

2009 NAVY BALLAST VENDOR SURVEY QUESTIONNAIRE

COVER PAGE

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THOMAS L. MADDOX

# NSWCCD Ballast Water Treatment Survey

Date: \_\_\_\_\_

<b>General Information</b>	
Manufacture	Environmental Technologies, Inc.
Product/Model Name	ETI BWTS
Contact Information (Name, Phone, e-mail)	Thomas L. Maddox, 800-940-8161, <a href="mailto:tlm@tlmcos.com">tlm@tlmcos.com</a>
Are you the manufacturer or distributor?	Manufacturer
Product Availability	2012 to 2015 est
Certification status, include date certified or anticipated. (IMO: G-8, G-9 [Basic and Final], Other)	None
Vessels using the system (Please provide Ship Name and/or location of land base test)	None

<b>Technology Description</b>	
Technology used, please identify for all stages, if applicable.	<b>Ozone</b> <b>Ultrasound</b>
Treatment location	<b>Discharge piping during de-ballasting</b>
Technology Description (Brief explanation of how the system operates)	The BWTS combines O3 and sonic energy to treat upon discharge.
Effluent quality achieved (If possible, please provide any testing data showing effectiveness during shore or shipboard testing.)	Please see the "Phase V 2008 Field Testing" Attachment
Does the system use consumables? (If yes, please identify the consumables)	No. The BWTS use compressed air to make O3, which is injected into the sonic reactor-piping module.

<b>Installation/Operational Information</b>
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<b>Installation/Operational Information</b>	
Is there any specific piping or tank configurations required for installation/operation? (Please explain)	There would need to be a loop at the location in the ship where the ballast water discharge piping exits the ship.
Does the system require the ballast water to be mixed within the tanks?	No. The BWTS is operated upon discharge only.
Is there a minimum or maximum amount of contact/residence time required? (Please explain)	We can treat a nominal 1500 m <sup>3</sup> /hr/6600 GPM, per ballast pump, in a manifold system consisting 20 feet of 12 inch dia pipe upon discharge.
Does the system incorporate any automatic or manual monitoring of the effluent to ensure correct operation? (Brief explanation of requirements)	Yes. "BallastWatch" Please see the BallastWatch Attachment
Does the system increase the corrosion rate of the ballast tanks, piping, or valves? (Steel, copper nickel, bronze materials)	No. The ballast water exits the ship through the SS manifold as mentioned above.

<b>Physical Characteristics (Size, Arrangement, Capacity, etc.)</b>			
	<b>Small Unit</b> (~400 gpm/100m <sup>3</sup> /hr)	<b>Medium Unit</b> (~3,000 gpm/700 m <sup>3</sup> /hr)	<b>Large Unit</b> (~10,000 gpm/2,000 m <sup>3</sup> /hr)
Flow Capacity (gpm or m <sup>3</sup> /hr)	The ETI BWTS can be sized from 1000 GPM	2K, 3K 4Kk 5K GPM	The largest single system is 6,000 GPM
Size (L x W x H) (in or mm)	20' L X 8' H X 8' W	Please see the "Attributes" Attachment for more details.	Please see the "Drwg" Attachments for more details.
Dry Weight (lbs or kg)	10,000 #s	12,000 #s	14,000 #s
Wet Weight (lbs or kg)	Plus 1,200 #	Same	same

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Stowage space required for consumables, spares, repair parts, etc for 6 months (L x W x H) (in or mm)	There are no consumables, nor any moving parts, thus this space requirement is very minimal.	Same	Same
Dry weight for spares and/or consumables for 6 months (lbs or kg)	Same	Same	Same
Is the system provided as a modular unit?	Yes. The BWTS can also be broken down into the following components and piped together: Oxygen Gen set, O3 Gen set sonic Gen sets Sonic reactors piping manifold	Same	Same
Can you provide dimensional/ system drawings?	Yes. Please see the "Drwg" Attachments	Same	Same

<b>Ship System Interface Requirements</b>			
	<b>Small Unit</b> (~400 gpm/100m <sup>3</sup> /hr)	<b>Medium Unit</b> (~3,000 gpm/700 m <sup>3</sup> /hr)	<b>Large Unit</b> (~10,000 gpm/2,000 m <sup>3</sup> /hr)
Electrical Power (KW)	25KW	80KW	200KW
Compressed Air (Minimum Pressure and Consumption Rate)	10 SCFM at 90-150 PSI	80 SCFM at 90-150 PSI	240 SCFM at 90-150 PSI
Potable Water (Minimum Pressure and Consumption Rate)	None	None	None

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Seawater (Minimum Pressure and Consumption Rate)	5 GPM for cooling water	10 GPM for cooling water	30 GPM for cooling water
Fuel (Minimum Pressure and Consumption Rate)	None	None	None
Drainage Requirements	None	None	None
Has the system been Shock (MIL-S-901D, Grade B) or vibration tested (MIL-STD-167) tested?	No.	No.	No.
Is the system hardened or ruggedized?	Yes	Same	Same
Other	Please see the various additional Attachments for more info and details	Same	Same

<b>Cost and Operating Information</b>			
	<b>Small Unit</b> (~400 gpm/100m <sup>3</sup> /hr)	<b>Medium Unit</b> (~3,000 gpm/700 m <sup>3</sup> /hr)	<b>Large Unit</b> (~10,000 gpm/2,000 m <sup>3</sup> /hr)
Cost per Unit	\$250,000.00	\$350,000.00	\$1,000,000.00
Consumables Cost for 6 months of operation	\$0.00	\$0.00	\$0.00
Estimated operating cost per m <sup>3</sup> treated water	The only cost of operation is the cost of the electric power	Same	Same

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Annual Operating Labor Hours	Zero! Because the ETI BWTS is a very automated and controlled system which can also, via, BallastWatch, be remotely monitored via the web.	Same	Same
Annual Maintenance Labor Hours	Because there are no moving parts or filters, the maintenance time require should be less than 40 hours/ year.	Same	Same
<b>Other</b>			
Additional Comments	Please call me to review and discuss the above when you have a moment.		