

CryoSwitch-MED

Switchover and recovery system for cryogenic storages of medical oxygen



CE 0476

CryoSwitch-MED is an automatic switchover system with recovery functions, based upon small-size transportable cryogenic storages, with capacity between 160 and 800 liters, known as MiniBulk.

CryoSwitch-MED is classified as 1st and 2nd source of storage systems for medical oxygen, in accordance with the standard ISO 7396-1.

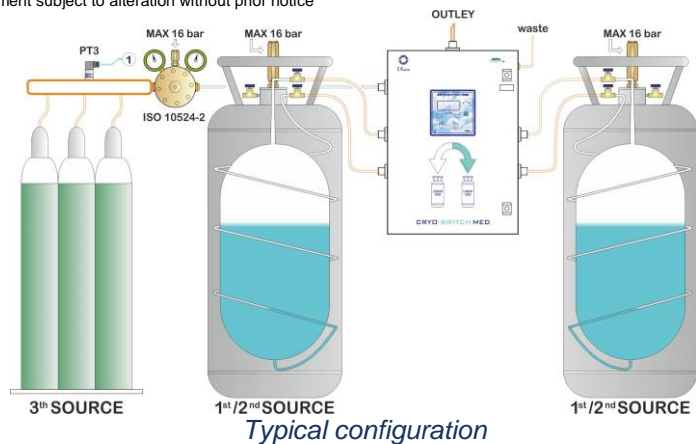


With reference to traditional switchover systems, based on cylinder bundles, **CryoSwitch-MED** has the following characteristics:

- *Reduced risks and costs due to a new design of the control circuit and low pressure operations*
- *Better efficiency: dewars 200 liters of LOX, approximately correspond to 160.000 liters of oxygen at phase gas, namely a bundle of 16 cylinders with capacity of 50 liters at 200bar*
- *Best ratio between net and gross weight*
- *Reduced management costs due to the cheapness of LOX and the time for refilling*
- *Reduced logistic costs due the smaller dimensions, weight and easier substitution operations*
- *Low frequency of periodic maintenance*

In addition, **CryoSwitch-MED** supplies the following performances:

- *Simpler legal requirements for installation if compared with the bigger cryogenic tanks;*
- *Recycling of the gaseous fraction generated by the natural heating in the backup storage (NER);*
- *Fully automatic functions of switchover, recovery, emergency notification and operative alarms;*



CryoSwitch-MED functions:

- Automatic switchover functions by solenoid valves, in function of real time monitoring for pressure or level dewars
- Automatic switchover in case of excessive consumption or output line pressure drop, with relative alarm notifications
- Recycling of the gaseous fraction generated by natural heating of the backup storage (NER)
- Temperature monitoring of dewars outlets with shut-off function (if required)
- Output pressure line monitoring
- Pressure regulator for output line
- Real time system status indication, by display and Leds
- Manual control mode for maintenance operations
- Local network interface RS485 with CRIONET or MODBUS protocol
- Remote monitoring on local network by FLOGUARD-MED
- Remote monitoring by modem on GPRS phone networks to central station with application CrioSystem Supervisor
- Switchover functions by pneumatic valves controlled by pilot gas
- Alarm notifications in accordance with standards ISO 7396-1. CE-MED certification as medical devices Class IIb
- Connection for gas cylinders III° source and monitoring of the relative pressure
- Pressure regulator for III° source, available only on the version with output line for II° Stage (**CryoSwitch-MED 12S**)

Comparative table between CryoSwitch-MED and traditional central gas station for gas cylinder:

<i>O₂ main storage (same content)</i>	MiniBulk 200lt	Gas cylinders 16x50lt @ 200bar
<i>Storage size</i>	Diam=500mm H=1.740mm	1.200x1.200xH=1.700mm
<i>Storage gross weight</i>	330 Kg	1.300 Kg
<i>Ratio between initial non-recurring cost</i>	1	1.8
<i>Operating pressure</i>	16 bar max	200 bar
<i>Ratio between cost of media</i>	1 (liquid gas)	4 (compressed gas)

MiniBulk levels can be monitored by weighing system, differential pressure transducers or capacitive sensors with 4-20mA output.



Scale



Capacimeter sensor