ESMIL PROCESS SYSTEMS

Equipment & Technology Solutions
for Waste Water Systems

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METAL PROCESSING CASE STUDY

SHIPYARD EFFLUENT TREATMENT AND RECOVERY PLANT

Conventional Treatment Systems

Conventional physico-chemical systems for the treatment of metal contaminated waste generally comprise pH correction followed by filtration. Whilst these systems are robust, they no longer satisfy the demands of the Environmental Agency.

The Esmil Shipyard Effluent Plant

The Esmil Shipyard Effluent Plant combines the advantages of conventional physico-chemical processes with proven membrane technology, offering the following benefits:

- 99.9% organotin compound removal;
- 95% recycle of process washwater;
- robust and reliable treatment plant;
- no chemical dosing requirement.

The plant can be substantially automated and an operator can be fully trained within weeks.

PROCESS OUTPUTS

The process results in two outputs:

1. **Permeate** (approx 95% of flow) can be recovered for re-use or disposed to the marine environment.
2. **Concentrate** (approx 5% of flow) which can be tankered off site for disposal or evaporated to leave a small volume of residue.

SPECIALISTS IN THE TREATMENT OF CHALLENGING INDUSTRIAL EFFLUENTS

Metal/Electronic Industry

Esmil Shipyard Effluent Treatment Plant
Organotin Removal Efficiency

	Mono Butyl Tin			Di Butyl Tin			Tri Butyl Tin			Tetra Butyl Tin		
	Raw (ng/l)	Treated (ng/l)	% Rem	Raw (ng/l)	Treated (ng/l)	% Rem	Raw (ng/l)	Treated (ng/l)	% Rem	Raw (ng/l)	Treated (ng/l)	% Rem
High Pressure Wash	<601	<45	92.5	670	<17	97.5	12,393	<9	99.9	680	<38	94.4
Shroud Blast Wash	2,027	<46	97.7	1,993	<22	98.9	50,400	<9	99.9	2,306	39	98.3
Slurry Blast Wash	<160	<46	72.1	728	<17	97.7	19,253	<9	99.9	585	<39	93.3
Ultra High Pressure Wash	656	<45	93	1,518	<16	98.9	23,184	<26	99.9	853	<38	95.5
Dock Wash	2540	150	94	34,060	146	99.6	370,000	24	99.9	15,636	<38	99.7

Analysis by NRA Laboratory, Exeter

Reference A & P Appledore, Falmouth, May 1996

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