FLOXAL™ Nitrogen

AMSA™ EOR Nitrogen Generation for Enhanced Oil Recovery

Contact


World leader in gases, technologies and services for Industry and Health, Air Liquide is present in 80 countries with close to 50,000 employees and serves more than 2 million customers and patients. Oxygen, nitrogen and hydrogen have been at the core of the company’s activities since its creation in 1902. Air Liquide’s ambition is to be the leader in its industry, delivering long-term performance and acting responsibly. 14AIR145
An Air Liquide AMSA™ EOR system is a compact, fully integrated system that provides a continuous supply of nitrogen (N₂) as demand changes. It is a reliable, low-cost N₂ supply solution when cryogenic purity is not required.

**AMSA™ EOR Technology**

AMSA™ EOR N₂ production is a clean air separation operation that requires only ambient air and electricity. This process uses selective permeation technology to separate N₂ from the air. It is the most economical mode of supply for a wide range of flow rates.

Depending on purity, the range of flow rates available are as specified below:

<table>
<thead>
<tr>
<th>PURITY</th>
<th>FLOW RANGE (SCFH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>99.9%</td>
<td>1,000 - 35,000</td>
</tr>
<tr>
<td>99.5%</td>
<td>1,500 - 50,000</td>
</tr>
<tr>
<td>99.0%</td>
<td>2,500 - 70,000</td>
</tr>
<tr>
<td>98.0%</td>
<td>3,500 - 90,000</td>
</tr>
<tr>
<td>97.0%</td>
<td>4,500 - 105,000</td>
</tr>
<tr>
<td>95.0%</td>
<td>5,500 - 125,000</td>
</tr>
</tbody>
</table>

Standard supply pressures of up to 150 psig with optional configurations available for higher pressure requirements.

**AMSA™ EOR BENEFITS**

✓ Standard sizes cover a broad range of flow rates and purities
✓ Reliable N₂ supply of consistent quality
✓ Investment, installation, operation and maintenance by Air Liquide
✓ Customized system design ensures the lowest cost
✓ Modular design provides upgrade flexibility if demand increases
✓ Load following of N₂ demand minimizes energy costs
✓ Telemonitored performance tracking supported by a network of alarm response centers and qualified service technicians
✓ Optional iDATAL™ service provides real-time operating data via the Internet

**THE AMSA™ EOR N₂ SEPARATION PROCESS**

Ambient air is compressed and filtered and then enters the membrane module which contains thousands of polymeric hollow membrane fibers. The selectivity of the membrane allows oxygen to pass through the wall of the membrane fiber and be vented to the atmosphere. Nitrogen remains inside the fiber and exits the membrane module and is delivered to the customer. The N₂ produced is cryo (dewpoint < -80°F) with residual O₂ of 0.5 - 5 percent based on the customer’s requirement.

**NITROGEN FLOODLINE FOR EOR**

If reservoir gas or carbon dioxide is not available, N₂ injection provides a non-corrosive alternative to recovery.

Gaseous N₂ produced by an AMSA™ EOR is a cost-efficient, reliable solution for the following tertiary Enhanced Oil Recovery applications:

✓ Pressure maintenance
✓ Immiscible displacement
✓ Miscible displacement
✓ Gas-assisted gravity drainage

Air Liquide will help you minimize your N₂ costs with an optimally designed AMSA™ EOR supply system to meet your unique N₂ injection requirements.

Our proven track record operating on-site N₂ supply systems assures you of the highest level of quality and reliability.

Contact us today at 1-800-338-7028 and allow us to evaluate your N₂ needs and provide our recommendations.
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**YOUR AMSA™ EOR SOLUTION IS ONLY THREE STEPS AWAY.**

1. Meet with an Air Liquide representative to establish the N₂ supply requirements for your injection project, including flow rate, flow profile, purity and pressure.
2. Allow Air Liquide to design the optimal solution tailored to your unique needs.
3. Evaluate Air Liquide’s proposed solution and commercial offer and negotiate a supply agreement.

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