

ANTI-MACROFOULING SYSTEM

Technology Overview

Billions of dollars are spent every year to manage the age-old biofouling problems in heat exchangers by the Shipping industries, Power plants, Desalination plants and Oil & Gas industries.

Biofouling is caused by the initial formation of micro-fouling (the slimy substance formed by bacteria, fungi & other microscopic organism) and which lead to the severe macro-fouling (caused by barnacles, calcified tubeworms, clams, oysters and mussels).

The prevention and removal of calcified macrofoulants is the most challenging operational and maintenance issues that cost such Industries billions of dollars per year due to increased operating costs (in anti-fouling measures, regular manual tube cleaning and higher energy consumption) as well as reduced operational efficiency (due to shorter run cycle, lower output, throughput disruptions and unscheduled outages).

The hike in oil prices in accentuated the unsatisfactory waste in higher electricity consumption caused by biofouling of the heat exchangers.

Potential Application

This technology is applicable in the following industries:

- Oil & Gas sector
- Petrochemical sector
- Marine & Shipping sector
- Power and Mining sector
- Desalination installation.

Customer Benefits

Green, non toxic, chemical-free, excellent replacement for costly chemical dosing methods
Continuous cleaning – minimal downtime required
Enables retrofitting onto existing heat exchanger systems



Features & Specifications

Current Measures:

The current dominant micro- and macro-fouling control technique is either continuous or intermittent chemical dosing of biocide, oxidizing and/or non-oxidizing compounds to raw/seawater to kill off undesirable biofouling organisms and larvae. However, these measures have much limitation as they are costly, hazardous, toxic to environment and provide only limited kill efficacy due to large volume of raw/seawater to be treated.

Our Solution:

Our concept is to use a continuous mechanical cleaning movement to disrupt the developmental cycle of biofouling organism, by creating a turbulent flow regime with hydrodynamic stresses that is hostile to their settlement, to disable the attachment capability of larvae by creating a weak-substrate bond interface from the outset and to 'knock-off' attached larvae by specially designed ball cleaning devices under the motive force of flow. If such organism or larvae is prevented from settlement and attachment at the outset – the transformation process from larvae into calcified adult form cannot take place.

Market Trends

Nowadays, huge efforts are made towards reducing the reliance on costly and toxic chemicals to clean and maintain heat exchangers in the Shipping industries, Power plants, Desalination plants and Oil & Gas industries. These industries have hundreds and thousands of sea-water based heat exchangers as part of their critical operational systems.

This technology is a novel solution to address their pain points and therefore such Industries are immediate matured markets for deployment of the Anti-Macrofouling System.

