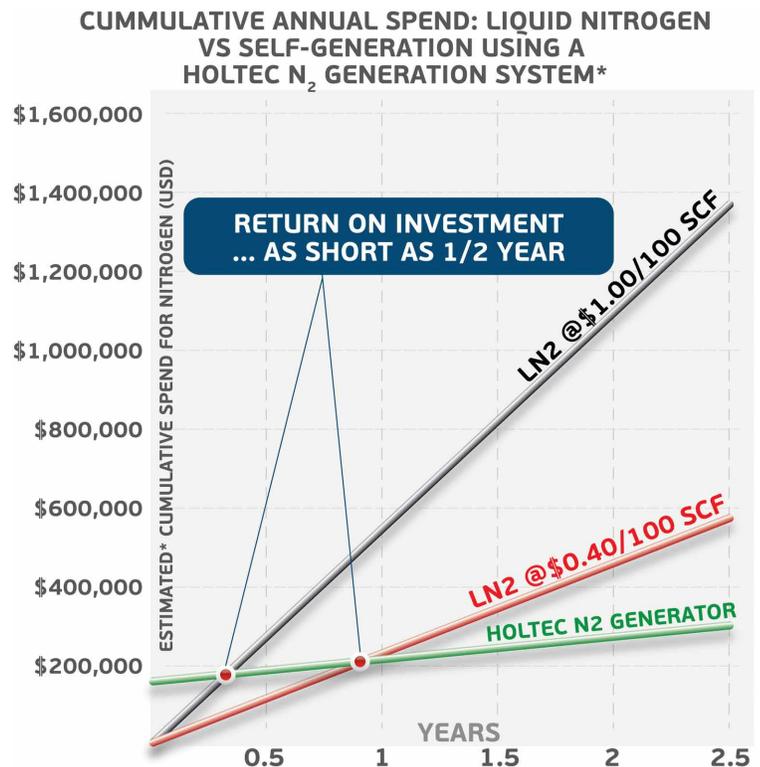


## Return On Your Investment: Purchasing a Nitrogen Generator

Nitrogen is available from gas suppliers in multiple delivery forms (bulk liquid, liquid dewars, and high pressure cylinders). Alternately, nitrogen can be self-generated by extracting it from ambient air using either PSA or Membrane technology (click here for more information). The benefits of self-production are numerous, but none is so compelling as the reduction in operating expenses.

Annual operating costs associated with self-production fall into two categories: 1) the electricity consumed by the air compressor and 2) periodic maintenance such as changing filters. Of these two, electricity is the largest annual expense. This cost, however, is relatively nominal in terms of cost per unit compared to the cost of purchasing nitrogen from gas suppliers.

The chart to the right provides an illustration assuming 100 SCFM demand needed on a 24/7 basis with the cost of self-production compared to purchasing nitrogen at two different price points. While an initial investment in the nitrogen generator is required (shown in this example as about \$180,000), the payback point is realized in less than one year!



\*Assumes 99.5% purity required, 100 SCFM Nitrogen demand (24/7), 100 psig Nitrogen output

## Return On Your Investment: Purchasing a Nitrogen Generator

- **ROI** - The initial investment in a nitrogen generator is typically paid back in less than one year. This ROI is even more dramatic for high nitrogen prices found in locations which are remote - or simply distant from the gas supplier's production site.
- **Operational Flexibility** - In addition to the expense of bulk nitrogen, buying it comes with harsh terms including price increases contractually dictated by the supplier. Contracts are typically 5-10 year and very restrictive. Purchasing nitrogen often comes with charges for tank rental fees, delivery fees, and hazardous materials surcharges.
- **Convenience** - Self-generated nitrogen is under your control. If you decide to run a second shift, nitrogen will be available! No need to work through contract, availability, and pricing details with your supplier.
- **Reduced Safety Concerns** - Self-generated nitrogen is typically stored at less than 100 psig/7 barg (possibly up to 400 psig/28 barg for some applications such as laser cutting). Cylinders are typically pressurized at more than 2000 psig/138 barg! Liquid nitrogen is stored at very low temperature which presents freezing hazards and when safety features fail, can cause extreme over-pressurization in downstream equipment.
- **Purity Control** - Bulk nitrogen is typically supplied at ultra-high purity (> 99.999%), significantly greater than most industrial requirements and requires more electricity to produce. In contrast, nitrogen generators are sized to produce only the flow and capacity you require. Smaller, less costly systems can be acquired if purity is customized to your actual need. (Click here for more information on typical application requirements)
- **Consumption Rates** - Pay only for the nitrogen you consume. When you are not using nitrogen, the nitrogen generator will turn off, consuming no electricity. Liquid nitrogen will boil off when not being consumed and must be released through safety valves. Additionally, some suppliers require you to take a certain amount and may empty your tank to atmosphere before refilling.

