



# SmartVFD HVAC and BYPASS Introduction

**Honeywell**

- “Today, our continuing progress is restricted...not by the power of pumps, but by the depletion of aquifers.”

- Paul Hawken *Natural Capitalism*

- **What Can We Do?**

- **Generation**

- ◆ Wind, Solar, Geothermal

- **Transmission**

- ◆ Smart Grid, local generation

- **Efficiency**

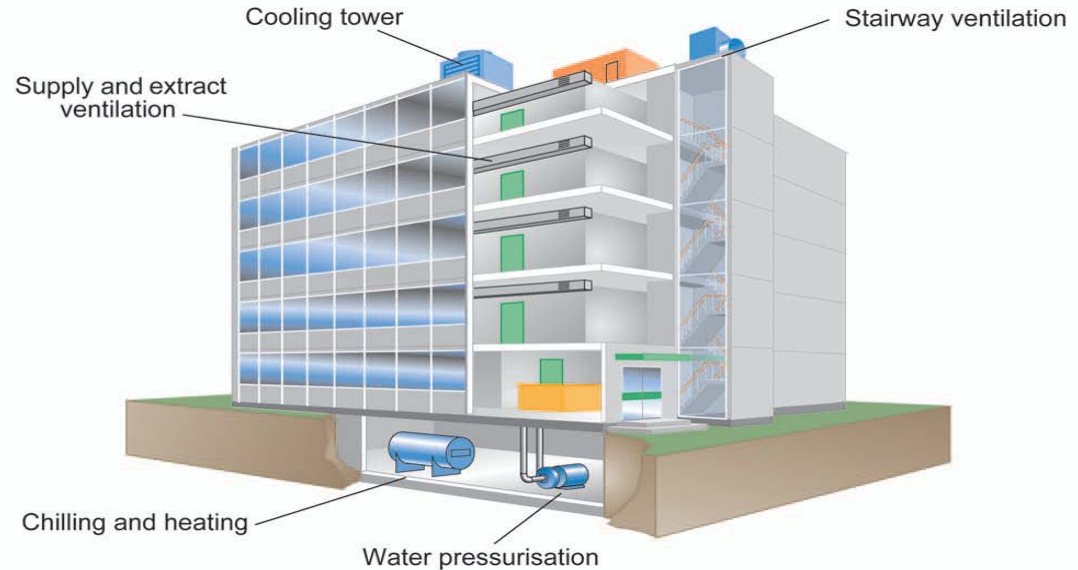
- ◆ Almost everything else including drives



*Buildings use 40% of US Energy*

# Buildings use Massive Amounts of Energy

- *Buildings use 40% of US Energy*
- **74% of electricity is consumed by commercial buildings**  
(source: US DOE, 2008 Building Energy Data Book)
- **More than half of that electricity is used to move air and water**



*Pumps & fans use more than half the world's energy*

- **VFDs significantly reduce electrical consumption**
  - Most pump and fan systems are oversized to account for maximum loads
  - Capacity usually exceeds demand
  - Application of VFDs converts systems to variable flow
- **Green House Gas Reduction**
  - 80% of commercial building CO<sub>2</sub> emission due to electricity consumption
- **VFDs reduce Wear and Tear**
  - Soft Start

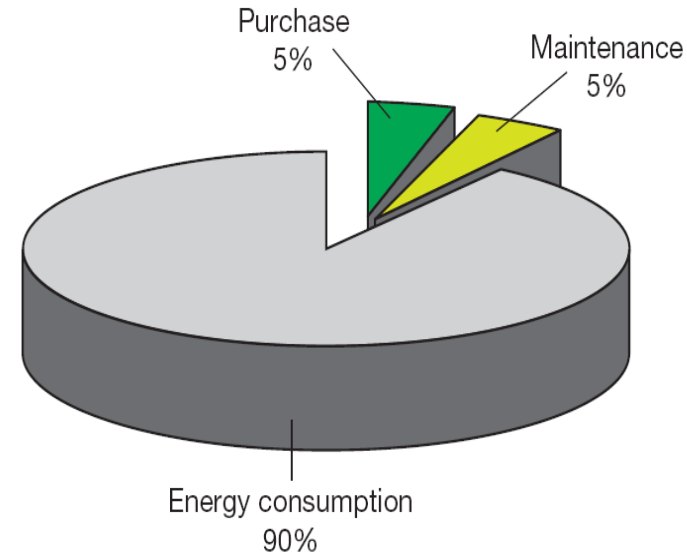
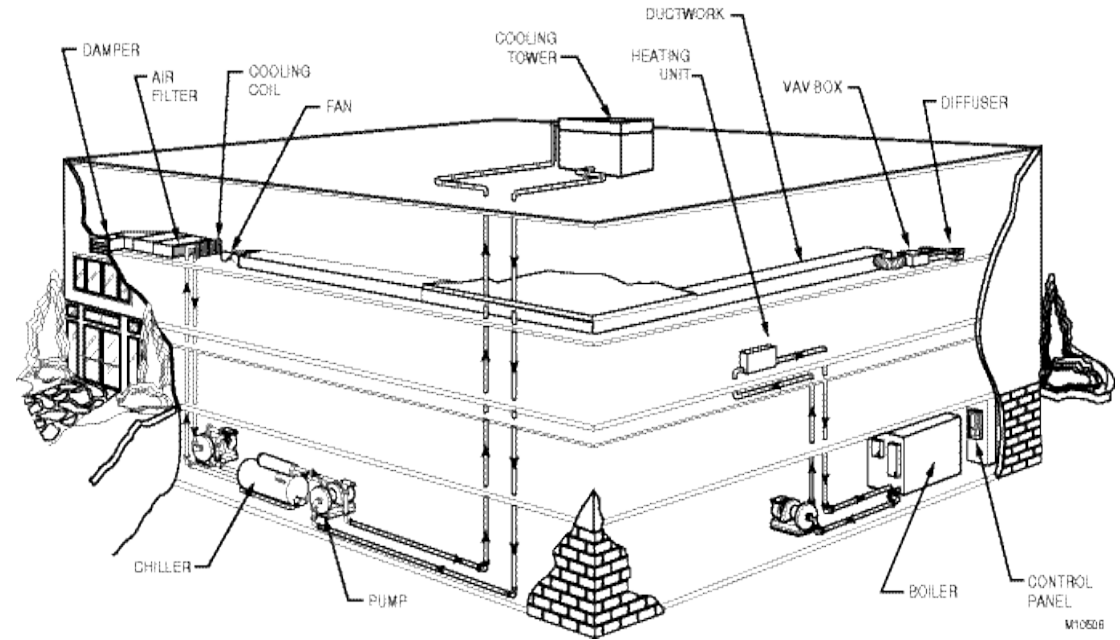


Fig. 5: Typical life time costs of ownership of pump. Source: Hydraulic Institute [www.pumps.org](http://www.pumps.org)

*A VFD provides speed control for a fixed-speed motor*

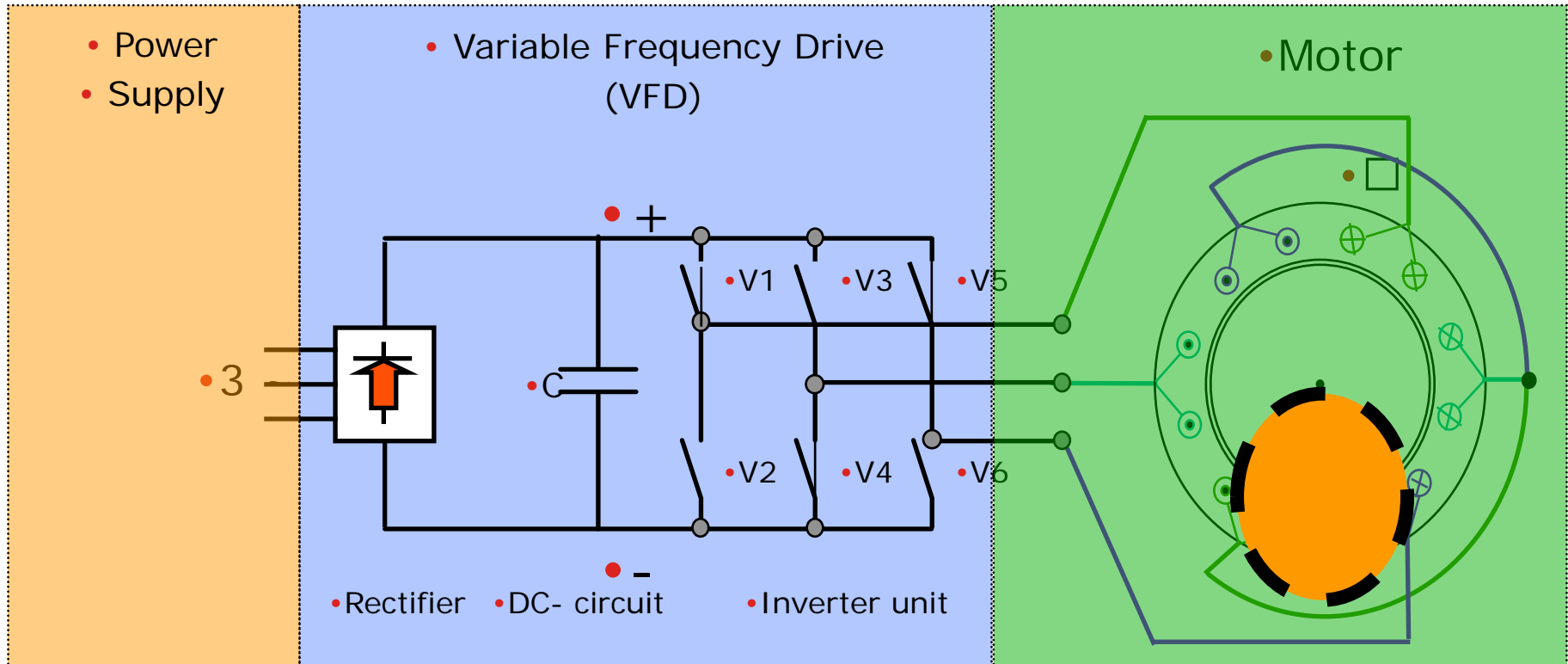
# Opportunities are Everywhere

- Supply and return fans
- Cooling Towers
- Compressors
- Stairway and parking ventilation
- Boiler pumps and fans
- Kitchen Hoods
- Roof Top Units
- Air Handlers
- Elevators
- Escalators



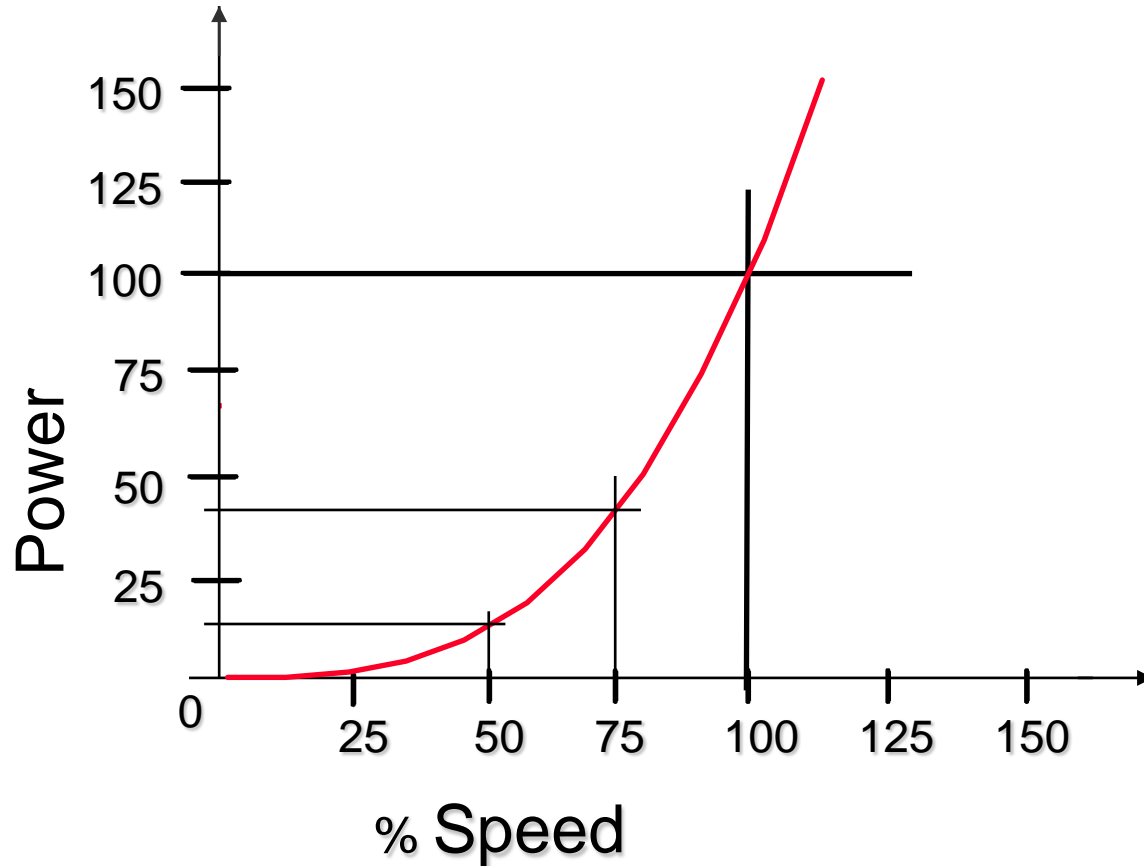
*VFDs are a crucial part of energy management systems*

# What is a VFD?



*Energy Savings based on Proven Technology*

# Power Savings = Energy Savings



## Energy Savings

3/4 motor speed = 42% power

**58% power saved**

1/2 motor speed = 12.5% power

**87.5% power saved**

## Money Saved

### Motor without VFD

At 100% speed = \$1,000 Cost

### Same motor with new VFD

At 75% speed = \$420 Cost

**\$580 Savings**

At 50% speed = \$125 Cost

**\$875 Savings**

# Whole Building Design

- **High performance HVAC Equipment**
  - 10-40% energy savings
- **Whole-Building-Design**
  - 40-70% energy savings
  - Design
  - Specify
  - Install and Commission
  - Maintain
  - Communication



*Honeywell VFDs are crucial to energy management strategies*



- **Intuitive Interface**
- **Easy Commissioning**
- **Standard Communication**
- **Reliable Protection**
- **Effective Operation/Monitoring**



*The SmartVFD for Smart Buildings*

# Graphic Interface

- High resolution
- Intuitive commissioning
- Manual in keypad
- Help screens
- Real time clock
- Local/Remote Button
- Memory in keypad



*Intuitive, Effective, Consistant SMART*

- **Standard**

- RS485
  - ◆ BACnet
  - ◆ N2
  - ◆ Modbus
- Ethernet
  - ◆ Modbus/TCP
  - ◆ BACnet/IP
- **Option Cards**
  - ◆ LonWorks
  - ◆ Profibus
  - ◆ CANopen
  - ◆ DeviceNet
  - ◆ Ethernet



*Built-in Communications*

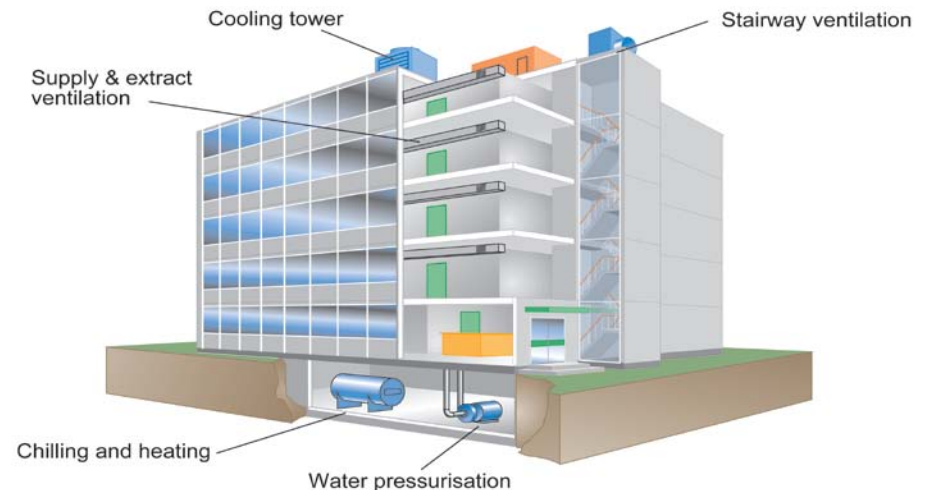
# Built-In Protection

- DC Choke
- Varnished boards
- RFI filter standard



*Harmonic, RFI, Environmental Protection*

- **Start-up Wizard – Pump/Fan**
- **Power loss ride through**
- **Fire mode**
- **Pump and Fan Cascade**
- **Ramp Time Optimizer**
- **Maintenance Counters**
- **Pump Soft Fill**
- **2 PID Controllers**



*The SmartVFD for Smart Buildings*

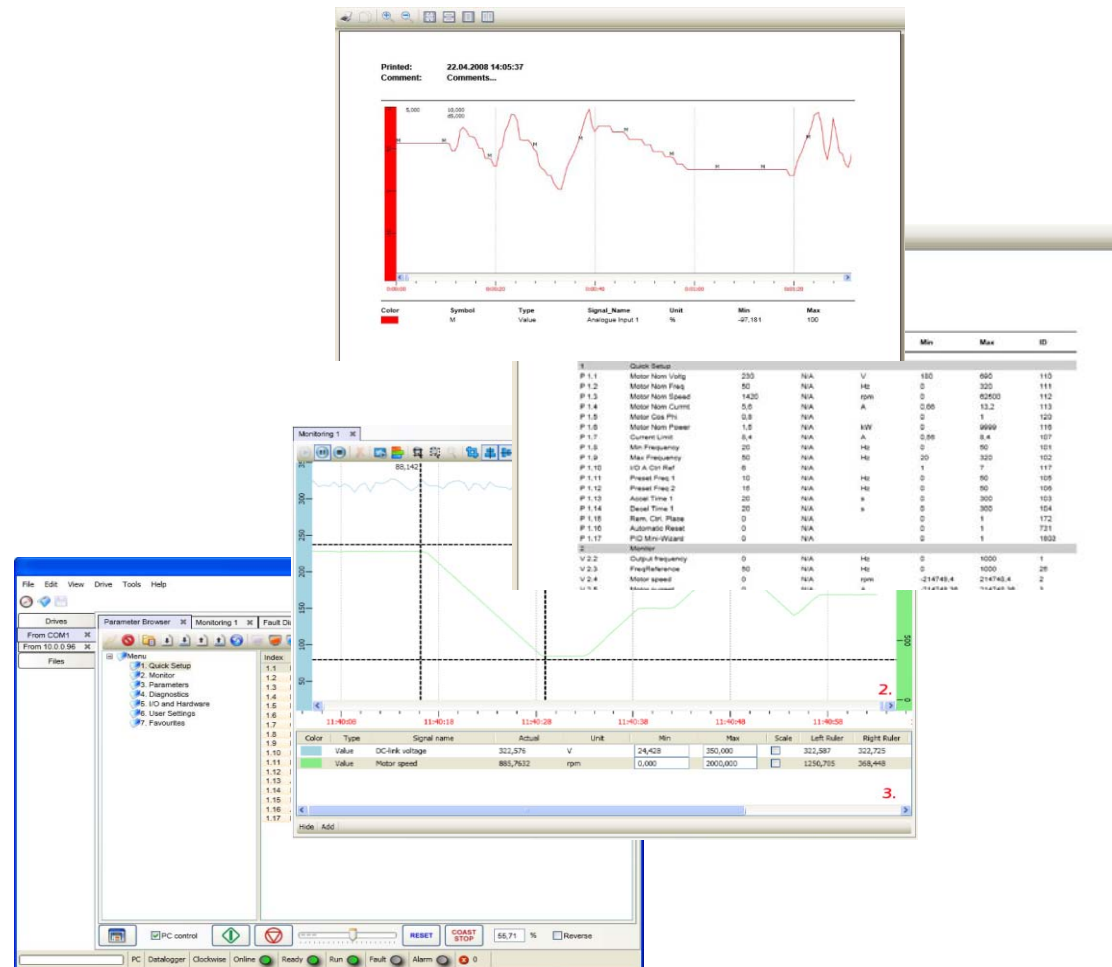
# SmartVFD BYPASS

- Low total installed cost
- Compact size
- Easy component access
- NEMA 1, 12, 3R
- All configurations
  - Disconnect
  - 2-contactor
  - 3-contactor
  - 3-contactor with AutoBypass, HOA

Height Comparison	Cool Blue	Next Gen
2ctr (1 - 7.5HP)	40 in	30 in
3ctr (1 - 7.5HP)	40 in	37 in
2ctr (10-20HP)	46 in	33 in
3ctr (10-20HP)	46 in	40 in
2ctr (20-40HP)	53 in	43 in
3ctr (20-40HP)	53 in	53 in



- SmartVFD Wizard
- Literature
- Energy Estimator
- Selection Tool
- Take-off Service
- Harmonic Simulator
- Technical Support



*Specify-Select-Install-Operate-Monitor*

# Honeywell

<http://.customer.honeywell.com/VFD>

