VFD SERIES

15-450 HP \ VARIABLE FREQUENCY DRIVE ROTARY SCREW AIR COMPRESSORS

RANGE FOR: 200V, 230V, 460V & 575V

Dependable by design.™

VFD Microprocessor

Standard in all 15 - 450 HP Variable Frequency Drive Air Compressors

Sullivan-Palatek has the highest standard in air compressor control with our microprocessor on all Variable Frequency Drive (VFD) compressed air packages. The Microprocessor has a customer friendly display with expanded descriptions of all the operating controls. It has RS485 communication between it and the VFD and displays all pertinent VFD power consumption data on the microprocessors screen. It is the most comprehensive compressor control indicator on the market.

The microprocessor will control your specific compressed air needs as the system requires, and will conserve your power when the compressed air need is reduced.

Microprocessor

Pressure schedule: program your daily operating schedule, and allows shut off during factory shut down up to 28 different times per week.

Built in sequencer: will trim up to 8 VFD or NON-VFD machines with microprocessor controls.

Dedicated pressure display always shown.

Configurable auxiliary display:
Multiple display choices: compressor status ~ differential pressure ~ drive fault ~ drive temperature ~ motor current ~ motor speed ~ percent capacity ~ power used ~ run or loaded hours ~ service times remaining ~ compressor operating temperature.

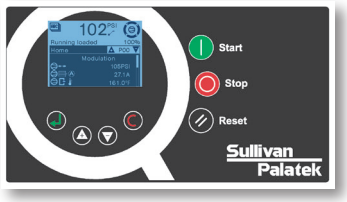
Target pressure: Easily programmed to suit plant requirements.

Proportional integral control at desired pressure allows tighter control of pressure without the need for add on line pressure flow controller devices.

RS485 communication between the microprocessor and main VFD. Secondary RS485 port for multiple machine functions and software updating.

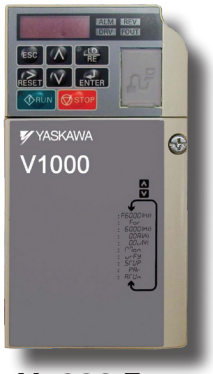
Programmable Features
Auxiliary alarm on fault input.
Additional end user alarm or shutdown programmable for normally open or closed contact devices.

Digital output
Exact set pressure
Load and unload pressures
Modbus address
Power failure auto restart
Shut down for excessive temperature or pressure
Stop run on time
Time for unloaded start



It can be programmed in:
» English
» French
» Spanish

A1000 Main Motor VFD



V1000 Fan Motor VFD

Today's controllers are much more powerful and versatile than prior models. The Microprocessor is the brains behind our VFD compressors – which allows you to program your daily operation schedule and shut off during factory shutdown up to 28 different times per week!

The built in sequencer will control up to eight VFD or NON-VFD compressors with the VFD compressor as the trim machine! And you can configure the display with any one of twenty operational readings - while still showing the always-visible dedicated pressure display!

Cooling System, Vertical Flow Models

Cooling system with Independent V1000 Variable Frequency Drive. Large side-by-side oil cooler and aftercooler for easy cleaning.

Note:

15-40 HP Inline Cooling, Horizontal
40-450 HP Updraft Cooling, Vertical

2nd VFD Fan Motor

Ensures optimum air flow for proper temperature control. Increased energy savings on fan motor during low RPM compressor operation. Safety shutdown feature is enabled when cooling fan power is interrupted.

All compressors are built with air cooled oil coolers and aftercoolers as standard, unless water cooled oil coolers and aftercoolers are requested.

Main Motor VFD

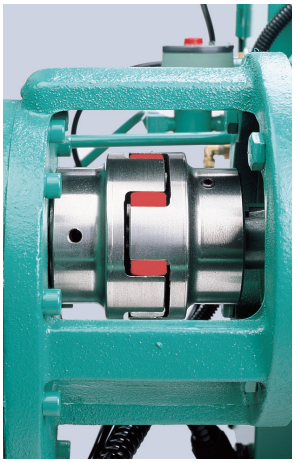
Yaskawa A1000 Drive is factory programmed and ready to run. Designed for tough industrial environments. Performance Features:

» 150% overload for 1 minute heavy duty
» 150% starting torque@ 1HZ
» Adjustable acceleration/deceleration
» Stall prevention

Drive Features

More than a frequency inverter, it is a complete, versatile air system.

» Wide power range for 200V, 230V, 460V and 575V.
» Pressure transducer motor speed control, provided by pressure signal via our microprocessor control.



Coupling & Drive

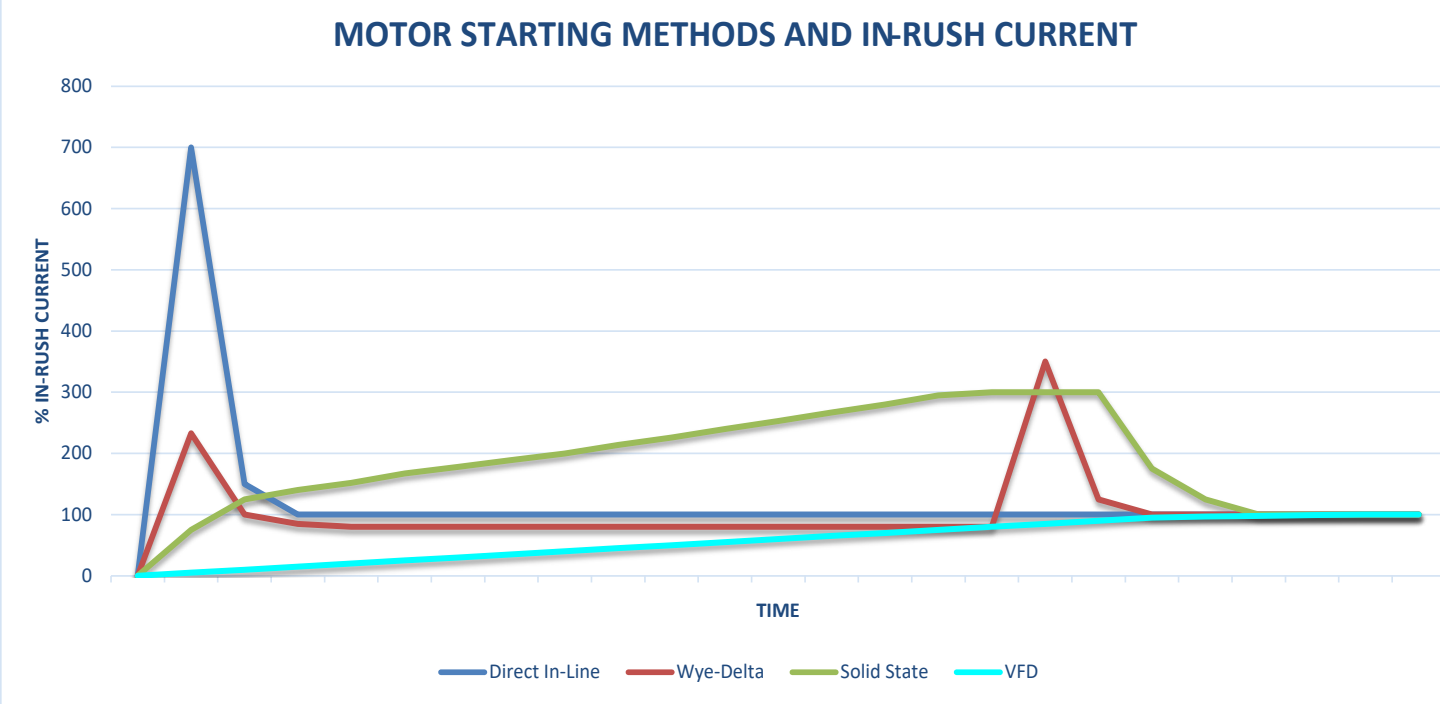
Compressor is flange mounted to motor C-face for positive alignment.

Sequencer Operation Principles:

The VFD compressor serves as the “Lead” machine. It runs at the speed needed to supply the necessary air pressure, and calls on the other “Lag” compressors to run when required. If there is more than one Lag, the Lead will determine which one is next up, and how many are needed to supply the right amount of air to the plant. The Lead should be close to the same size or larger than the Lags so they don’t suddenly over-pressure the system. Normally the VFD maintains tight pressure control unless the air demand is low enough to reach the unload pressure. In this case it will maintain the pressure midway between the load and unload pressures. It attempts to maintain this, but will speed up or slow down to maintain this midpoint pressure, while adding or taking off Lags to maintain the desired pressure range.

Practical Operation:

The specific operating pressure needed to allow correct plant operation needs to be determined. The VFD Lead should be set up so the needed pressure is midway between the load and unload settings. The Lags should have their modulation regulator set so there is minimal modulation. The whole system will operate as efficiently as a VFD will, and thus it should not modulate until it is at this pressure to unload pressure. The VFD Lead will do a good job of maintaining the needed pressure, and therefore, it does not need to be set higher than needed. The Lead has PI0 control functions in it which will help to stabilize the control in changing conditions. The Lead’s pressure schedule can also be used to totally shut down the system at certain times of the day or week, or to reduce the system pressure for those times of the day when less air (CFM) is needed for normal operation.

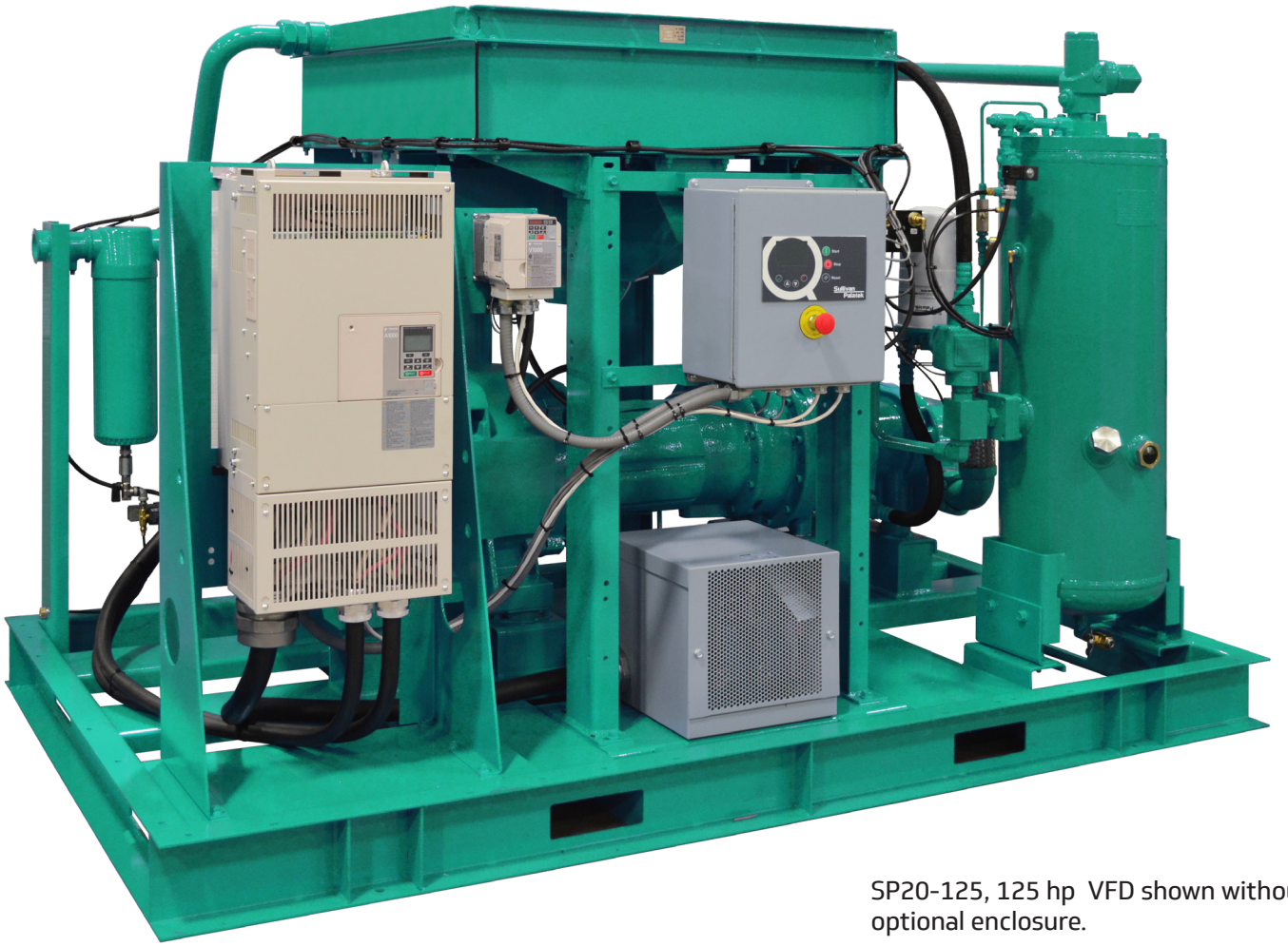


Save Money

Please note from the graph above that the VFD will not draw the in-rush current that other starters will require. This means that starting the VFD compressor will not incur the penalty payments charged by power companies for momentary spikes in current draw associated with other starting methods.

Ease of Maintenance

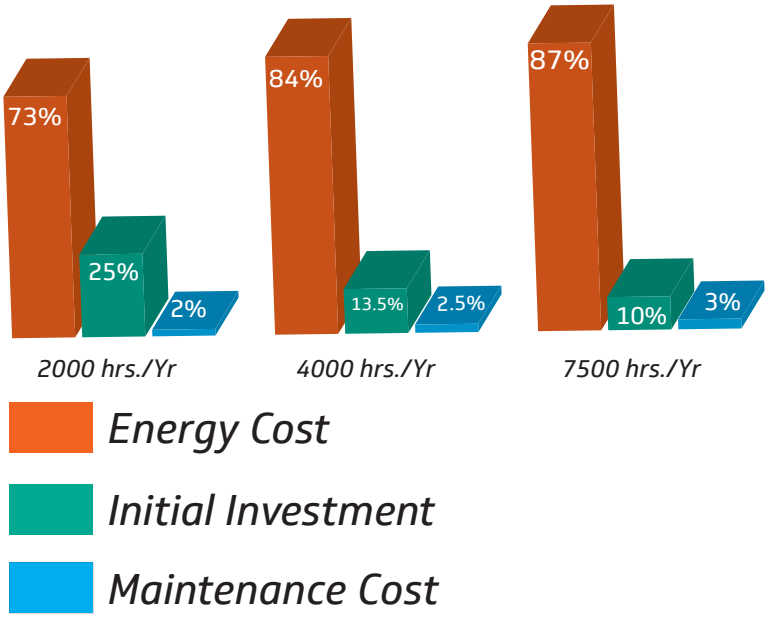
Open VFD compressors are easy to maintain, but so are those with the optional enclosure. Large service panels on all sides make it easy to service any part of the equipment.

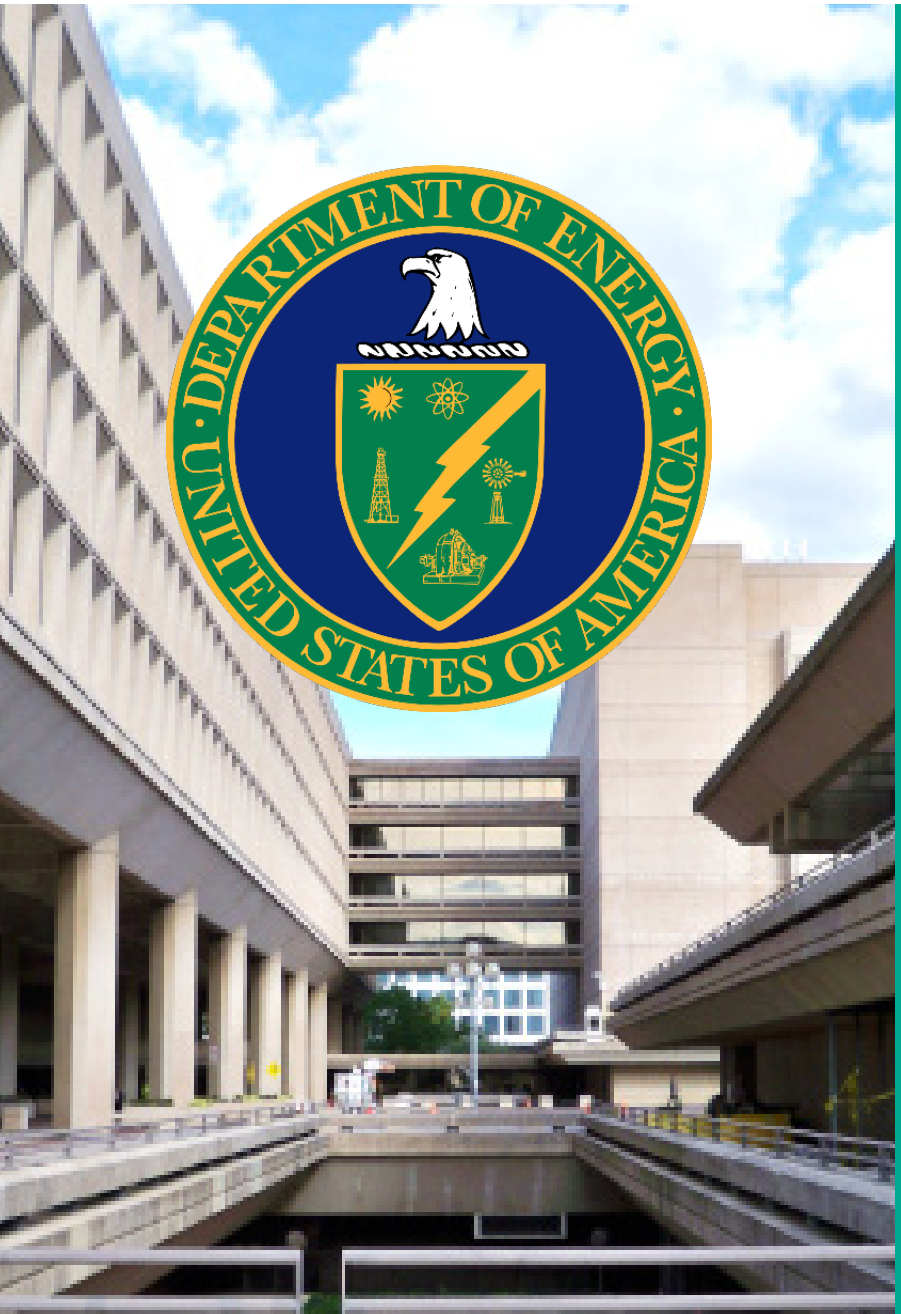


SP20-125, 125 hp VFD shown without optional enclosure.

Based on 7500 Hours a Year, 87% of the Cost of Ownership for Your Compressor is ENERGY.

This chart is based on a power cost of 8 cents per Kwh. Depreciation cost is rated at 5 years at 8% interest.





Business Tax Incentives

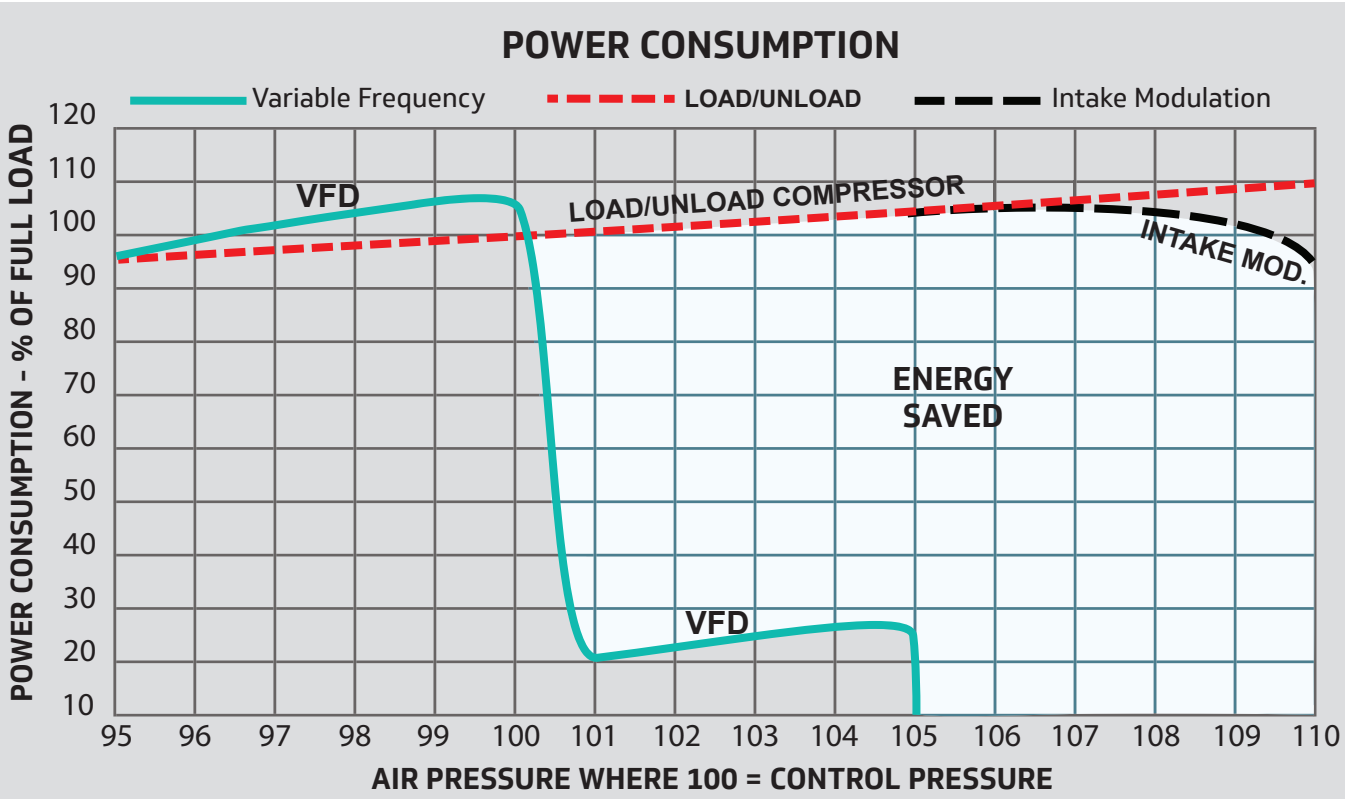
Advanced Energy Manufacturing Tax Credit ("MTC")

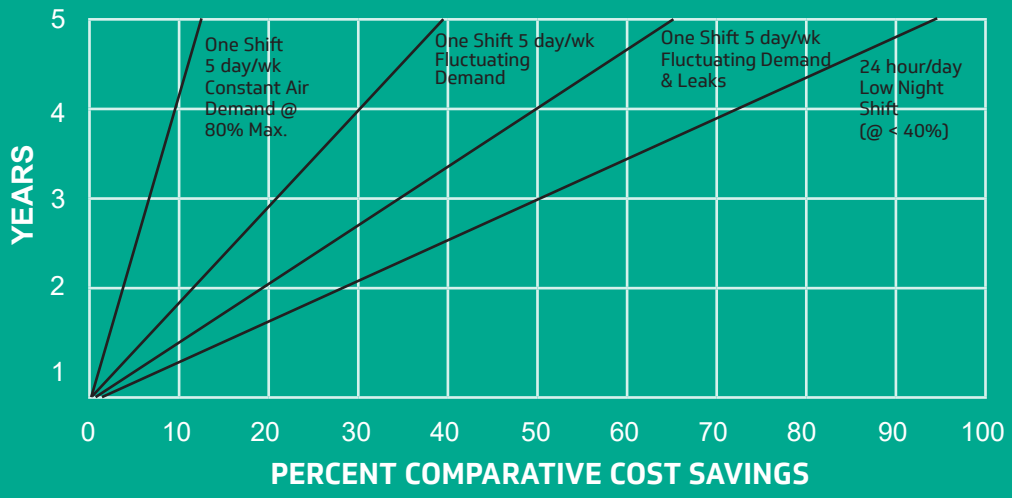
The American Recovery and Reinvestment Act of 2009: 1. ("Recovery Act") amended or added numerous energy tax incentives available to businesses, utilities, and government. Many of these incentives were previously modified by Emergency Economic Stabilization Act in 2008: 2. The majority of the incentives were originally passed into law under the Energy Policy Act of 2005 (EPACT): 3. The Recovery Act also provided additional tax incentives for consumers.
Source Information http://www.energy.gov/additionaltaxbreaks.htm

In addition to government tax incentives, some local utility companies also have rebate plans or incentives.

Operating Efficiency; VFD vs. Std Compressors

This Power Consumption Efficiency Curve Chart shows how the Variable Frequency Drive operates more efficiently than other controls in providing air delivery. The VFD helps reduce energy bills. Operating at 70% capacity, the VFD consumes 25% less power than a standard compressor. The Variable Frequency Drive has a soft start feature that maintains a low starting current. This reduces the stress on the site power supply and also reduces motor wear. The VFD system complies with the electro-magnetic compatibility standard and is UL listed. The VFD system is not limited to a fixed number of starts per hour.





The Cost Savings Chart illustrates the reduced operating cost of a VFD Unit by correcting poor air usage: Five day/week operation, erratic demand fluctuations (28% of installations), steady weekend consumption with leaks (64% of installations). This shows 24 hour operation with low night shift and high day shift consumption at more than 40% savings after 5 years. **In many instances the VFD Compressor will have a payback of the additional cost within 2 1/2 to 3 years.**

SPECIFICATIONS

VFD HORIZONTAL FLOW MODELS

Model By HP	Maximum CFM At Control Pressure			Dimensions LxWxH (in) Enclosed (Open)	Weight Lbs. (Open)
	100 Psig	125 Psig	150 Psig		
D-15VFD	63	**56	43	78x41x43 (56x38x37)	1400 (1100)
D-20VFD	95	**78	60	78x41x43 (56x38x37)	1500 (1200)
D-25VFD	120	105	84.5	59x38x37*	1300
D4-25VFD	120	**92	84.5	59x38x37*	1300
D-30VFD	150	123	100	59x38x37*	1350
D-40VFD	190	170	130	59x38x37*	1425

* 25, 30 and 40 hp VFD must be UD series if enclosed
**Capacity in accordance with CAGI / ISO 1217 (Annex C / Annex E)

VFD VERTICAL FLOW MODELS

Model By HP	Maximum CFM At Control Pressure			Dimensions - LxWxH (in) Enclosed (Open)	Weight Lbs. (Open)
	100 Psig	125 Psig	150 Psig		
UD-25VFD	150	123	100	80x37x49* (66x37x47)	1600
UD-30VFD	150	130	100	80x37x49*(66x37x47)	1650
UD-40VFD	190	**165	130	80x37x49*(66x37x47)	1500
UD-50VFD	204	201	170	91x37x49 (80x37x48)	2000 (1700)
UDG-50VFD	245	225	205	91x37x49 (80x37x48)	2000 (1700)
UD-60VFD	320	285	255	91x37x49 (80x37x48)	2160 (1700)
SP16-60VFD	320	275	255	78x52.5x61	3130 (2754)
SP16-75VFD	346.2	**338	280	78x52.5x61	3455(3075)
SP16-100VFD	485.2	**440	N/A	91x57x61	3795 (3495)
SP16-125VFD	580	**535	480	91x57x61	3945 (3645)
SP20-125VFD	630	**555	490	113x58x72 (113x58x74)	6475 (5825)
SP20-150VFD	740	680	610	113x58x72 (113x58x74)	6700(6080)
SP20-200VFD	980	**861	810	113x58x72 (113x58x74)	6925 (6275)
SP20-250VFD	1140	1065	960	113x58x72 (113x58x74)	7150 (6500)
SP20-300VFD	1150	1145	1140	113x58x72 (113x58x74)	7620 (7000)
SP32-300VFD	1500	N/A	N/A	165x79.5x98.7 (165x79.5x86.6)	11600 (10500)
SP32-350VFD	1650	1566	N/A	165x79.5x98.7 (165x79.5x86.6)	12000 (10900)
SP32-400VFD	1925	1633	1533	165x79.5x98.7 (165x79.5x86.6)	14500 (13400)
SP32-450VFD	1910	1770	1633	165x79.5x98.7 (165x79.5x86.6)	15000 (13900)

* All dimensions in 460V power, please contact factory for dimensions for other voltages

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