

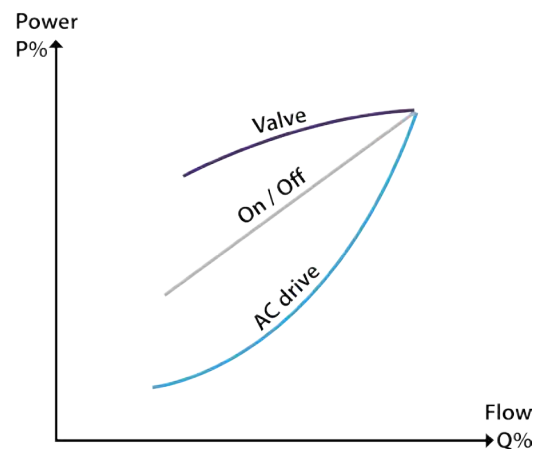


# Azcue Eco-Energy System

## Reduce energy consumption & improve your profitability

With the need to reduce costs in an ever challenging market, as well as increasing environmental concerns, energy efficiency is a growing focus for the marine industry. As a result of this, Azcue Pumps have developed an energy saving concept to ensure that only the energy required to operate a pump is used.

The Azcue Eco-Energy System uses an AC drive to control the speed of a sea water cooling pump's motor by changing the frequency of the electrical supply based on the current requirements of the pump, rather than the most extreme operating conditions. Using an AC drive frequency converter to control pump output, rather than a valve or on-off control, generates substantial energy savings.



“Energy savings of up to 80%”

### Key benefits of the Eco-Energy System -

- ✔ Energy savings of up to 80%
- ✔ Reduced fuel consumption
- ✔ Limited mechanical stress
- ✔ Pumps have longer lifetime
- ✔ Less maintenance on wearing parts
- ✔ No need to reserve power for start-up
- ✔ Reduced risk of cavitation
- ✔ Lower CO<sub>2</sub> emissions

# How the Eco-System can cut your energy costs

The sea water cooling pump system in the engine room is generally designed to cope with worst-case scenarios; it operates as though the sea water temperature is at around 32°C and the vessel has maximum load. In reality these conditions are met less than 5% of the time, and real cooling demand is between 50-70% less than the system is designed for, making energy use much above actual requirements.

“Typical payback period of one year”

Azcue's Eco-Energy System adjusts the speed of the pump to the real cooling demand; when the sea water temperature is lower and less cooling is required, the pump will use less energy. By using AC frequency converters in this way significant energy cost savings can be made.

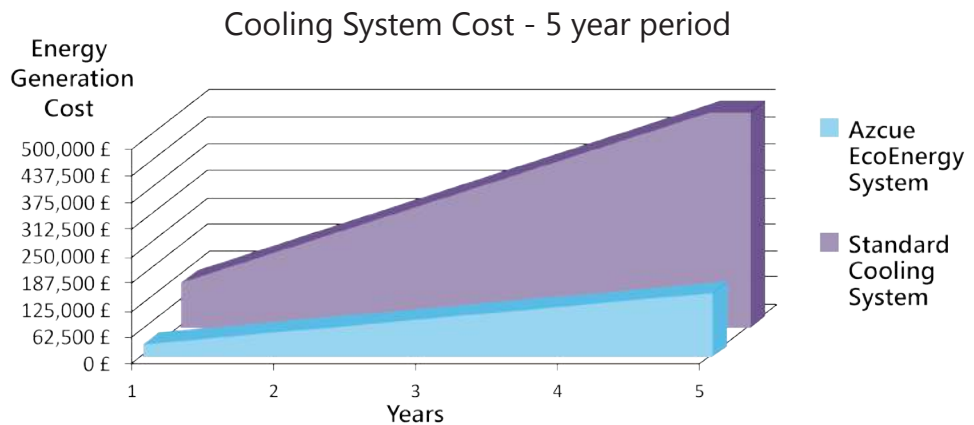
## Example savings calculation

Calculations are based on the following required figures:

Fuel consumption of the auxiliary engines	244 gr/kWh
Fuel type and cost	MGO @ 337.50 £/ton
Size of vessel (dead weight tonnage)	208,000
CO <sub>2</sub> emissions	660 gr/kWh
Number of pumps in system and capacity	2 @ 50%, 1 in standby
Running hours per year	6240 hrs

**The onboard cost per generated kWh is: 0.0823 £/kWh**

Provide us with your figures and we will calculate your savings today!



	Consumed Power	Running Hours per year	Annual Energy	Annual Fuel Consumption	Annual CO <sub>2</sub> Emissions	Annual Cost Energy Generation
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### SW Cooling System Specifications

2x500 m<sup>3</sup>/hr @ 30 mWc - 1750 rpm  
60 kW per pump at duty point

120 kW	6240 hrs	748,800 kWh	182.71 Ton	494.21 Ton	61,626 £
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### Azcue Eco Energy System

Real Cooling Demand: 700 m<sup>3</sup>/hr  
2 pumps performing 250 m<sup>3</sup>/hr consuming 17 kW each

34 kW	6240 hrs	212,160 kWh	51.77 Ton	140.03 Ton	17,460 £
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### SAVINGS

86 kW	-	536,640 kWh	130.94 Ton	354.18 Ton	44,166 £ 71.67%
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