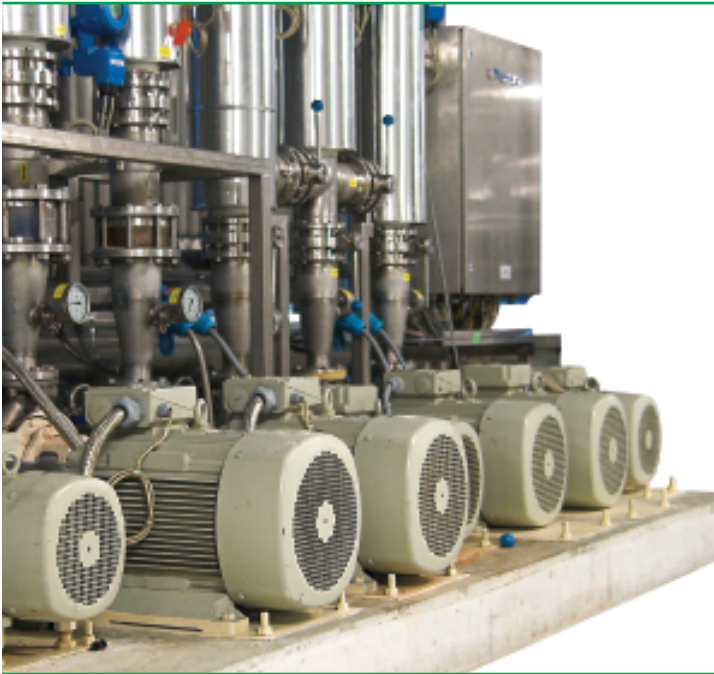


FRENIC ECOPAK



World Class Drives from Fuji Electric, now Packaged...

For Variable Torque Fans & Pumps



Offering the most common required and specified features for variable torque fan and pump applications in commercial buildings as well as facilities for: health care, education, retail, hotel, and manufacturing; **FRENIC-EcoPAK** is ideally suited for applications involving:

- Air Handling Units (Supply & Return Fans)
- Exhaust Fans
- Cooling Tower Fans
- Condenser Fans
- Chilled Water Pumps
- Hot Water Pumps
- Pressure Boosting Pumps

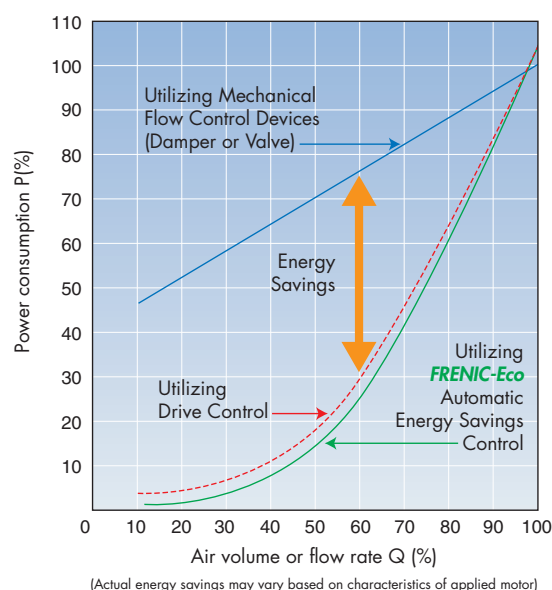
FRENIC-EcoPAK Features

- Multiple Configurations Offer Flexibility:
 - 2 Contactor or 3 Contactor Bypass
 - 2 Contactor Bypass w/ Drive Isolation Switch
 - Non-Bypass
- Integrated Motor Branch Circuit Protection, up to 100kA Short Circuit Current Rated Packages
- Reactor Options for Reducing Harmonics
- Soft-Switching PWM Drive Output
- Catch-a-spinning Motor Functionality
- Enhanced Automatic Energy Savings, Reduces Power Consumption of Both the Motor and Drive
- Simple Construction Leads to Ease of Maintenance
- LCD and LED Keypad, also Functions as a Copy Unit
- Quick-Start Programming Menu for Ease of Start-Up
- Power Monitoring from the Drive's Keypad
- Run Permissives
- Damper Control
- Fireman's Override
- Built-in PID Control with Sleep Function
- Communication Protocols: Modbus RTU, Metasys® N2, & APOGEE® FLN are Built-in the Drive
- PC Software for Drive Set-Up & Monitoring





Lower Energy Bills & CO₂ Emissions



Energy savings can be achieved by utilizing variable speed drives to reduce the motor speed for meeting demand flow in place of mechanical flow control devices, such as dampers or valves. The Affinity Laws for centrifugal loads state that flow is proportional to motor speed, pressure is proportional to motor speed squared, and power required is proportional to motor speed cubed.

Energy Savings Example:

Replacing a damper controlled fan system with an across the line motor controller to a variable speed drive system with operating characteristics of: 85% air flow required for 2,000 hrs/yr, 60% air flow required for 2,000 hrs/yr, and operated by a 20Hp (15kW) motor.

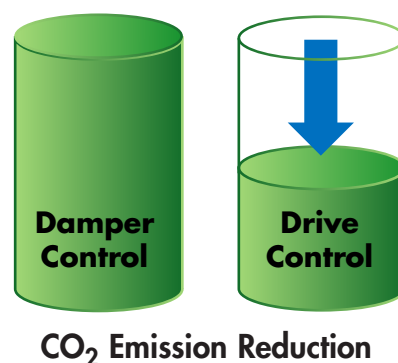
Energy required by using damper control: 50,100kWh/yr
Energy required by using drive control: 24,900kWh/yr
Energy Savings by using drive control: **25,200kWh/yr**

Energy savings achieved by using drives can correlate to reducing the amount of carbon dioxide (CO₂) emitted into the environment from power generation plants.

CO₂ Emission Reduction Example:

Using the Energy Savings previously calculated at 25,200kWh/yr and a CO₂ Emission factor of 1.36lbs/kWh⁽¹⁾

Estimated reduction of CO₂ emissions: 34,270lbs/yr



Reduce Maintenance Cost & Ambient Noise

Drives inherently soft-start the motor, reducing wear and tear on the attached mechanical components, resulting in reduced maintenance.

Cooling tower fans, exhaust fans, and condenser fans can produce undesirable ambient noise. A reduction in ambient noise can be accomplished by applying **FRENIC-EcoPAK** drives.



⁽¹⁾ Source: U.S. Environmental Protection Agency Office of Atmospheric Programs Climate Protection Partnerships Division
The Emissions & Generation Resource Integrated Database For 2006 (eGRID2006), April 2007

	2 Contactor Bypass	3 Contactor Bypass	2 Contactor Bypass w/ Isolation Disconnect	Non-Bypass
Ratings				
Horsepower & Voltage	2 - 60Hp, 208/230V 2 - 200Hp, 460V	2 - 60Hp, 208/230V 2 - 200Hp, 460V	2 - 60Hp, 208/230V 2 - 200Hp, 460V	2 - 60Hp, 208/230V 2 - 200Hp, 460V
Enclosure	UL Type 1	UL Type 1	UL Type 1	UL Type 1
Ambient Temperature	-10° to 40° C	-10° to 40° C	-10° to 40° C	-10° to 40° C
Features				
Input Disconnect & Branch Circuit Protection (Padlockable & Interlocked with Enclosure Door)	Standard Device or Fusible Disconnect	Standard Device or Fusible Disconnect	Fusible Disconnect	Standard Device or Fusible Disconnect
Electrically & Mechanically Interlocked Drive Output and Bypass Contactors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	N/A
Drive Input Isolation	N/A	Contactor	Disconnect Switch	N/A
Class 20 Motor Overload Relay	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	N/A
DC Link Reactor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3% AC Line Reactor	Optional	Optional	Optional	Optional
5% AC Line Reactor	Optional	Optional	Optional	Optional
Control Power Transformer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Power On Indication	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	via Keypad
Drive Run Indication	via Keypad	via Keypad	via Keypad	via Keypad
Drive Fault Indication	via Keypad	via Keypad	via Keypad	via Keypad
Bypass Run Indication	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	N/A
Motor Overload Indication	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	via Keypad
Drive-Off-Bypass Selector Switch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	N/A
Isolate-Normal Selector Switch	N/A	<input type="checkbox"/>	N/A	N/A
Safety Interlock Input	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Programmable
Run Command Input	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Enable Input	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Programmable
Fireman's Override Input	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	N/A
Analog Speed Reference Input	0-10VDC or 4-20mA	0-10VDC or 4-20mA	0-10VDC or 4-20mA	0-10VDC or 4-20mA
Damper Control Output	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drive Run Status Output	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drive Fault Status Output	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bypass Run Status Output	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	N/A
Programmable Relay Outputs (Qty 2)	Optional	Optional	Optional	Optional
Analog Signal Output (Programmable Functionality)	0-10VDC or 4-20mA	0-10VDC or 4-20mA	0-10VDC or 4-20mA	0-10VDC or 4-20mA
Automatic Bypass	Optional	Optional	Optional	N/A
Customer Control I/O Terminal Strip	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Communication Protocols				
Modbus RTU	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Metasys® N2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
APOGEE® FLN (P1)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
LONWORKS®	Optional	Optional	Optional	Optional
BACnet	Optional	Optional	Optional	Optional
Profibus DP	Optional	Optional	Optional	Optional
DeviceNet	Optional	Optional	Optional	Optional
Codes & Standards				
UL & cUL Listed per UL508A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Applicable NEMA & NFPA Standards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

☐ Indicates Provided As Standard

Metasys is a registered trademark of Johnson Controls, Inc.
APOGEE is a registered trademark of Siemens Building Technologies, Inc.
LonWorks is a registered trademark of Echelon Corporation.

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Fuji Electric Corp. of America
47520 Westinghouse Drive
Fremont, CA 94539, USA

Tel. 510.440.1060
www.fujielectric.com/fecoa/products/ac_drives/

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