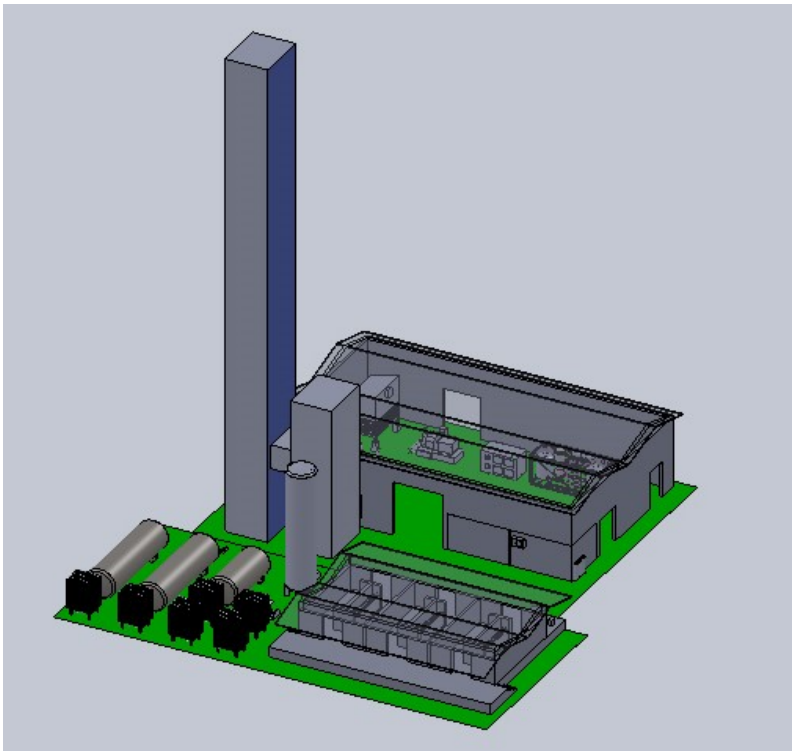
Gas Engineering

Cryogenic Process Systems

Model 4L1000

Liquid O_2/N_2/Argon Generating Plant
1000 Nm^3/hr



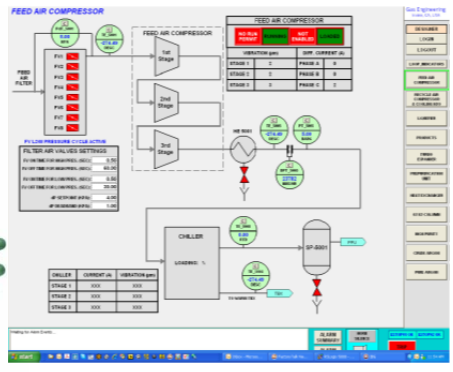
The 4L1000 is a modular, "packaged" type plant furnished in six modules: feed air compressor, recycle air compressor, air chiller, pre-purifier, turboexpander and cold box.

Features

- State-of-the-art process with **ultra-low specific power**
- **Argon production by distillation**, integrated into main cold box
- **Modular plant design** facilitates ease of installation and minimizes on-site construction cost
- State-of-the-art Gas Engineering **GEX Control System** provides fully automated operation, remote access capability and optional **100% redundant "hot" PLC backup**
- **Robust, low speed turboexpander system** provides maximum reliability with no compromise to efficiency
- High efficiency process compressors **optimize reliability and efficiency**

Plant Options

- Argon production
- LOX sub cooling
- Evaporative cooling system
- Total Hydrocarbon Analyzer
- LIN, LOX and LAr storage tanks
- High Pressure Gas Cylinder Filling System
- Prefabricated Interconnecting Piping
- ASME/CE certification
- On-site assistance – installation, start-up



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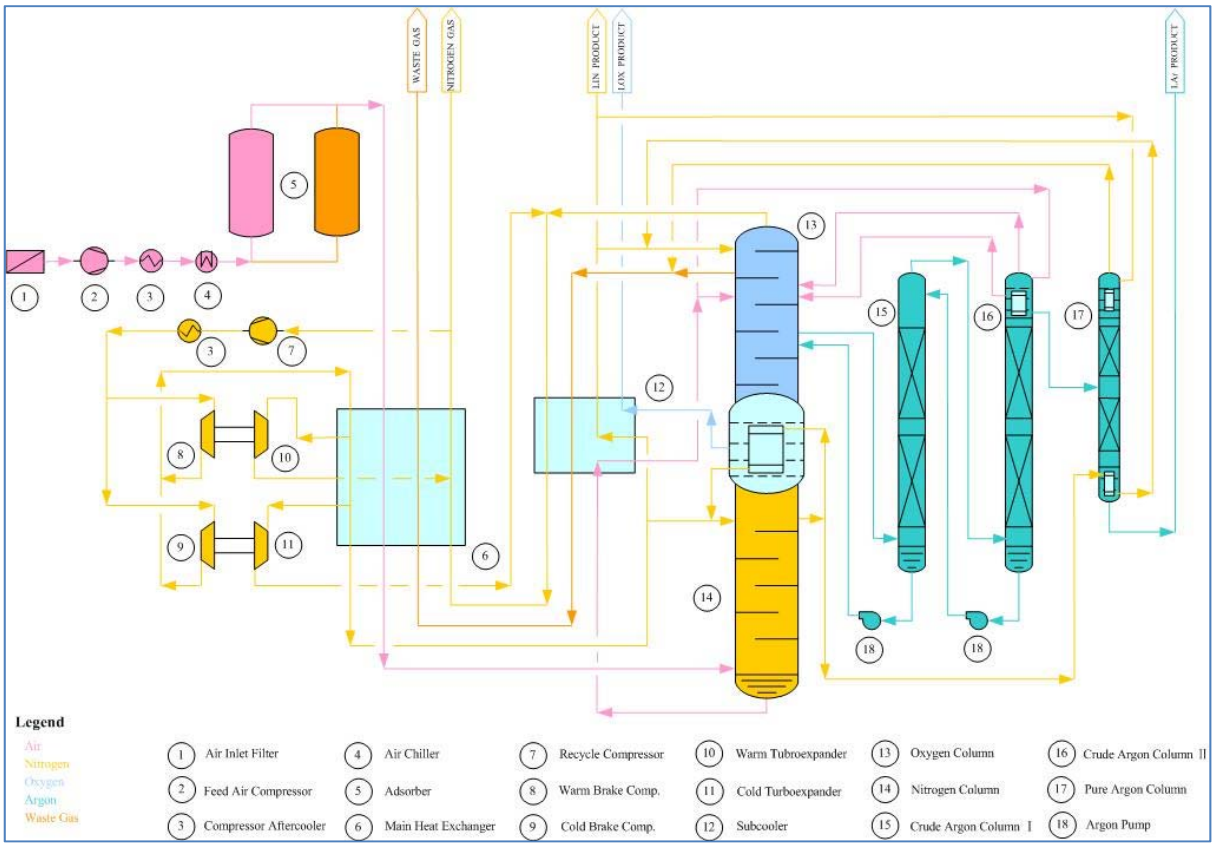

Operating Mode		Maximum Oxygen	Maximum Nitrogen
Production			
Liquid Oxygen	Nm3/hr	840	60
Liquid Nitrogen	Nm3/hr	180	1,040
Liquid Argon	Nm3/hr	28	
Total Liquid Production	Nm3/hr	1,048	1,100
Gaseous Nitrogen	Nm3/hr	1,350	
Purity			
Oxygen	% O2, Min	99.6	99.6
Nitrogen	PPM O2, Max	5	5
Argon	% Ar, Min	99.999%	
Product Temperature and Pressure			
Liquid Oxygen	K , bar(g)	90.5 , 0.5	90.5, 0.5
Liquid Nitrogen	K , bar(g)	78, 5.0	78 , 5.0
Liquid Argon	K , bar(g)	91 , 0.5	
Utilities			
Power	kW	1,263	
Cooling Water Flow	lpm	1700	
Cooling Water Temp.	Deg C	20	
Specific Power (based on liquid production)	kW-hr/Nm3	1.21	1.11

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