Get Profitable Faster And More Sustainably With UOP Modular Solutions
Small-Scale LNG. Big Dividends.

Big Savings Compared To Diesel And Fuel Oil

LNG fuel is often ideal for both long-range transportation and high volume, high horsepower applications.

UOP Modular Small-Scale LNG Plants Deliver Superior Long-Term Value

When you can get to market faster and enjoy lower costs for the long term, the switch from diesel to Liquefied Natural Gas (LNG) is a smart choice. And thanks to the total turnkey solution from UOP and Black & Veatch, it’s also an easy one.

The long-term value shines through in lower lifecycle costs. By working with a cost-effective and reliable liquefaction provider, you’ll enjoy a payback that continues to deliver year after year.

A 6-month-faster startup vs. field erected can mean up to $15 million in additional liquefaction revenue!*

*Example: for 200kgpd plant at 80% load factor

A 20% lifecycle cost advantage vs. nitrogen expansion can mean up to $14 million in NPV benefits!!

**Example: 200kgpd plant with a 80% load factor, 10% discount and 10-year project life horizon

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**Figure:**

**LNG Producer\(^1\) Conversion Cost of Pipeline Natural Gas to LNG Process Comparison**

<table>
<thead>
<tr>
<th>Plant Capacity (thousands of gallons of LNG per day)</th>
<th>Unit Production Cost $ per gallon of LNG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen Expansion</td>
<td>$0.25</td>
</tr>
<tr>
<td>UOP/Black Veatch Modular Single Mixed Refrigerant (SMR)</td>
<td>$0.10</td>
</tr>
</tbody>
</table>

**Assumptions:**

- Conversion Cost= Fixed + Variable liquefaction costs, excluding natural gas feedstock cost, US Gulf Coast basis
- Unit Conversion: 1 gallon of LNG = 0.6 gallons of diesel; 12 gallons of LNG = 1 mmbtu

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Ongoing Competitive Advantages
In addition to getting to market faster, modular Small-Scale LNG solutions from UOP deliver ongoing advantages that set your business apart from competitors. The proven gas processing technologies are designed for efficiency and dependability, helping you maximize profits while reducing operating and maintenance costs.

The end result is a highly competitive lifecycle cost for your small-scale LNG plant to effectively position you in the industry for the long term.

Complete Turnkey Solution
UOP and Black & Veatch have you covered from design through production and dispensing.
- Design
- Engineering
- Equipment procurement
- Fabrication
- Installation
- Quality control
- Storage and dispensing systems
- Optimized controls
- Project management and ongoing support
- Start-up/commissioning support

Simplified Expansion
UOP’s Small-Scale LNG solutions give you large-scale development possibilities. The fast startup and overall production efficiencies give you the perfect platform for expansion into other regions. The combination of core technology, repeatable design and increased cash flow set the stage for adding multiple sites with the same consistent results. It’s the cost-effective way to build up capacity over time or meet the need for multiple fueling sites.

Often Ideal For:
- High Horsepower
  - Rail
  - Marine
  - Mining
  - Oil Field
- Long Haul Trucking
- Virtual Pipeline
- Flare Gas Reduction
- Biogas Monetization
- Distributed Power

Key Benefits:
- Low Lifecycle Cost
- Fast Startup
- Full Turnkey Solution
- Operational Flexibility
- Proven Reliability
- Program Management
- Simplified Expansion

UOP Small-Scale LNG Facts
At A Glance:
- Converts pipeline quality natural gas to “cold” LNG
- Single Mixed Refrigerant (SMR) liquefaction technology lowers lifecycle production costs as much as 20% compared to nitrogen expansion
- Highly efficient power consumption
- Pre-Engineered Plant Capacities: (i) 100, (ii) 200, (iii) 400 thousand gallons per day of LNG (kgpd)
- Turndown capability of up to 50% of capacity
- 18-month lead-time from order placement to start-up
- Approximately 10 acres of real estate required, (depending on tank storage capacity and local permit requirements)
- Modular delivery and installation minimizes field work
- Meets a range of pipeline feed gas conditions (gas composition and feed pressure)
- Plant power options:
  - Electric grid >98.5% conversion of pipeline feed natural gas to LNG
  - Natural gas turbine >80% conversion of pipeline feed natural gas to LNG
- Skid-mounted modular equipment for inside battery limits
- Backed by proven experience:
  - UOP has produced more than 100 modular gas-processing projects in North America
  - Approximately 40% of the LNG produced worldwide uses UOP pretreatment technology
  - Black & Veatch has developed more than 24 SMR plants for small-scale LNG
  - Honeywell Process Solutions (HPS) integrated automation, optimization, and safety systems have been successfully utilized for over 30 years across the LNG value chain from baseload liquefaction plants to LNG carriers.

Small-Scale LNG
Working Together With You

Together, UOP and Black & Veatch bring a range of innovative technologies, proven processes and cost-effective services to deliver Small-Scale LNG solutions from design through production. You simply can’t find a better team to work with.

About UOP

UOP, a Honeywell company, provides processes, technologies and equipment for gas processing, refining and petrochemical industries. Since 1914, UOP has developed more than 70 licensed processes for the industries we serve. Providing gas-processing solutions for more than 60 years, UOP is the world’s leading process technology licensor and equipment provider for gas treatment and conditioning. UOP has supplied technology to more than 3,600 process units for gas processing in a broad range of applications.

About Black & Veatch

Black & Veatch is an employee-owned, global leader in building Critical Human Infrastructure™ in Energy, Water, Telecommunications, and Government Services. Since 1915, we have helped our clients improve the lives of people in over 100 countries through consulting, engineering, construction, operations, and program management.

Learn More

For more information about Honeywell UOP Small Scale LNG solutions, please contact your UOP representative or visit us online at www.uop.com.