

# Eco-Flow<sup>®</sup>

Aquatic Variable Frequency Drives



**BUILT FOR PURPOSE**



[www.h2flow.net](http://www.h2flow.net)



**Top:** Eco-Flow units with accompanying bypass and Aquatic Controllers.  
**Bottom:** A series of Eco-Flow units with Aquatic Controllers.

## SO SMART, YET SO SIMPLE

The Eco-Flow® Aquatic Variable Frequency Drive (VFD) from H2flow Controls is much more than just another Variable Frequency Drive. It combines durable construction with a unique aquatic controller which optimizes the system specifically for the demands of a commercial swimming pool facility.

By combining functionality, quality, and reliability, Eco-Flow™ provides the user with an unparalleled VFD experience. Fully configured for the pool & spa industry, Eco-Flow® offers an array of unique features to ensure complete optimization of pool pumps while also maintaining ease of operation and user-friendliness.

Designed for 3-Phase centrifugal pool pumps ranging from fractional through 1,500 horsepower, Eco-Flow® Aquatic Variable Frequency Drives are capable of handling practically any recreational water application, e.g., pools, spas, fountains, and various other types of water features.

\* For control of fountains and water features, see our Eco-Flow-F product line.

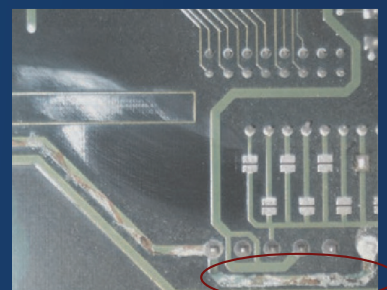
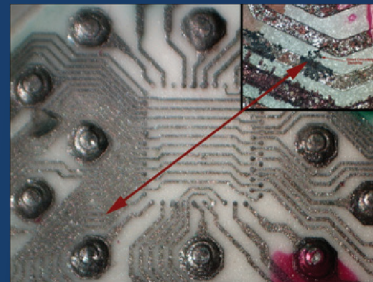
*VFD's are designed for a vast array of applications. Aside from its harsh environment, the commercial pool room is one of the more simple applications where a VFD can be installed, as all-but-a-few of the many parameters of a VFD are not needed. Eco-Flow is a unique solution that is designed specifically for this type of application; the Aquatic Controller simplifies setup to the point that a customer who has never even seen a VFD can be up and running in less than 15 minutes.*

## BUILT FOR PURPOSE

The hostile environment of a pool equipment room is not ideal for a typical Variable Frequency Drive - unless it's a NEMA 12 rated Eco-Flow®.

The vast majority of VFDs are NEMA 1 rated and designed for clean, dry, non-corrosive environments, which is not typical of most pool equipment rooms. Over time, chemical gases will destroy electronic circuits that are not fully sealed and protected from such an unforgiving environment.

It is essential that the VFDs electronics be fully sealed and protected against these effects. For more than 30 years, H2flow Controls and its partners have been exposing Variable Frequency Drives to some of the harshest environmental conditions. You can count on us to protect your investment!



**Above:** Examples of VFD circuit boards that have been damaged by chemical gases.

# UNIQUE AQUATIC CONTROLLER

Using a vivid color touch screen display, the Eco-Flow's unique Aquatic Controller provides an unrivaled user experience. Programming the VFD is achieved by answering straight-forward questions on the Controller's screen. Day-to-day operation such as pump start, pump stop, and backwash speed are initiated by simply pressing the appropriate button. With the inclusion of the Eco-Flow's optional Flow Transducer, the Aquatic Controller even provides a digital readout of flow (GPM).



**Above-Left:** Eco-Flow® Bypass with Aquatic Controller.  
**Above-Right:** Close-up of the Aquatic Controller digital keypad.

## KEY FEATURES

- Rugged NEMA 12 construction
- Aquatic Controller with Modbus communication
- Two programmable speeds - optimize efficiency based on pool occupancy
- Constant Flow - maintains DEQ required flow rates
- Programmable backwash
- Interface to Building Management System
- Readout of accrued energy savings
- Pump dry run and cavitation protection
- Worn pump impeller detection
- Closed suction / discharge valve detection
- Loss of prime detection
- VFD power loss protection
- Soft start / stop - extended equipment life
- Supply voltage: 3 x 208 / 230 / 480 VAC
- Optional 3-contactor bypass panel
- Optional Line Reactor
- Optional Load Reactor
- Lightning Arrestor available
- Password protected - prevents unauthorized tampering
- Built-in DC Bus Filter
- Multi-function readout (i.e., run time, consumed power, speed, etc.)

## BENEFITS

- Considerable energy-saving potential
- Reduced operating noise
- Increased service life of pumps, filters, motors, and associated parts
- Can be mounted directly to pump room wall
- Quick and simple start-up with Aquatic Controller
- Programmable automatic and manual backwash
- Protection against pump dry run and cavitation
- Detection of worn impeller, closed suction / discharge valve, and loss of Prime
- Soft starting and soft stopping eliminates risk of damage associated with water hammer



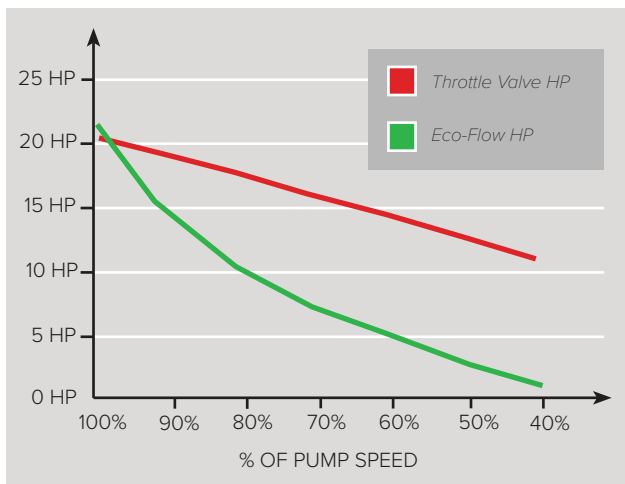
## FILTRATION EFFICIENCY

The largest single commodity cost for operating a commercial pool is the electricity required to run the pump. Depending on the cost charged for electricity, operating a 15 HP pump will typically cost \$12,000 to \$30,000 per year.

During pool design, the engineer often 'over-sizes' the pump to account for changes made during construction or later additions. It is much easier to throttle back the flow rate with a control valve than it is to decrease the size of the pump. However, controlling the flow rate in this manner is comparable to driving a car with your foot hard on the gas pedal while controlling your speed with the brake - both waste a terrific amount of energy.

Flow is directly proportional to the pump's rotational speed. Using an Aquatic Variable Frequency Drive to control the speed will result in significant energy savings. A drop in speed of just 10% will reduce the electrical energy by 27%. Many pumps can be slowed by 20%, which results in a staggering 49% energy saving.

VFD's are easy to install and will typically have a return on investment period of two years or less.



**Graph:** Power taken by 20HP pump. Throttling Valve versus Eco-Flow®

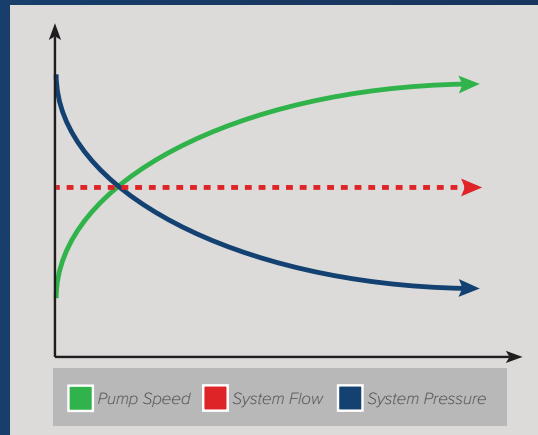
Scan to learn more about Eco-Flow Variable Frequency Drives



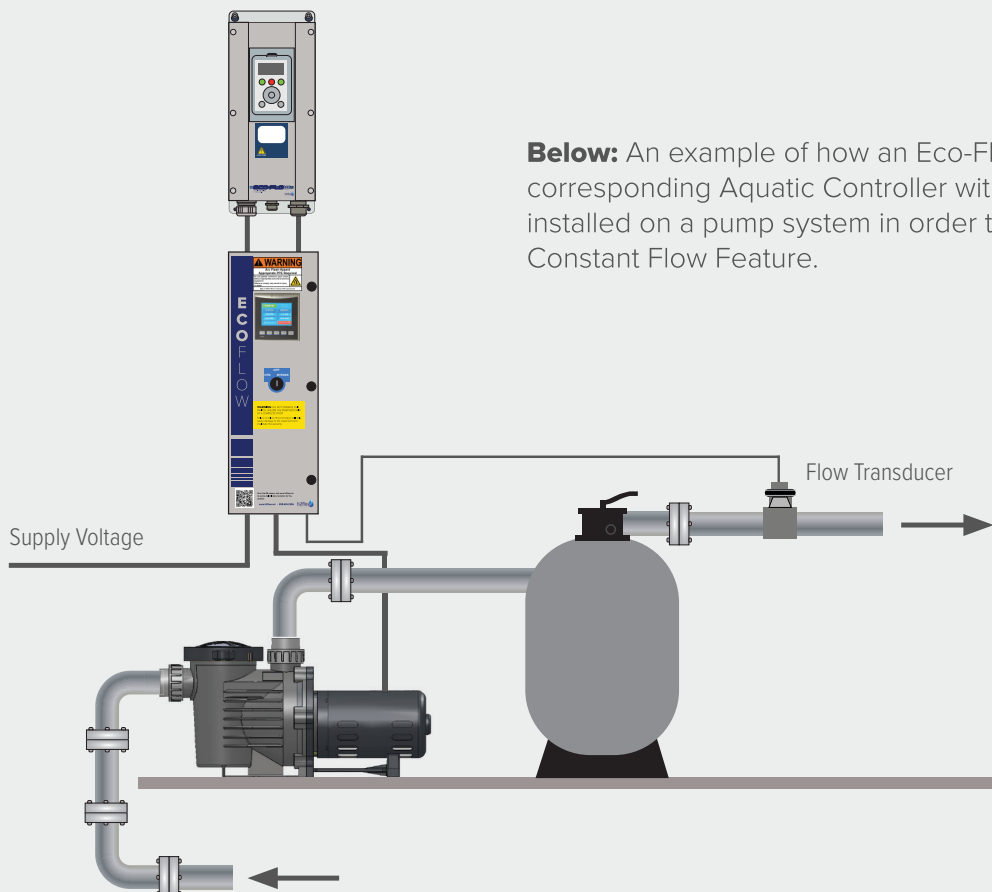
# CONSTANT FLOW

While running the pump at a lower speed will achieve a significant reduction in operating costs, Eco-Flow® can further optimize the circulation system's performance by utilizing its powerful 'Constant Flow' feature.

By pairing Eco-Flow with the 4-20mA output of a digital flow meter, such as FlowVis Digital, maintaining precise control of the flow rate is possible. This ensures that State mandated turnover rates are maintained - even as the filter becomes dirty. As an added safety measure, the system will not allow the pump to over-speed and will go into a visual alarm condition should it determine that the filter needs to be backwashed.



Achieve constant flow by pairing Eco-Flow with FlowVis Digital. Scan the QR Code to learn more



**Below:** An example of how an Eco-Flow and corresponding Aquatic Controller with Bypass can be installed on a pump system in order to utilize the Eco-Flow Constant Flow Feature.

# SAVE MORE MONEY WITH ECO-FLOW

The Affinity Laws tell us that a centrifugal pump's power consumption decreases significantly when its speed is reduced. Flow is directly proportional to pump speed, and many pumps produce too much flow. Reducing the flow with a control valve has very little impact on reducing energy, whereas reducing the pump's speed with an Eco-Flow can typically save 30-50% of the electrical energy.



**SAVE 30-50%**  
on electrical energy costs

## SPECIFICATIONS

<b>Installation Environment</b>	Indoor, wash down, corrosive gases possible
<b>Supply Voltage</b>	3 x 208/230VAC ± 10%, 3 x 480VAC ±15%, 3 x 575VAC ±15%
<b>HP Range</b>	1 - 1500 HP
<b>Construction</b>	NEMA 12 / IP56
<b>Operating Temperature</b>	32 - 104°F / 0 - 40°C (122°F / 50°C with de-rating)
<b>Supply Frequency</b>	50 - 60 Hz
<b>Relative Humidity</b>	90% or less
<b>Maximum Altitude without De-rating</b>	3,280 ft. De-rate by 1% for every 328 ft. above this. Maximum 13,123 ft.
<b>Output Voltage</b>	0 - Mains supply voltage
<b>Rated Output Current</b>	Current rating of VFD, 120% overload for one minute
<b>VFD Efficiency at Nominal Load</b>	97%
<b>Speed Control</b>	Via Eco-Flow Aquatic Controller. Programmable speeds based on time or constant flow
<b>Communication Protocol between Eco-Flow and Aquatic Controller</b>	Modbus
<b>Approvals</b>	CE, cUL

## *Progress through Innovation™*

Our innovative solutions are developed with a focus on controlling, monitoring and measuring machines and processes.

Contact your authorized H2flow Controls solutions provider to find out how our products can help you and your customers.

Find an authorized partner at [www.h2flow.net/locate-a-partner](http://www.h2flow.net/locate-a-partner)

AC DRIVES | ANTI ENTRAPMENT DEVICES | FLOW METERS

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