

**intelligent Centralised CO₂
Removal System**

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OVERVIEW

Micropore and JFD have teamed together to introduce the 'intelligent Centralised CO₂ Removal System' for diesel-electric submarines.

The 'intelligent Centralised CO₂ Removal System' provides a superior solution compared to legacy burner, granule and soda lime systems.

This new solution can be supplied for new submarine builds or can be retrofittable onto existing submarines. The system utilises the Micropore's proven ExtendAir® PowerCube® which is proven in regards to performance and has many other benefits compared to legacy systems.

ISSUE

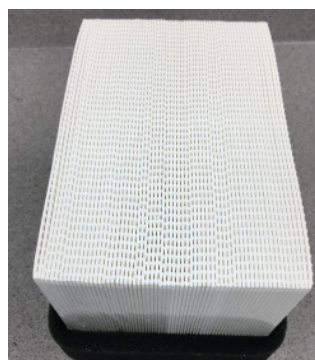
Within closed environments such as submarines, carbon dioxide will reach toxic levels much sooner than oxygen depletion health concern. To combat this and maintain a safe atmosphere, scrubbing solutions are used to maintain the carbon dioxide (CO₂) levels. This forms one part of the environmental / air purification system on submarines to maintain a safe environment for people.

For Nuclear, and Air-independent propulsion AIP submarines which have large amounts of energy, they can utilise regenerative systems to scrub the atmosphere. For Diesel Electric Submarines, for which energy management is critical, use of disposal systems is required.

SOLUTION

This new solution utilises the best capabilities of both Micropore and JFD, for which JFD has used the latest gas management technology and solutions to harness the proven Micropore adsorbent PowerCubes®. The system is made up of the following:

- **Centralised Scrubber Unit** – This component acts at the heart of the system, powering the air flow through the submarine and holds the ExtendAir® PowerCube® units. The system features analysers and a display screen to monitor usage of each ExtendAir® PowerCube®
- **Compartment Ventilation Units** – As part of the pipework which runs through the submarine and to each compartment, small ventilators assist in circulation of the air. The number of units can be scalable depending on volume of compartments.



PowerCube® Adsorbent Block



Canister for one PowerCube®

BENEFITS

- Solution can be customised and scalable to crew / compartment size / complement
- Up to 25% CO₂ removal performance increase compared to legacy systems
- No dusting – improved health and safety – Material handling
- 33% less storage volume for same calcium hydroxide mass of granules.
- Retrofittable to existing submarines

QUALIFICATION

System can be tested to Nation requirements (e.g. shock, vibration, environmental)

INTEGRATION AND EXTENSION

The Centralised CO₂ Scrubber Solution, is one part of an Environmental Control System / Air purification System. This system can be designed to interface and work with the following systems:

- CO analysers and removal systems
- intelligent Submarine Atmosphere Monitoring System (iSAMS)



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