Alternate Energy Systems, Inc.

A Corporation devoted to Energy-Oriented Needs

Standard Propane / Air Systems

A quick Overview

- Compatible with Natural Gas
- Primary Fuel Source or Natural Gas Backup System
- Compact Design
- Environmentally Friendly
- Safe Operation
- Low Capital Investment
- Huge Savings on Gas Bills
- Attractive Leasing Offers

What is a Propane / Air System ?

Simply put, Propane / Air Systems convert liquid propane into propane gas, and then mix the propane gas with air at a pre-set ratio (usually 57% propane / 43% air). This propane/air mixture is directly compatible with natural gas and can therefore be used by any natural gas fired equipment, such as burners, heaters, stoves, furnaces, water heaters, etc., without any modification to the equipment. This makes operating the equipment easy, avoids lengthy and costly change-over times, and guarantees uninterrupted energy supply.

Where are Propane / Air Systems used ?

Propane / Air Systems are mainly used for one of the following three reasons:
Primary Fuel Source - In areas where natural gas is not available, or where natural gas will be made available in the future, Propane / Air Systems allow users to immediately convert to cost-effective and readily available natural gas appliances and other equipment.

Standby Systems - Most natural gas utilities offer larger users highly discounted rates for so-called “interruptible service”. This discount rate is available to the user year-round. When demand exceeds allotted pipeline-capacity (i.e., when domestic demand flares up during extremely cold winter days), the utility company curtails their “interruptible” customers, who then switch to their standby system. Curtailments usually occur only a few days throughout the year and happen only with advance notice. The savings from the use of the “interruptible rate” are usually so significant, that most users recover the capital investment for a standby system within 6 to 18 months. Thereafter, all savings on energy costs are direct improvement for the “bottom line”.

Backup Systems - Critical installations, such as hospitals, military installations, livestock farms, etc. often require backup systems for electricity and natural gas. AES Propane / Air Systems produce gas that is readily available and directly compatible with natural gas.

Peak Shaving - Utility Companies and large industrial users typically have supply agreements for a certain amount of natural gas over a certain period of time (day, week, month), with set pricing for this amount. As they exceed their contract amount (i.e. on extremely cold days), prices typically increase dramatically. Propane/Air systems can be installed that carry a percentage of the total load, keeping the consumption from the main supplier within acceptable limits, avoiding the payment of penalties.

How much does it cost ?
How much can be saved ?

The cost of a Propane / Air System depends largely on its capacity. Small systems, with capacities of 10 million BTU per hour (approximately 10,000 cft per hour, or 2,200 therms per day) start at under $ 10,000 (plus tanks and installation). Larger systems can cost in excess of $ 250,000, when combined with large tank capacities, or when site conditions require complex installations.

Savings largely depend on the rate-differential between “firm” rates and “interruptible” rates. Typically, the difference is 30% or more. If your average monthly energy bill for natural gas is $ 6,000, then you could expect $ 6,000 x 30% savings x 12 months = $ 21,600 per year. Based on these assumptions, a system for this size load would amortize in well under one year. Thereafter, your savings would be approximately $ 1,800 per month. Attractive leasing options are available to minimize, or even eliminate, up-front out-of-pocket expenses.

The cost of Propane / Air Gas depends on the cost of propane, which fluctuates throughout the year. Most customers compensate for this through buying their propane during the summer months, when propane prices are usually lower than in winter. Even after compensating for the fact that the heat content of 1 gallon of liquid propane is approximately 10% less than the heat content in 1 therm of natural gas, “production” cost of propane/air gas is very close to, or sometimes even below, the cost of natural gas. This means that even extended periods of curtailment do not pose a problem.

Selection Chart for Propane / Air Systems

Customer, Maximum Consumption			AES System			
Therms	Cubic Feet	BTU per hour	Model Number	Vaporizer Type	Mixer Type	Maximum Capacity
1,500 per day	60,000 per day	7 Million	AE-80 HVS-7	Direct Fired AE-80	Hallberg Venturi (1)	7 Million BTU / h
2,000 per day	80,000 per day	10 Million	AE-120 HVS-10	Direct Fired AE-120	Hallberg Venturi (1)	10 Million BTU / h
4,500 per day	175,000 per day	20 Million	AE-240 HVS-20	Direct Fired AE-240	Hallberg Venturi (2)	20 Million BTU / h
6,500 per day	250,000 per day	30 Million	AE-360 HVS-30	Direct Fired AE-360	Hallberg Venturi (3)	30 Million BTU / h
10,000 per day	400,000 per day	50 Million	WB-550 HVS-50	Water Bath WB-550	Hallberg Venturi (5)	50 Million BTU / h
12,000 per day	500,000 per day	60 Million	WB-750 HVS-60	Water Bath WB-750	Hallberg Venturi (6)	60 Million BTU / h
15,000 per day	600,000 per day	70 Million	WB-850 HVS-70	Water Bath WB-850	Hallberg Venturi (7)	70 Million BTU / h
20,000 per day	800,000 per day	80 Million	WB-1000 HVS-80	Water Bath WB-1000	Hallberg Venturi (8)	80 Million BTU / h

Instructions: In section “Customer, Maximum Consumption”, find the load that comes closest to your actual maximum consumption. Move to the right to select AES model number.

Note: All values are approximate and are intended for orientation purpose only. Consult AES for correct system sizing.

Two typical Systems

Shown on the left and on the right are two typical Propane / Air Systems. The system on the left has the water bath vaporizer and the surge tank mounted on a common steel skid. The venturi mixers can be seen mounted between the surge tank and the vapor outlet header of the vaporizer.

The system on the right is a typical combination of a direct fired vaporizer with 2 venturi mixers, for a nominal capacity of 20 million BTU per hour, or approximately 4,500 therms per day. A system of this size would most likely be sufficient to supply a medium size factory with Propane/Air Gas as a direct replacement for natural gas.
Both systems are skid-mounted, allowing for easy installation and maintenance.

The small footprint of the units allows installation almost anywhere. The venturi mixers can be equipped with air-intake silencers, so that even installations in residential areas are no problem. In fact, several hotels are using this type of standby system with great success and without any complaints from guests or neighbors.

The propane storage tanks can be installed at a remote location. Some customers prefer underground tanks for residential areas. However, all storage tank installations are currently exempt from Risk Management Plan requirements, if the stored LPG is used as “fuel”.

Factory Direct Price List for selected Propane / Air Systems

Model Number	Maximum Capacity	List Price in US-$
AE-80 / HVS-7	7 Million BTU / h	$ 10,843.00
AE-120 / HVS-10	10 Million BTU / h	$ 11,343.00
AE-240 / HVS-20	20 Million BTU / h	$ 24,193.00
AE-360 / HVS-30	30 Million BTU / h	$ 33,247.00
WB-550 / HVS-50	50 Million BTU / h	$ 54,121.00
WB-750 / HVS-60	60 Million BTU / h	$ 64,168.00
WB-850 / HVS-70	70 Million BTU / h	$ 69,920.00
WB-1000 / HVS-80	80 Million BTU / h	$ 79,354.00

Other Products from Alternate Energy Systems, Inc.

Water Bath Vaporizers
Hot Water Vaporizers
Steam Vaporizers

Electric Vaporizers
Electric Water Bath Vaporizers

Venturi Type LPG / Air Mixers
Patented Piston Operated LPG / Air Mixers

Complete Vaporizer / Mixer Systems
Peak Shaving Plants
Gas Stabilization Systems

Accessories for LPG / Air Systems
LPG Pump Packages

Service
Maintenance
Trouble Shooting

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