



SPECTRA
WATERMACHINES™

Case Study:
Spectra
Z-Guard
53 DeFever Yacht
Split A/C System

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One of the largest occurrences of calcification and biological build up occurs on board air conditioning systems. Due to their constant use, a/c pump cooling systems provide an ideal environment for barnacle and tubeworm growth amongst other biological and mineral deposits. Such build up can lead to pump failure and possibly systems damage. Until now, only semi-annual cleaning procedures that can cost a boat owner anywhere from \$1000 to \$4000 dollars in maintenance charges were the solution. Now the Spectra Z-Guard eliminates the use of acids and maintains the system full time.

About 7 months ago Dick Murray of Murray Marine approached the owner of a 53 DeFever who was having high maintenance costs and offered to put a Spectra Z-guard on one of the 2 cooling systems. The De Fever has 3 stow-away a/c systems with a total of 36,000 Btu output and is run with two 1,000 gph cooling systems. The systems require 250 gph per 12,000 Btu. The test was performed for 6 months.

The test was an absolute success. After the 6-month trial all that was found in the protected system was pine needles and a light coating of mud due to the location of the boat in Florida. The strainer basket inside the sea water strainer was in virtually new condition. No corrosion, No Barnacles, No organic slime or calcification!

Figure "1" is a comparison of the two sea strainer baskets that were mounted directly next to each other. The strainer on the left is the strainer basket from the Spectra Z-guard protected system and the one on the right was unprotected. Notice that the bottom of the unprotected strainer (right) has corroded away, and the green organic growth and clogged strainer holes in the metal requiring replacement of the strainer basket. At the same time the protected basket is

fully intact including the handle at

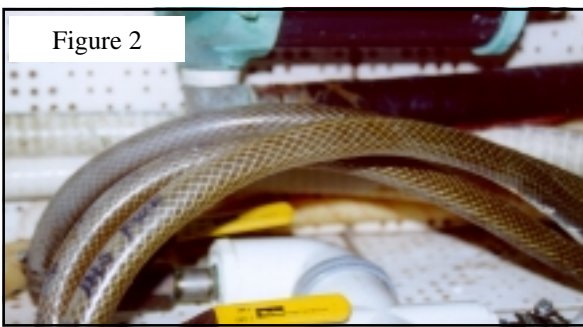


Figure 2

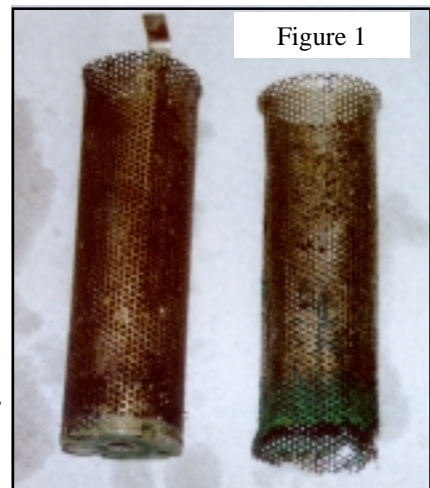


Figure 1

Spectra Z-guard also protects the hoses in the system (Figure 2). To the left is a picture of cooling system hoses. Notice that the hoses are still clear (cloudy from local mud) and there is no biological or marine growth (forward most 2 hoses in the picture). By remaining clean the hose life is extended. Any hose replacement will be the result drying or stiffness from age, not from clogging of barnacle growth.

Figure “3” depicts the condition of the strainer baskets upon removal. Laid next to the receivers for the baskets, you can see that the actual condition of the strainer housing bases and connection points. The top receiver is corroded and dark from biological growth whereas the bottom receiver (the protected system) is clean and still shines after 6 months. Also note that there is less growth around the collar of the base assembly.



In summary;

- Spectra Z-guard produces no electrolysis issues.
- The Spectra Z-guard system will eliminate the need for acid washing the air conditioning system.
- Occasional replacement of the sea water strainer basket will still be necessary although less frequently.
- The cooling water hoses will still require periodic replacement due to dryness or stiffness of age, not from barnacle growth.

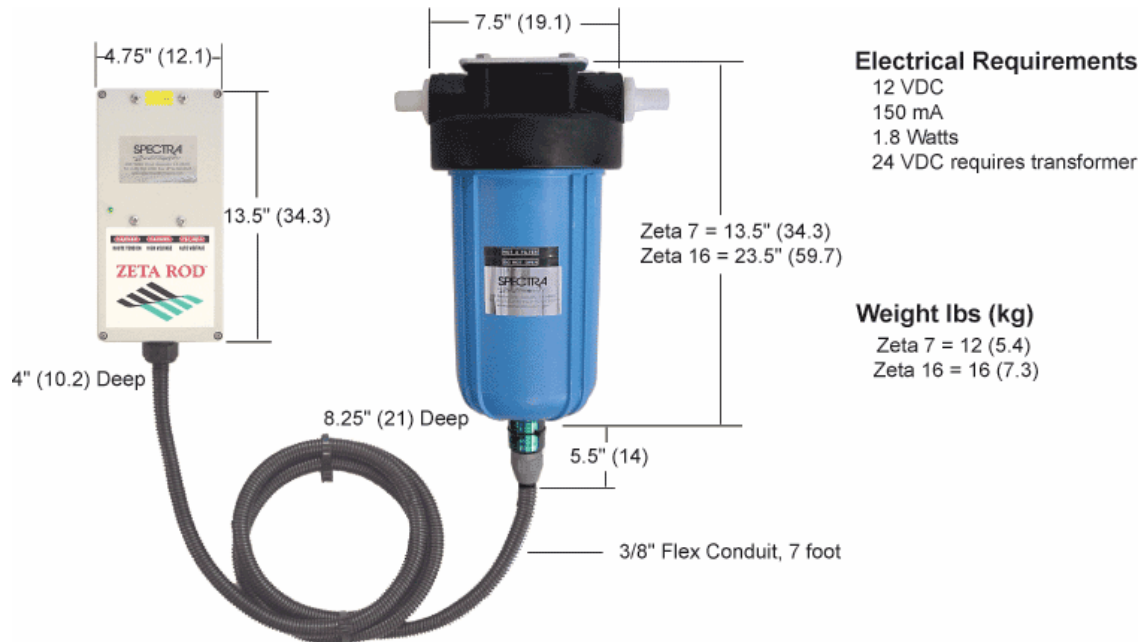
“The Zeta System really works, way beyond my expectations” Dick Murray

Spectra Z-guard installation is very quick and simple. Here are some installation tips:



- The Spectra Z-guard needs only enough room to be able to unscrew the housing and lower it for inspection. Thus it can be mounted in any tight quarters.
- System is connected to any constant power supply using a 5 amp in line fuse (I.e. battery switch feed terminal)
- The power unit may be mounted either along side of the unit or remotely (up to the reach of the connecting harness).

*** Note Old Style Reaction Chamber shown**



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