



Medical oxygen

Changing storage and delivery equipment requirements

An insight from **AMBRA Sistemi** into cryogenic switchover systems and technologies.

With a European healthcare market undergoing constant evolution today, particularly in terms of how medical gases are stored and delivered, a gap has arisen in the market for the new technologies to match.

Italy-based AMBRA Sistemi s.r.l. is responding to these needs in the field of cryogenic switchover systems. Intended for small hospitals or retirement homes, the company has introduced the CryoSwitch-MED, an automatic switchover system based upon T-PED cryogenic storage vessels better known as minibulks or dewars, as an alternative to traditional gas cylinders in the evolving healthcare market in Europe.

The CryoSwitch-MED unit is classified as primary and secondary sources of

storage systems for medical oxygen, in accordance with the standard ISO 7396-1. This means that the unit is connected to the two T-PED cryogenic storages as the primary and secondary sources, while the reserve source is guaranteed with connection to external compressed gas cylinders. Thanks to the simple design of the control circuit and low operating pressure, it reduces risks and cost of installation.

The unit includes a specific patented logic recovery function for the gaseous fraction generated by natural heating of the back-up storage in the T-PED cryogenic storage, which is conveyed to the supply, avoiding loss of gas. With reference to traditional switchover systems based on gas cylinders, the CryoSwitch-MED unit improves the

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following characteristics:

- Efficiency
- Ratio between net and gross weight.

Furthermore, it reduces the recurring costs due to the lesser cost of cryogenic medical oxygen with reference to compressed means of supply, logistics costs, risks associated with high pressure, and the frequency of periodic maintenance. The size dimensions of the T-PED cryogenic storages depend on user consumption, but in order to use the same size of all storage situations, AMBRA Sistemi believes it is useful to apply the configuration 2+2. Here, one example of the configuration with a T-PED cryogenic storage size of 220 litres is dependent on the user consumption:

- CryoSwitch-MED 1+1 from minimum 3,500 up to maximum 10,000 Sm³/year
- CryoSwitch-MED 2+2 from minimum 10,000 to maximum 20,000 Sm³/year

The 220 litre size looks the best solution here, owing to the limited dimensions and weight, which therefore allows for ease of handling.

The unit has local visual and audible signals in accordance with EN 60601-1-8 for operating and emergency alarms, while the unit can be connected to remote repeaters or building alarm system. Remote monitoring is also available through a modem with GPRS technology. 

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