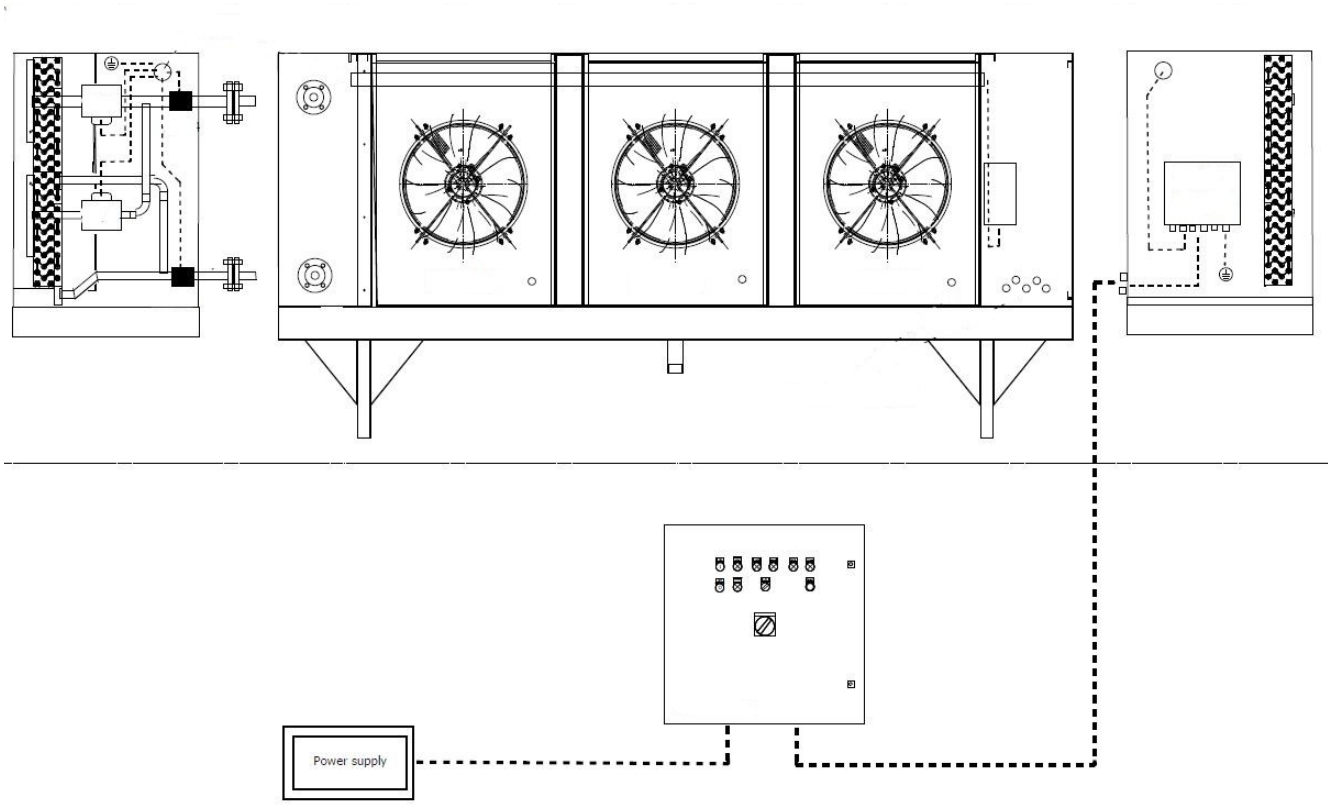
Vaporizing capacity (apx.) from liquid CO_2 at 17 bar (247 psi)	length/width/height mm without control box	in/out connections outer Ø	net weight kg apx.	power consumption	max. operating pressure
200 kg/h SS (440 lb/h)	2'200 x 900 x 1'000 (87×35×39 in)	1“ PN 40	350 kg (771 lb)	1.6 kW (2.1 HP)	25 bar (363 psi)
300 kg/h SS (661 lb)	3'000 x 900 x 1'000 (118×35×39 in)	1“ PN 40	403 kg (888 lb)	2.4 kW (3.2 HP)	25 bar (363 psi)
500 kg/h SS (1102 lb/h)	3'000 x 900 x 1'200 (118×35×47 in)	1“ PN 40	459 kg (1011 lb)	2.4 kW (3.2 HP)	25 bar (363 psi)
1‘000 kg/h SS (2205 lb/h)	4'200 x 1'000 x 1'450 (165×39×57 in)	1“ PN 40	747 kg (1646 lb)	5.4 kW (7.2 HP)	25 bar (363 psi)

Atmospheric ASCO CO_2 Vaporizers: Description



Liquid carbon dioxide is taken from a tank, completely evaporated in the vaporiser and fed to the point of use. In order to ensure safe defrosting of the vaporizer, it is equipped with two autonomous coils, which are controlled by a solenoid valve each. While one vaporizer coil is in service, the other is being defrosted. The fans only operate if a consumer equipment is obtaining CO_2 gas and the difference between inlet and outlet in the vaporizer reaches a defined level. This is monitored continuously.

The arrangement shown above permits operation of the vaporizer at air temperatures of max. +40 °C, at least +10 °C and, at reduced capacity as low as +5 °C in order to be able to utilise the vaporizer thoughout the year, the unit should be installed inside a building away from the most inclement weather, for example in a boiler room or similar.

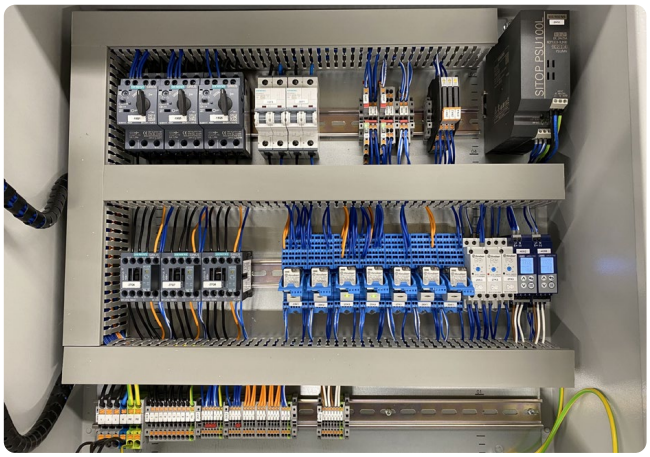


Atmospheric ASCO CO_2 Vaporizers: Description and installation

Description
ASCO Atmospheric CO_2 Vaporizers are supplied as one unit, prewired, pretested (incl. pressure test to 35.4 bar) (513.4 psi) and ready for immediate use.
They consist of a special heat exchanger unit with stainless steel tubes and aluminium fins. Air is forced through the heat exchanger by fans. Any condensate dropping from the tubes is collected by a tray mounted on the bottom of the unit, and an outlet pipe can be connected to drain. The unit also includes
solenoid valves and a complete control box. A temperature sensor is also incorporated to ensure no liquid CO_2 can pass through the vaporizer.

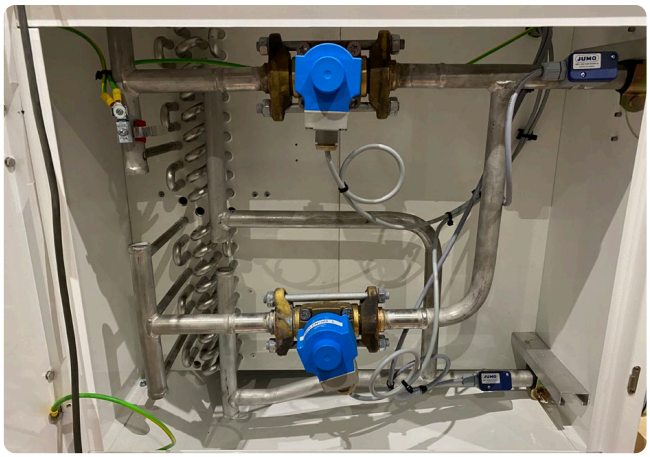
Installation
ASCO Vaporizers should ideally be installed in areas such as boiler houses and similar warm rooms (max. temperature of +40 °C). External installation is only recommended where ambient air temperature is above +10 °C and max. +40 °C. They also operate at +5 °C but at reduced capacity.

Terminal box for external control cabinet



External control cabinet with 10 m connecting cable, temperature sensors and cabinet heating

1'000 kg/h (2'200 lb/h) Atmospheric ASCO CO_2 Vaporizer: Air intake side



Two independent coils

Atmospheric ASCO CO_2 Vaporizer: Available standard capacities

200 kg/n (440 lb/h) atmospheric ASCO CO_2 SS Vaporizer **Art.-Nr. 901523**
200 kg/h (440 lb/h atmospheric ASCO CO_2 SS Vaporizer with defrost **Art.-Nr. 901527**

Pos. 001

With temperature dependent start/stop device
With a register circuit made of stainless steel tubes EN 1.4301 / AISI 304
400 VAC ± 5 %/ 50 Hz / 3 Ph + PE +N

air flow total:	3.4 m3/sec (120 ft3/sec)
CO2 registry volume:	15.76 l (4 gal)
net weight:	350 kg (771 lb)
fan speed:	1'330 rpm
no. of fans:	2
power cons. per fan:	0.84 kW (1.1 HP)
flange connection:	1" PN40

Minimum ambient air temperature required +10 °C, max. +45 °C

300 kg/n (660 lb/h) atmospheric ASCO CO_2 SS Vaporizer **Art.-Nr. 901524**
300 kg/h 660 lb/h atmospheric ASCO CO_2 SS Vaporizer with defrost **Art.-Nr. 901528**

Pos. 002

With temperature dependent start/stop device
With a register circuit made of stainless steel tubes EN 1.4301 / AISI 304
400 VAC ± 5 %/ 50 Hz / 3 Ph + PE +N

air flow total:	5.1 m3/sec (180 ft3/sec)
coil volume:	22.24 l (6 gal)
net weight:	403 kg (888 lb)
fan speed:	1'330 rpm
no. of fans:	3
power cons. per fan:	0.84 kW (1.1 HP)
flange connection:	1" PN40

Minimum ambient air temperature required +10 °C, max. +45 °C

500 kg/n (1100 lb/h) atmospheric ASCO CO_2 SS Vaporizer — Art.-Nr. 901525
500 kg/h (1100 lb/h atmospheric ASCO CO_2 SS Vaporizer with defrost — Art.-Nr. 901529

Pos. 003

With temperature dependent start/stop device
With a register circuit made of stainless steel tubes EN 1.4301 / AISI 304
400 VAC ± 5 %/ 50 Hz / 3 Ph + PE +N

air flow total:	5.1 m3/sec (180 ft3/sec)
coil volume:	43.58 l (11.5 gal)
net weight:	459 kg (1011 lb)
fan speed:	1'330 rpm
no. of fans:	3
power cons. per fan:	0.84 kW (1.1 HP)
flange connection:	1" PN40

Minimum ambient air temperature required +10 °C, max. +45 °C

1000 kg/n (2200 lb/h) atmospheric ASCO CO_2 SS Vaporizer — Art.-Nr. 901526
1000 kg/h (2200 lb/h atmospheric ASCO CO_2 SS Vaporizer with defrost — Art.-Nr. 901530

Pos. 004

With temperature dependent start/stop device
With a register circuit made of stainless steel tubes EN 1.4301 / AISI 304
400 VAC ± 5 %/ 50 Hz / 3 Ph + PE +N

air flow total: 9.9 m3/sec (350 ft3/sec)
coil volume: 77.55 l (20.4 gal)
net weight: 747 kg (1646 lb)
fan speed: 890 rpm
no. of fans: 3
power cons. per fan: 1.8 kW (2.4 HP)
flange connection: 1" PN40

Minimum ambient air temperature required +10 °C, max. +45 °C

Atmospheric CO_2 Vaporizers: Options

Dome loaded pressure reducing valve C31 — Art.-Nr. 4046817

Pos. 001

for gaseous and liquid CO_2
incl. repair kit (diaphragm and O-ring)

Dome loaded pressure reducing valve C2-K32 — Art.-Nr. 4046644

Pos. 002

for gaseous and liquid CO_2
incl. repair kit (diaphagm and O-ring)

Line safety assembly 1“- 25 bar (363 psi) welding connection — Art.-Nr. 4071785

Pos. 003

Consisting of:
- stainless steel pipe 1" / DN25
- safety valve 25 bar (363 psi)
- vent ball valve stainless steel 1/4“

Atmospheric CO_2 Vaporizers: Options

CO_2 flowmeter DN15 — Art.-Nr. 4071248

Pos. 004

- Mass flow sensor Type DN15 (fully calibrated) assembled to process pipe DN 15, PN 40 with flange connection DIN 2635.
- Measuring range 0 - 1'000 kg/h (0– 2200 lb/h) at 22 bar (319 psi)
- The transducer (on wall bracket) is equipped with digital display of current CO_2 flow rate in kg/h as well as totalizer and integrated keyboard.
- 5 meter connection cable with plug for terminal connections (unwired and unconnected)
- Voltage 115 -230 V, 50/60 Hz

Accessories included:
- 2 pcs counterflange DN15/PN40 welding
- 8 pcs screw M12 x 50, hex., inox
- 8 pcs Nut M12, inox (item no. 100022)
- 2 pcs gasket DN 15, 2 x 51 x 22 mm (0.59x2x1.37 in)

CO_2 flowmeter DN25 — Art.-Nr. 4071249

Pos. 005

- Mass flow sensor Type DN25 (fully calibrated) assembled to process pipe DN 25, PN 40 with flange connection DIN 2635.
- Measuring range 0 - 2'700 kg/h (0 - 5'940 lb/h) at 22 bar (319 psi)
- The transducer (on wall bracket) is equipped with digital display of current CO_2 flow rat in kg/h as well as totalizer and integrated keyboard.
- 5 meter connection cable with plug for terminal connections (unwired and unconnected)
- Voltage 115 - 230 V, 50/60 Hz

Accessories included:
- 2 pcs counterflange DN 25/PN40 welding
- 8 pcs screw M12 x 50, hex., inox
- 8 pcs Nut M12, inox
- 2 pcs gasket DN25, 2 x 71 x 35 mm (0.08 x 2.80 x 1.38 in)