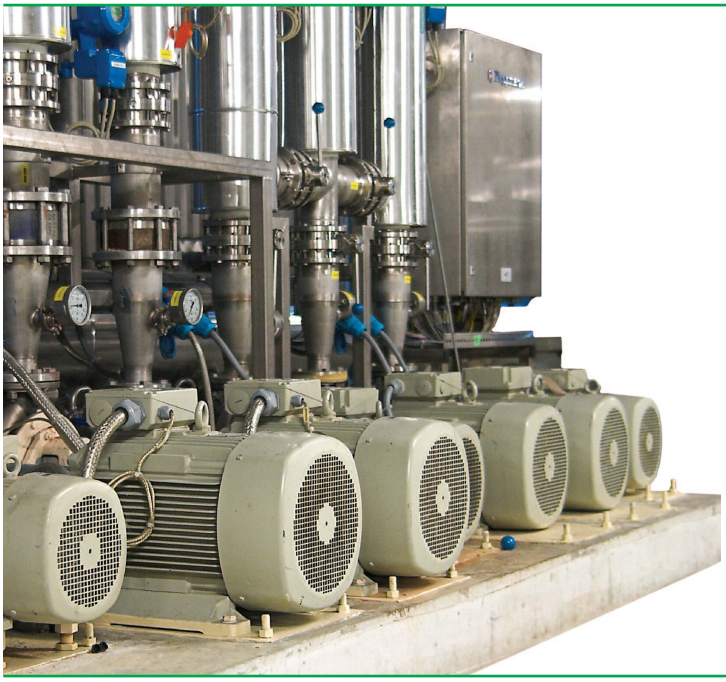
FRENIC-EcoPAK

Fuji Electric

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

For Variable Torque Fans & Pumps

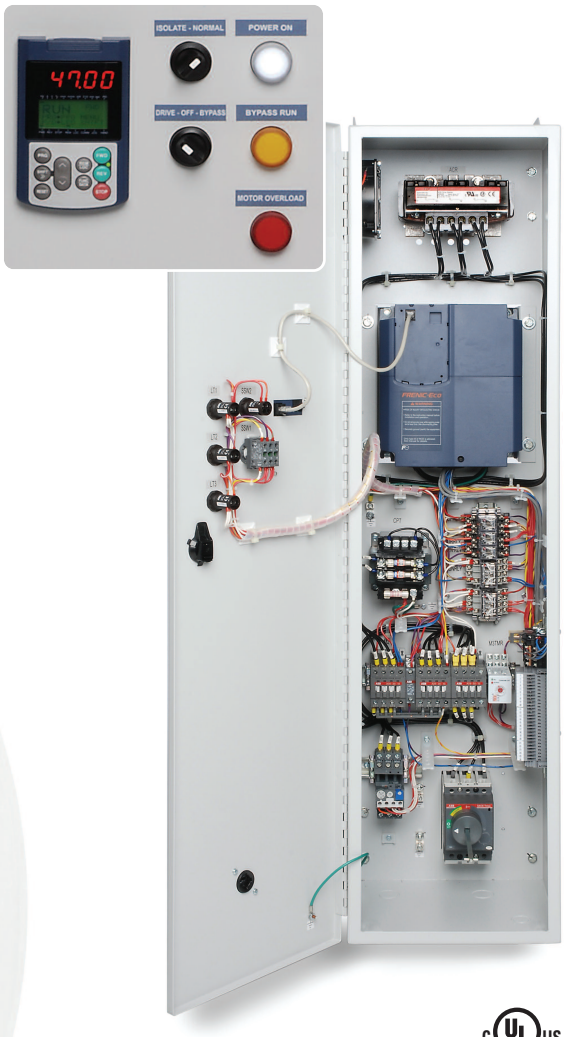


Offering the most common required and specified features for variable torque fan and pump applications in commercial buildings as well as facilities for: health care, education, retail, hotel, and manufacturing; ***FRENIC-EcoPAK*** is ideally suited for applications involving:

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

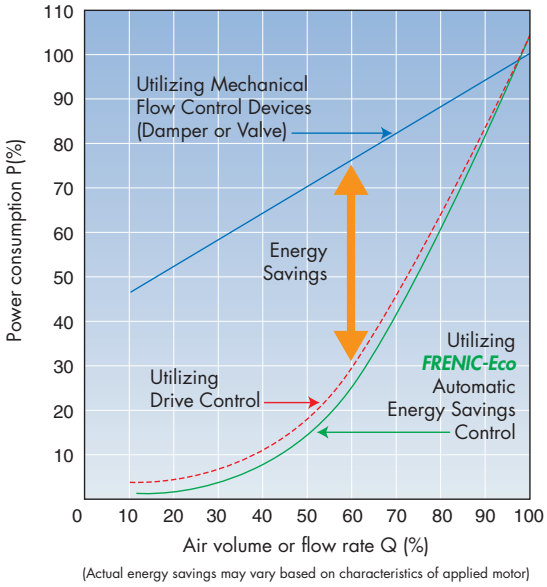
FRENIC-EcoPAK Features

- Multiple Configurations Offer Flexibility:
  - 3 Contactor Basic Bypass (for Pump & Cooling Tower Applications)
  - 3 Contactor Bypass (for Fan Applications)
  - 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
- 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



for an Economical and Ecological Solution.

Lower Energy Bills & CO_2 Emissions



(Actual energy savings may vary based on characteristics of applied motor)

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.

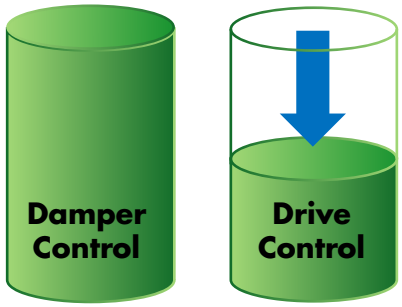
Energy Savings Example:
Replacing a damper controlled fan system with an across the line motor controller to a variable speed drive system with operating characteristics of: 85% air flow required for 2,000 hrs/yr, 60% air flow required for 2,000 hrs/yr, and operated by a 20Hp (15kW) motor.

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 (CO_2) emitted into the environment from power generation plants.

CO_2 Emission Reduction Example:
Using the Energy Savings previously calculated at 25,200kWh/yr and a CO_2 Emission factor of 1.36lbs/kWh(1)

Estimated reduction of CO_2 emissions: 34,270lbs/yr



CO_2 Emission Reduction

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

	Non-Bypass	Basic Bypass	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
NEMA/UL Type 1 Enclosure	S	S	S
NEMA/UL Type 3R Enclosure	Consult Factory	Consult Factory	Consult Factory
NEMA 12 Ventilated Enclosure	O	O	O
Ambient Temperature	-10° to 40° C	-10° to 40° C	-10° to 40° C
Features			
Input Disconnect & Branch Circuit Protection	Standard Device or Fusible Disconnect	Standard Device or Fusible Disconnect	Standard Device or Fusible Disconnect
Electrically & Mechanically Interlocked Drive Output and Bypass Contactors	N/A	S	S
Drive Input Isolation	N/A	S	S
Motor Overload Relay	N/A	Class 20	Class 20
DC Link Reactor	Standard on ≥100Hp	Standard on ≥100Hp	Standard on ≥ 100Hp
3% AC Line Reactor	S (Optional ≥ 100Hp)	S (Optional ≥ 100Hp)	S (Optional ≥ 100Hp)
5% AC Line Reactor	O	O	O
Control Power Transformer w/ Fusing	S	S	S
Power On Indication	via Keypad	S	S
Drive Run Indication	via Keypad	via Keypad	via Keypad
Drive Fault Indication	via Keypad	via Keypad	via Keypad
Bypass Run Indication	N/A	S	S
Motor Overload Indication	via Keypad	S	S
Drive-Off-Bypass Selector Switch	N/A	S	S
Isolate-Normal Selector Switch	N/A	S	S
Safety Interlock Input	Programmable	S	S
Run Command Input	S	S	S
Enable Input	Programmable	Common w/ Safety Interlock	S
Fireman's Override Input	N/A	N/A	S
Analog Speed Reference Input	0-10VDC or 4-20mA	0-10VDC or 4-20mA	0-10VDC or 4-20mA
Damper Control Output	Programmable	N/A	S
Drive Run Status Output	S	S	S
Drive Fault Status Output	S	S	S
Bypass Run Status Output	N/A	S	S
Programmable Relay Outputs (Qty 2)	O	O	O
Analog Signal Output (Programmable Functionality)	0-10VDC or 4-20mA	0-10VDC or 4-20mA	0-10VDC or 4-20mA
Automatic Bypass	N/A	N/A	O
Customer Control I/O Terminal Strip	S	S	S
Communication Protocols			
Modbus RTU	S	S	S
Metasys® N2	S	S	S
APOGEE® FLN (P1)	S	S	S
LonWorks®	O	O	O
BACnet	O	O	O
Profibus DP	O	O	O
DeviceNet	O	O	O
Ethernet	O	O	O
Codes & Standards			
UL & cUL	S	S	S
Applicable NEMA & NFPA Standards	S	S	S

S = Provided As Standard
O = Optional

Please consult with your local Fuji Electric sales representative for additional ratings, features or communication protocols not listed above.

Information subject to change without notice

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