Sandia National Laboratories

Hybrid System for Separating Oxygen from Air

Summary

Sandia has developed a portable, oxygen generation system capable of delivering oxygen gas at purities greater than 98 percent and flow rates significantly greater than commercially available systems. The current process of producing high purity oxygen through a two-stage Pressure Swing Absorption (PSA) method is bulky, energy demanding, and oxygen recovery efficiencies are low. PSA units are currently used in medical, refining, and chemical and gas industries to produce oxygen.

The method devised by Sandia uses highly selective permeable membranes to enrich the stream flowing to a much smaller PSA separation unit, reducing the size and the energy demands of an ambient temperature gas separation process. This system is appropriate for local small to intermediate scale oxygen needs. It provides higher purity than single-stage PSA systems, while consuming significantly less power than two-stage oxygen purifiers.

Licensing & Partnering Status:

Various license and partnering options are available. Please contact the Intellectual Property department to discuss.

Technology Readiness Level:

Sandia estimates this technology's TRL at level 2. The concept has been formulated and requires additional research.

BENEFITS

- A portable, non-cryogenic, oxygen generation system
- Capable of delivering oxygen gas at purities greater than 98 percent
- Method reduces the size and energy demands of the gas separation process

APPLICATIONS

- Chemicals
- Healthcare
- Oil and gas
- Refining
- Medical devices
- Enhanced combustion
- Fuel cells

U.S. PATENTS ON SD# 10351

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INTELLECTUAL PROPERTY & LICENSING CONTACT

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National Nuclear Security Administration

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