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| Case | Application: Delta Industrial Automation Products for Energy Saving Applications | | | | |
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| Applicable to | AC motor drives, PLC, temperature controller, HMI, Hybrid Energy Saving System HES Series, Power Regenerative Unit REG2000 Series | | | | |
| Key words | Energy-saving HVAC system, injection molding machine, elevator | | | | |

【Introduction】

Taiwan relies heavily on energy imports, which account for up to 97% of the country's energy consumption. International oil prices have increased rapidly due to increasing power and electricity demands and limited power system capacity. How to manage power and electricity more efficiently and dependably has become a critical concern.

Energy-saving control systems are commonly applied to commercial facilities and homes using HVAC systems, water cooling pumps and compressors, fans for water cooling towers, district HVAC control, elevators, lighting controls and many more. Factories also use energy saving control systems to improve the energy efficiency of machinery, such as injection molding machines, compressors, pumps, and others.

【HVAC Systems】

A traditional HVAC system does not provide a frequency control function, so users need to purchase an HVAC system based on its maximum capacity requirement. The motor of a traditional HVAC system operates at full speed all the time even if it is not operating at peak hours, so a large amount of energy is wasted. Applying frequency control to the HVAC system delivers the exact output required by demand, which provides substantial energy savings. There are three frequency control modes for the HVAC system:

1. Operation Schedule Control:

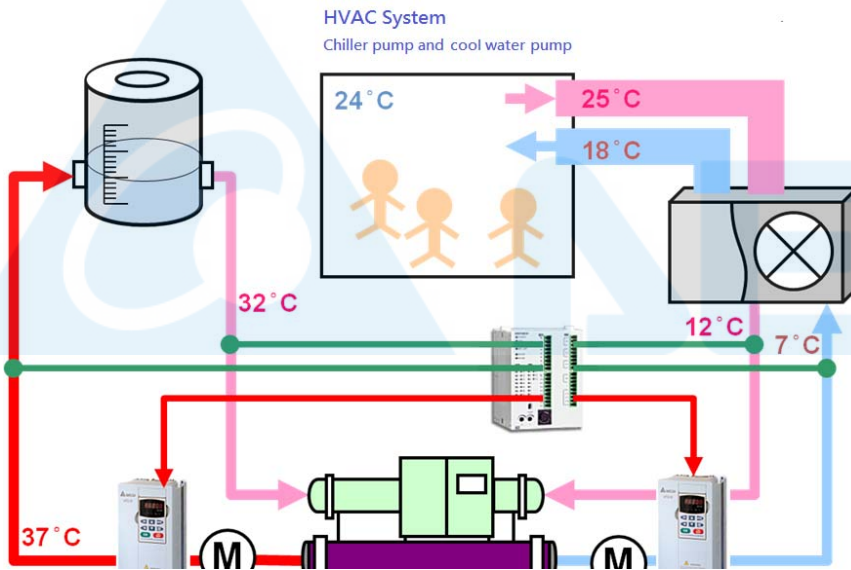
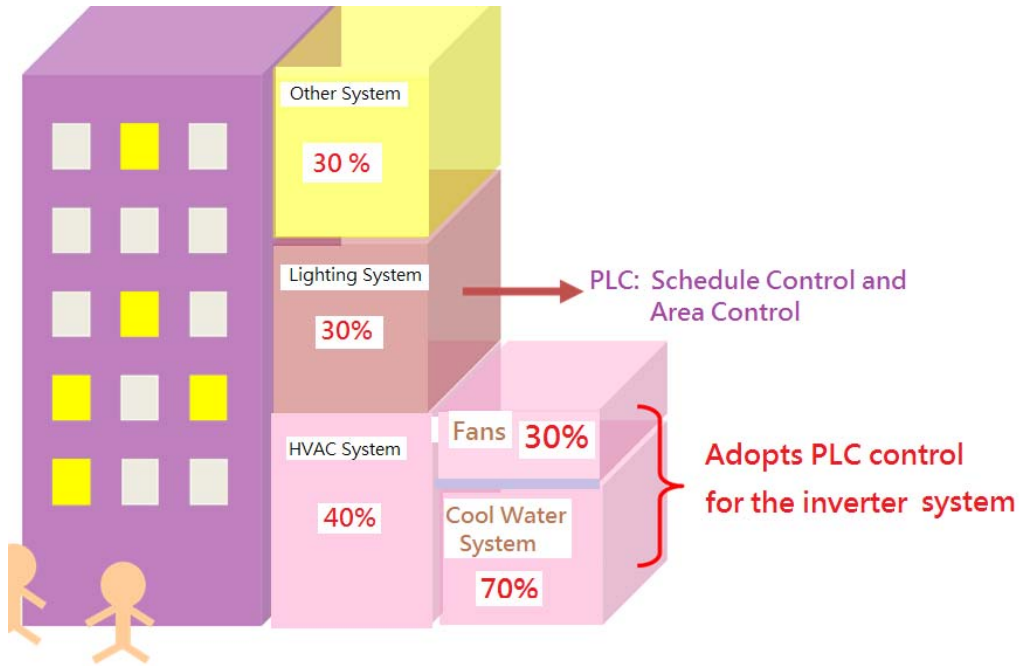
Set an operation schedule. The HVAC system automatically turns off at the set schedule to avoid energy loss and secure the system. This prevents anyone from activating it during non-scheduled time, or in case a user forgets to turn off the system and waste energy.

2. Band Width Control:

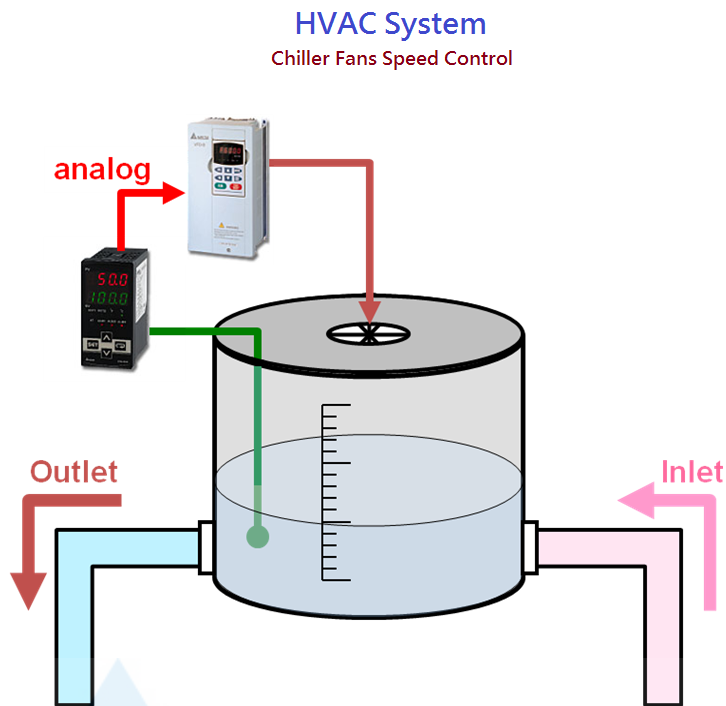
Set HVAC circulation time. Adjust the air compressor operation time and proportion for different environmental conditions and seasons.

3. Load Control

Set operation for full load, stop, bandwidth, and all other types of control.



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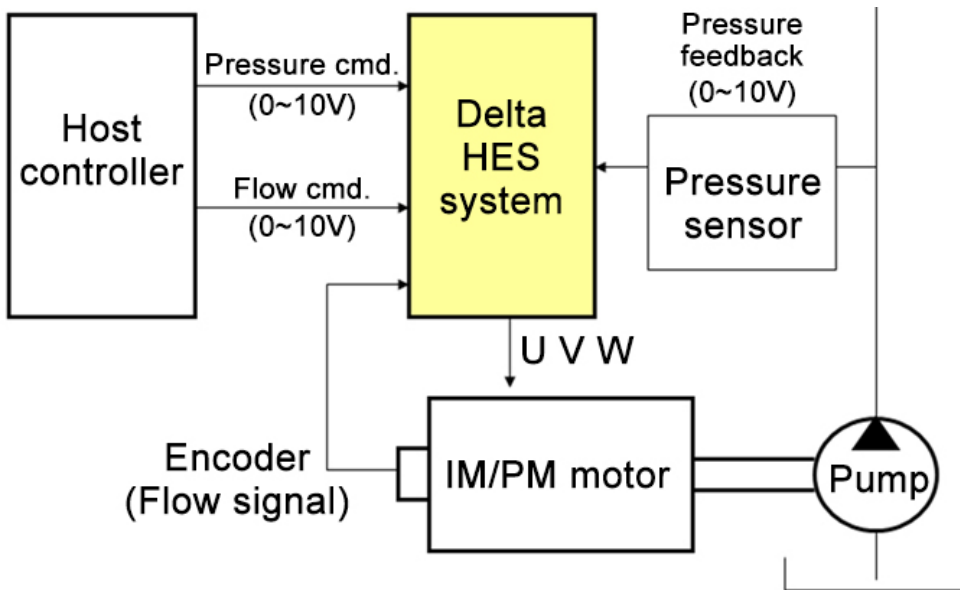
【Machinery Applications】

The injection molding machine and compressor industries share a similar control method. A traditional system has a motor that operates at full speed and generates an excess amount of pressure and flow that needs to be removed using the high-pressure throttle valve, which causes energy waste. By applying the energy-saving control system, the AC motor drive controls the motor to operate at its required speed, providing precise flow and pressure.

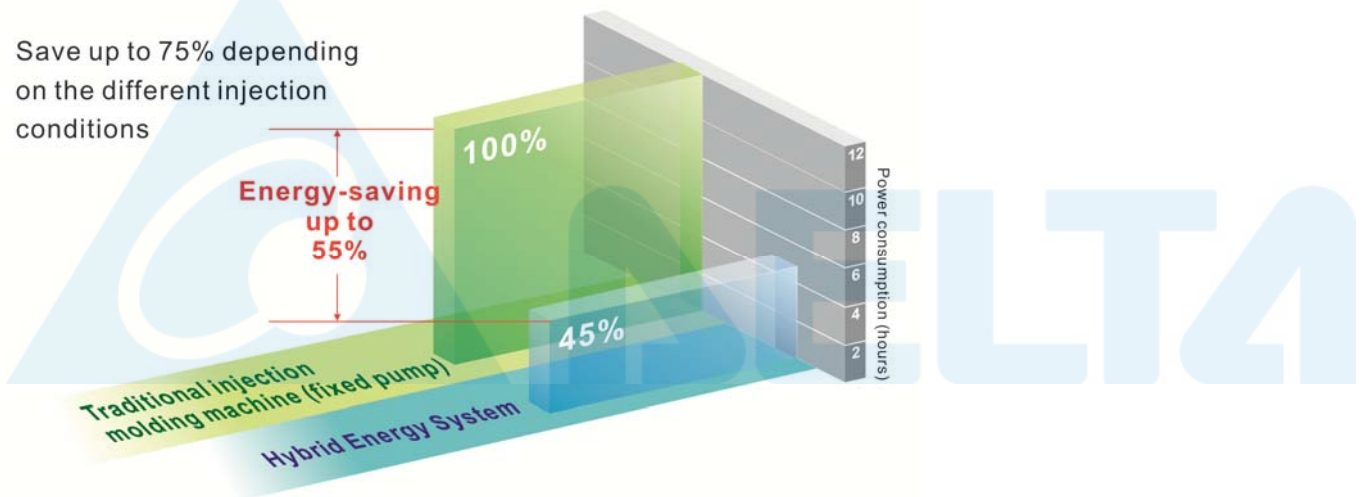
【Injection Molding System】

The Delta Hybrid Energy Saving System- HES series provides precise control of pressure and flow. A high-pressure throttle is not required to attain energy-saving results. A decrease in system oil temperature also achieves 30%-70% in energy savings.

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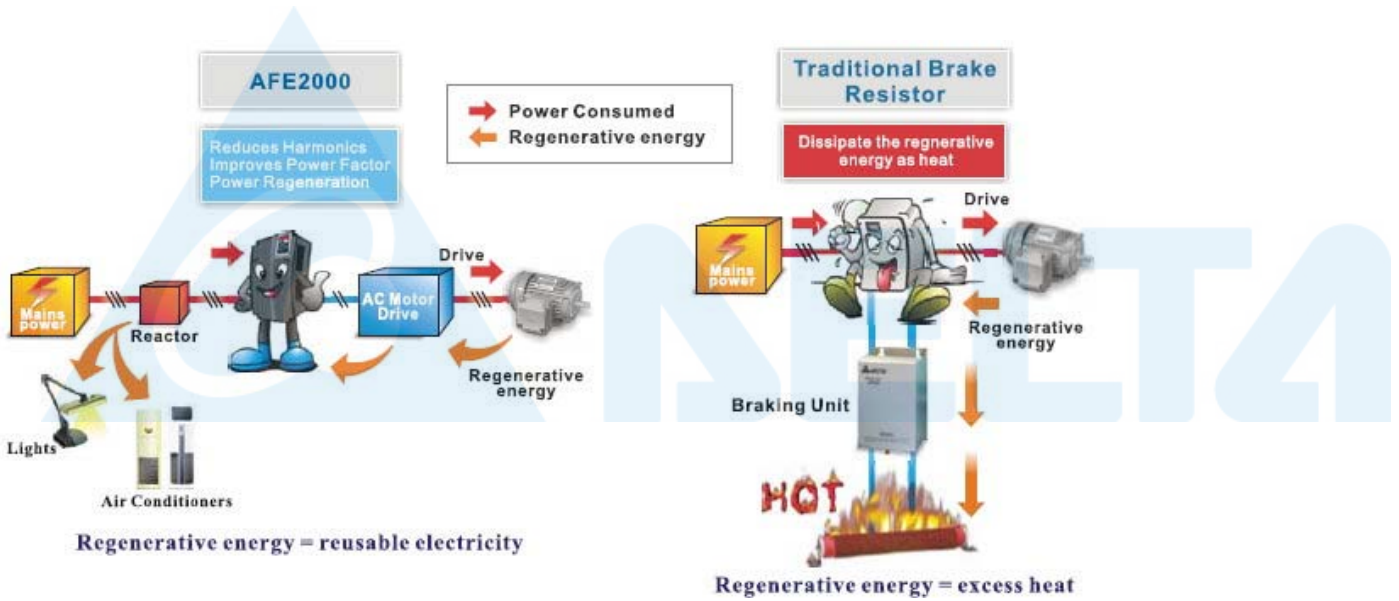
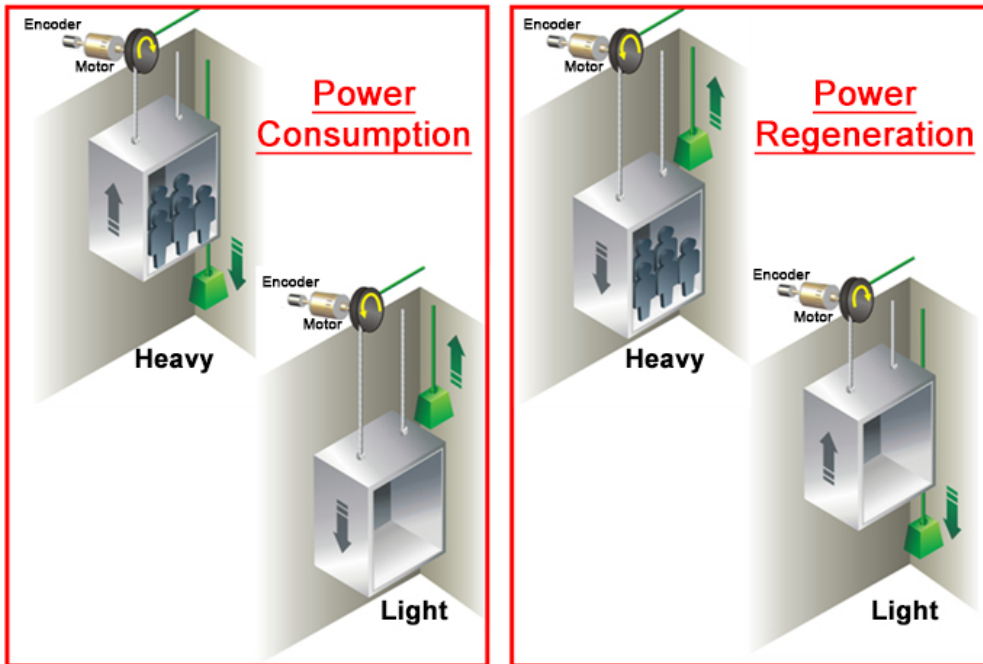
Save up to 75% depending on the different injection conditions



【Elevator System】

The crane and elevator system saves energy by collecting regenerated energy and converting it into reusable power. Traditional methods use brake resistors to convert excess regenerative energy into heat but with four quadrant operation. Delta's REG2000 series converts regenerative energy into reusable electricity and reduces the temperature of the system and the control room. When the REG2000 series is connected to the mains system, the power generated is supplied back to the mains system for other facilities to use. Delta's solution is energy saving and environmentally friendly.

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[Conclusion]

Delta's industrial automation solution provides outstanding energy-savings in many areas including HVAC systems and machinery. The most noteworthy application is a building automation solution used in the Delta Taoyuan Technology Center, which is a gold level green building. This application incorporates PLC, HMI, temperature controller, AC motor drives and many other industrial automation products, as well as solar panels and a rain water recycling system. Delta's goal is to provide energy saving and highly efficient solutions to make the world a better place.

For more information on Delta industrial automation products, please visit our website at:

<http://www.deltaww.com/ia>

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