

# CAGE MOUNTED SNSAFE SYSTEM

## BIO-FOULING PREVENTION SYSTEM

### PUMP OVERVIEW

The ClydeUnion S&N Pumps SNSAFE system offers the most comprehensive bio-fouling prevention solutions package in the market. Strategic implementation of our systems increases the service life.

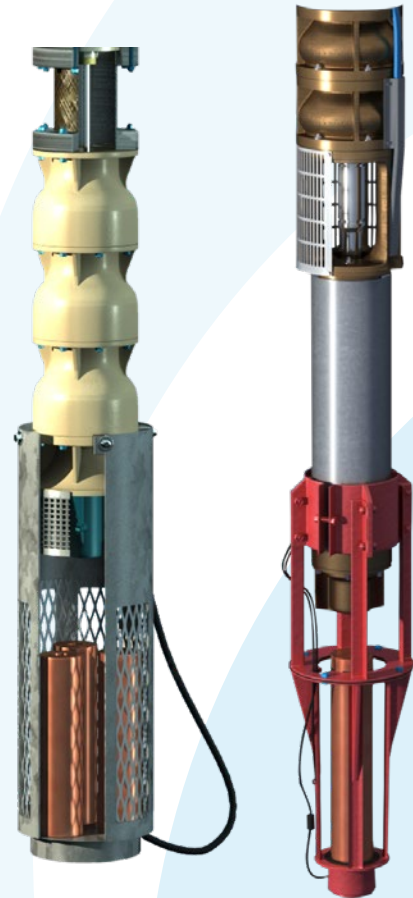
- Delivers an impressed DC current from a power converting control panel to strategically placed copper anodes in the seawater system
- The passage of the DC current through the copper anode releases copper ions into the seawater flow at a pre-determined rate
- The copper ions deter the entry and growth of fouling organisms

### DESIGN

- Anode cage assembly attaches to the motor housing of an electric submersible pump or the suction of a vertical turbine pump
- The power supply and earth return cables run from the submersed anode to the topside mounted control panel
- Submerged under water in the caisson

### EFFECTS OF BIO-FOULING

- Creates a thermal barrier around a pump motor and reduces the amount of heat that can be dissipated
- Accelerates corrosion by impingement/erosion, pitting and cavitation
- Reduces fluid flow throughout the piping of the vessel/rig
- Restricts and/or creates turbulent fluid flow at pump intakes

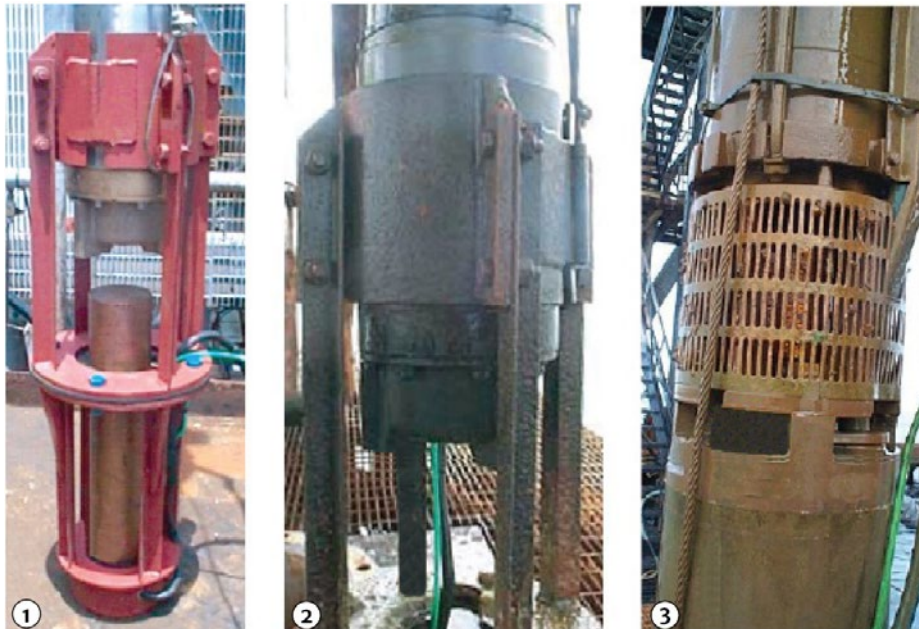


### SYSTEM BENEFITS

- Eliminates bio-fouling macro-organisms
- Low initial cost
- Replaceable anodes
- Minimal maintenance
- Pre-calculated anode life
- Low operating cost
- Minimal space requirement

## IN THE FIELD

- ① Cage mounted system just before installation
- ② Cage mounted system 11 months after installation with no sea life growth
- ③ Pump intake screen 11 months after installation with no sea life growth



## EFFECTS OF SEA LIFE GROWTH ON PUMPS



Sea life growth covering the pump bowls and intake screen



Sea life growth inside the pump intake and on the pump shaft

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