

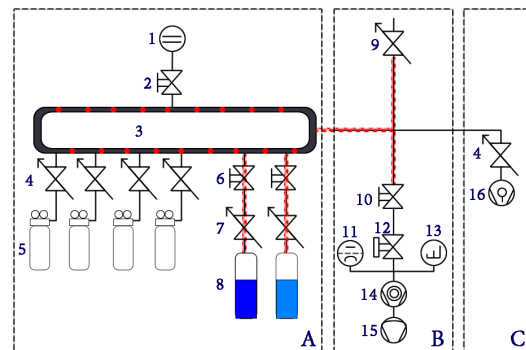
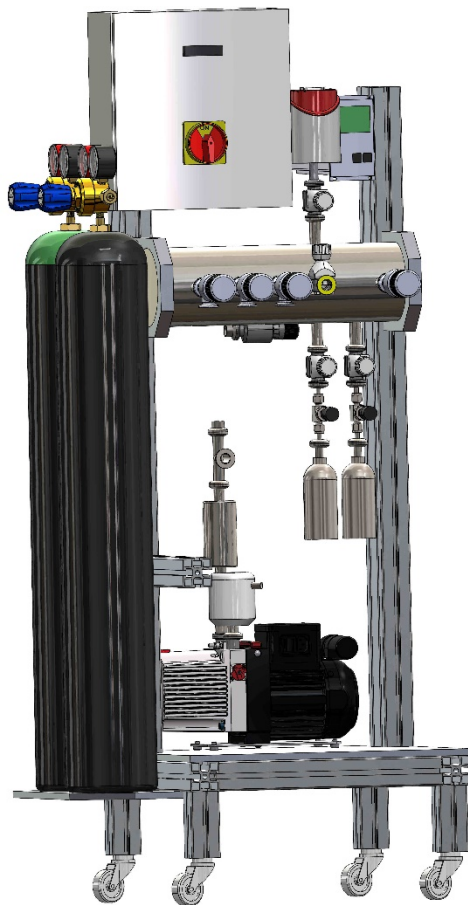
## GASCART (Gas mixed chamber portable)

### Objectives

A gas mixing system has been designed to introduce gases (mixed gases) in a vacuum chamber.

### Technical parameters

- Gas mixing chamber, where gas mixtures are prepared. It consists of a 3.3 l stainless steel cylinder with three/four gas and one/two liquid vapor entrances. Whilst the gas entrances are connected to gas bottles through manual gas dosing valves.
- Each liquid vapor entrance is connected to a 0.5 l stainless steel liquid reservoir through a membrane and a needle valve.
- Both the cylindrical chamber and the connection pipes between the liquid reservoirs and the chamber are surrounded by a 120W heating tape and covered by insulating material so as to avoid liquid condensation on the internal walls. With this heating power a stable and homogeneous working temperature of 60°C is achieved.
- A capacitive vacuum gauge is connected to the mixing chamber providing a gas-independent pressure measurement.
- Rotary pump and a manual gas dosing valve. With this pumping system the base pressure on the gas mixing chamber is  $10^{-3}$  mbar. The valve acts as a throttle valve to adjust the system conductance and allows a continuous dynamic mixing of the gases. In this way, a proper mixing of the gases is achieved in the gas mixing chamber in an overall pressure range from  $10^{-2}$  mbar to 110 mbar (the measuring range of the capacitive vacuum gauge).



Technical scheme of the gas mixing and inlet system. (A) Gas mixing chamber. (B) Gas monitoring and gas inlet connection. (C) Pumping system. 1.- Capacitive vacuum gauge; 2.- Membrane valve; 3.- Mixing chamber; 4.- Gas dosing valves; 5.- Gas bottles; 6.- Membrane valves; 7.- Needle valves; 8.- Liquid reservoirs; 9.- Leak valve; 10.- Membrane valve; 11.- Pirani-Penning vacuum gauge; 12.- Gas regulating valve; 13.- Mass spectrometer; 14.- Turbomolecular pump; 15.- Membrane vacuum pump; 16.- Rotary pump. The red dots and red lines denote the heating elements.