EcoTech
INTERNATIONAL INC.

EcoBeam XL Series
The Science of Magneto Hydro Dynamics

NON CHEMICAL WATER CONDITIONING, TREATMENT, PURIFICATION, MEMBRANE AND FILTRATION TECHNOLOGIES FOR INDUSTRIAL, PHARMACUETICAL, COMMERCIAL, MUNICIPAL RESIDENTIAL AND WASTE WATER SYSTEMS, POLLUTION CONTROL SYSTEMS, PONDS & GROUND WATER RECOVERY SYSTEMS, WATER BASED SCALE REMOVAL AND PREVENTION SYSTEMS, AND HEAT EXCHANGE AND FUEL EFFICIENCY ENHANCEMENT SYSTEMS.

The Micro Chip of the Water Industry

AN EVALUATION & TRIAL PROPOSAL FOR CONDITIONING, SCALING & CORROSION

EXECUTIVE SUMMARY

ECOTECH SYSTEMS INTERNATIONAL INC.

THE MOST ENVIRONMENTALLY FRIENDLY COMPANY IN THE WORLD

ECOTECH SYSTEMS INTERNATIONAL INC. IS A PENNYLVANIA 100 COMPANY AND THE WINNER OF THE GOVENOR OF PENNSYLVANI EXPORT EXCELLENCE CERTIFICATE. WE ARE ALSO MEMBERS OF THE AMERICAN WATER WORKS ASSOCIATION

ECOTECH SYSTEMS INTERNATIONAL INC. is an Environmental Company that specializes in the **Science of Magneto Hydro-Dynamics** (MHD). We have developed a Cutting Edge Environmental Technology that employs the Laws of Physics, to affect the chemistry of water and other fluids in such a way, that scale causing dissolved solids in these fluids, change from a dissolved state into suspension. This is a technology, whereby we can treat and condition water, other fluids and their systems, without the use of energy or chemicals solving a major problem related to water and contributing to a healthier environment.

The technology removes all existing scale, rust and other contaminants that build-up in pipelines, heat exchangers, cooling towers, and all other equipments that use water, oil or gas. The applications are absolutely **NON INVASIVE** therefore the pipelines do not require additional plumbing. Once installed, our systems require absolutely no maintenance or power source. The life span of the equipment is unknown but, if not tampered physically, it will last for a very long time (19 years proven so far).

Our Fuel Enhancing MHD Series are used on diesel, petrol, gas and other fuels, to improve their efficiency and to reduce emissions, thereby making our products very environmentally friendly.

We also specialize in making drinking water from almost any source, be it ground water, rivers, rainwater, ponds, lakes, or the sea. We also design and fabricate modular units that can produce from 1,000 gallons to over 1,000,000 gallons of drinking water per day. We also use solar energy where conventional electric energy is not available to operate pumps. We increase the efficiency of industrial waste water, recycle it and help to reduce the affluent that is normally deposited into our streams and aquifers contaminating them. The refuse sludge can be converted to organic fertilizer.

An environmentally friendly Head to Toe, EcoBeam XL Installed Oil Mill

The company is registered in the Commonwealth of Pennsylvania, in the United States of America. We produce the ECOBEAM XL SERIES OF MAGNETO HYDRO-DYNAMICS (MHD) SYSTEMS. All of the Research, Development, Manufacturing and Fabrication of the Systems are mainly done in the United States of America and Japan. The company has systems operating in the United States, Canada, Mexico, Brazil, South Africa, Japan, China, Hong Kong, South Korea, Taiwan, Vietnam, Singapore, Malaysia, Brunei, Thailand, Philippines, Indonesia, Australia, Pakistan, Norway, Sweden, Denmark and Qatar.

The Cutting Edge technology is unique in the sense that in over nineteen years of operation, we have a ONE HUNDRED PERCENT SUCCESS RATE. Our applications range from a simple home system to commercial, industrial, residential complexes, ponds, lakes, rivers, ground water, recovery and oil and gas exploration and refining.

The back bone of the invention is the ECOBEAM XL SERIES OF MHD (MAGNETO HYDRO-DYMANICS) PRODUCTS.

At the moment, the following series is produced: -

- ECOBEAM XL Five Windows
- ECOBEAM XL Two Windows
- ECOBEAM XL Windowless
- ECOBEAM XL Solo
- ECOBEAXM XL Duo
- ECOBEAM XL Jumbo
- ECOBEAM XL Super
- ECOBEAM XL Type F1

Ecobeam XL leads the way in non chemical treatment

INTRODUCTION

A proposal to prove the efficacy of the ECOBEAM XL Technology in the following areas:

a) Removal of Scale buildup in Pipes and Equipments.
b) Removal of Corrosion from Pipes and Equipments
c) Improve the quality of water

All protocols and procedures that **ECOTECH SYSTEMS INTERNATIONAL** INC requires must be followed in both letter and spirit.

Selection of the equipments to be used for proving the efficacy of the ECOBEAM XL, must be done in close consultation with **ECOTECH SYSTEMS INTERNATIONAL INC.**

Provision of these equipments, the location for the tests, all power and security arrangements and full access must be provided by the client.

Water testing and testing of any other material is the responsibility of the client.

The efficacy shall deem to be proved by:

a) Before and after water Analysis results
b) The accumulation of removed debris as deposited in the filters
c) Before and after pictures

Depending upon the degraded condition of the equipments under test, the time frame for the complete removal of Scale and corrosion cannot be quantified.

However, the appearance of the above results shall be considered sufficient proof of the efficacy of the ECOBEAM XL TECHNOLOGY,

PROPOSAL

The following equipments are recommended for this test:

a) A heavily scaled up and corroded WATER COOLED COMPRESSOR
b) A heavily scaled up and corroded HEAT EXCHANGER
c) A section of pipe that is heavily scaled and corroded.
d) A small Cooling Tower (consists of a Condenser, Pipes, Pumps and Cooling Tower) this shall be a separate test by itself.

EQUIPMENTS REQUIRED

a) ECOBEAM XL SYSTEMS (No. of System to be determined according to the apparatus selected for the application)
b) One fresh water holding tank from the main water supply.
c) One Pump to circulate water from the holding water tank, through the equipments and back to the tank.
d) Two sets of 20 inch TEN micron filters to be installed in parallel
e) Two sets of 10/20 inch FIVE micron filters to be installed in parallel
f) One Quartz Green Sand Filter
g) One Activated Carbon Filter
h) One KDF filter
i) One UV
j) PLUMBING and Valves

ECOBEAM XL APPLICATION PROTOCOLS

1. WATER COOLED COMPRESSORS

The water cooled Compressors' "Body jackets" are cooled with city water.

PROBLEMS

The city water is rich with:

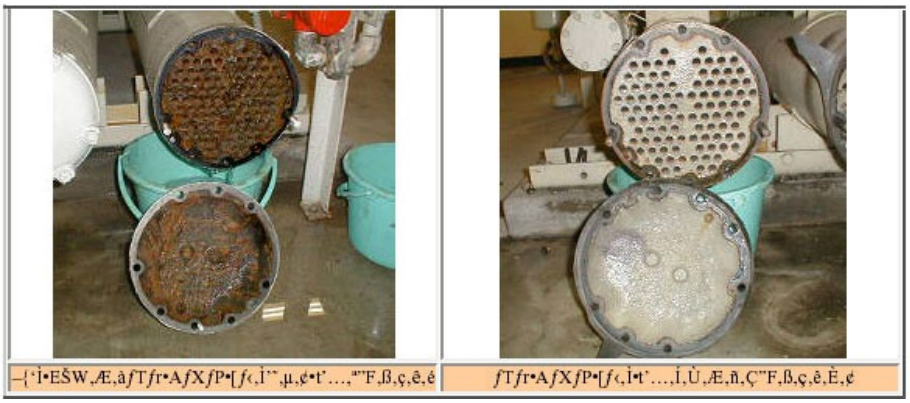
a) Biological Fouling
b) High iron
c) Manganese
d) Calcium, Magnesium, Silicates and Sodium
e) Other unknown elements

EFFECTS ON COMPRESSORS

a) Owing to high rate of heat transfer, there is aggravated build up of iron and Biological fouling inside the body jacket
b) Scale and rust accumulates inside the body jacket with every pass of the water.
c) Biological fouling adheres to the build up of iron and other elements inside the pipes and equipments, releasing enzymes that react chemically with the metal and with the other build up materials inside the body jackets. This reaction increases the thickness of the buildup, reducing heat transfer and causing metal fatigue.
d) The reduction in the heat transfer causes the compressor to overheat, thus there is more wear and tear on the moving parts of the compressor, reducing efficiency, increase in electrical usage, increased breakdowns and maintenance and reduction in the life of the compressors!
e) Chemical Treatment of the water has failed to solve this problem.

SOLUTION

a) The ECOBEAM XL will Treat and Condition the incoming water so as to separate the dissolved solids to be removed from the water, along with the suspended solids and the biological fouling, before the water enters the body jacket of the Compressors.
b) The ECOBEAM XL Treated and Conditioned Water will then gradually remove all Scale, Rust, Corrosion and biological buildup inside the compressor body jacket.
c) These removed materials shall be gathered by a filter on the output side of the compressor. When the filter fills up, its cartridge shall have to be replaced.
d) Over time, the entire body jacket shall be free of the build up and corrosion and the corroded areas inside the body jacket shall cure itself by the reversal of the corrosion, changing from corrosion to Black hard oxidized iron. (Fe_2O_4 to Fe_3O_3)
e) The compressors shall begin to work much more efficiently, use less power and there will be an increase in the life of the equipment.



Compressor Heat Exchange Tubes in Japan before and after installation of EcoBeam XL

2. PUMPS

The efficiency of the pumps is reduced by secondary effects.

PROBLEMS

The city water is rich with:

a) Biological Fouling
b) High iron
c) Manganese
d) Calcium, Sodium, Silicates
e) Other unknown elements

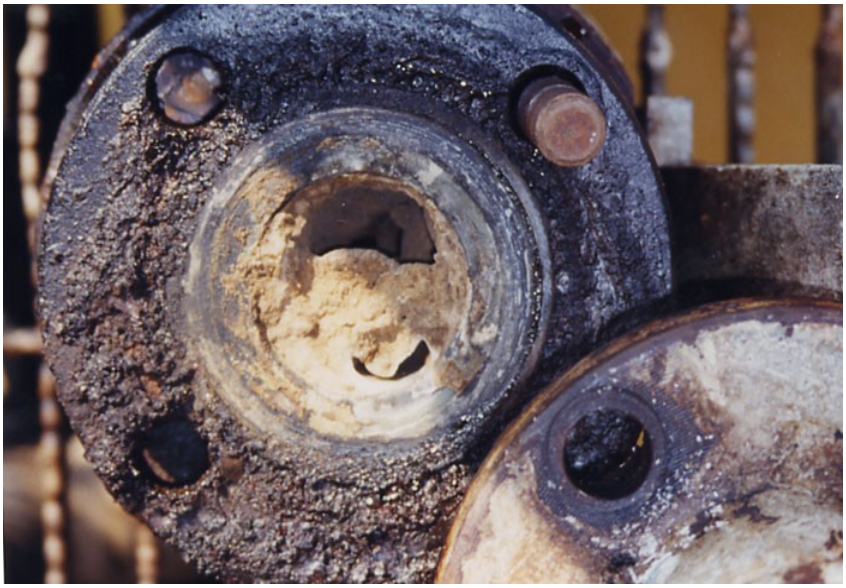
EFFECTS ON THE PUMPS

a) Owing to the high speed of the pump impellers, there is a great increase in the speed of the water as it passes through the pump.
b) This increases the turbulence in the flowing water, and causes friction between the water and the metal inside the Pumps.
c) Increased turbulence disturbs the electrical memory of the molecules of the water as well as the electrical memory of the suspended and dissolved solids in the water
d) There is continuous generation of ELECTROMAGNETIC WAVES BY THE MOTOR OF THE PUMP.
e) These motor generated ELECTROMAGNETIC WAVES are stronger than the electrical conductivity of the individual charge on the suspended and dissolved solids.
f) The Body of the pump being more positive attracts the molecules to embed on it. This adds to the scale and corrosion inside the pump, especially on the impellers.
g) Over time, the pump begins to heat up, there is metal fatigue, reduced efficiency, a noticeable increase in electrical usage, thermal breakdown, and frequent shut downs, increased requirement of repairs and eventually replacement of the pumps themselves.
h) Chemical Treatment of the water has failed to solve this problem.

SOLUTION

a) The ECOBEAM XL treated and conditioned water removes the suspended and the dissolved solids from the water, so that they are prevented from entering the pump.
b) The ECOBEAM XL Conditioned water then goes on to remove existing buildup in the pump, removing scale rust and corrosion.

c) This will enable the impellers to move more freely, increase the efficacy of the pump, reduce electrical load, reduce and eliminate the need for frequent repairs and increase the life of the pump.



Heavily Scaled Pump Flanges

3. HOLDING TANK

The Holding tank is for Feed and Return Water to the equipments

PROBLEMS

The city water entering the Holding Tank is rich with:

a) Biological Fouling
b) High iron
c) Manganese
d) Calcium, Sodium, Silicates
e) Other unknown elements that come with the return water from the equipments in use

EFFECTS IN THE HOLDING TANKS

a) Contaminated incoming water from the city brings biological fouling, Iron, Manganese and other unknown elements with it into the holding talk.
b) Return water from the equipments brings dust from the atmosphere and all contaminants left on the equipments where heat exchange, turbulence or friction occurs.
c) All these combine with the changing temperatures of the water both at the equipments and at the Holding Tank, light from nature, to conditions conducive to the germination of bacteria.
d) There is chemical dosing in this water, but it does not have the desired effect on the biological fouling.

e) A bacterium in water develops immunity to chemical dosing and thus chemicals have to be changed continuously, but stronger strains of bacteria overcome all chemicals.

f) As a result, the biological fouling and the iron, manganese and other materials plate out inside the pipes leading to the equipments, becoming housing colonies for additional bacteria.

g) These bacteria are released into the atmosphere by the water when it is exposed to the air, gets deposited inside the equipments and most importantly, from the equipments, find their way into human breath and food sources.

SOLUTION

a) The Fresh "Make Up" Water to the Holding Tank Must be treated so as to be free of Iron, Manganese, Dissolved and Suspended Solids and from Biological fouling.

b) The returning water from the equipments must be filtered before it is allowed to enter the Holding Tank.

c) All Water pipes from the Compressors or other equipments from and to the Holding Tanks, and from the Holding Tanks back to the equipments must be purged of existing iron, scale and biological fouling.

d) All the water in the Holding Tank must be put on a RECIRCULATION LOOP THROUGH A UV SYSTEM.

e) The ECOBEAM XL will play the dominant role in all of these protocols.

Improvement of water quality in the holding tanks

4. COOLING TOWERS

The maximum problems occur here.

PROBLEMS

a) The CHILLERS/CONDENSERS consist of a series of closed loop copper tubes that carry chilled water (using compressed Ammonia), to cool buildings and brings back heat from the buildings. This hot water needs to be cooled so as to be used in the Chillers again.

b) The closed loop warm water flows trough a Bunched Coil in the condenser, where it transfers heat to an OPEN LOOP water systems.

c) This warm water in the condensers is carried by pumps to the Cooling Tower where the Heat is let off into the atmosphere through evaporation.

d) In a Cooling Tower, there is a FAN Forced Air draft that shatters the dropping water, evaporating part of it, and with it removing the heat. But it also adds lots of dust and debris from the atmosphere into the water.

e) Some of this water is evaporated for efficient cooling, but in the process, the water leaves behind all suspended and dissolved solids which "PLATE OUT" and

"CAKE UP" in the cooling tower, the pipes, and the Condenser Tubes, owing to the heat exchange.

f) Evaporated water is compensated for by a fresh water make up system in the pan.

g) Biological fouling and other suspended and dissolved solids become part of this migrating water.

h) As this "BUILD UP" grows, the heat transfer is reduced, affecting the efficiency of the cooling of the Ammonia. This forces the compressor in the Chillers to work harder causing them to overheat.

j) In the case of Water Cooled Compressors; this additional heat puts a strain on the water jacket of the Compressors, causing additional buildup and corrosion inside the Body jackets.

k) The compressors grow hotter, inducing metal fatigue, frequent breakdowns, repairs, increase in power usage, and loss in efficiency, downtime losses, high maintenance and replacements costs.

l) The Closed Loop- Ammonia tubes, which are exposed to the elements, react with the chemicals in the water and with the deposits on them, accelerating pitting and corrosion.

l) This induced corrosion, is further aggravated by the dust and other contaminants in the atmosphere.

m) Along with the continuous spray and occasional rain, some of these materials fall into the basin of the Cooling Towers from where they migrate back to the Condenser tubes, causing abrasion and corrosion.

n) Overall the efficiency of every piece of equipment in the loop is affected and reduced.

o) This Phenomenon affects the efficiency of the entire operation supported by this engineering, adding notable losses in revenue.

SOLUTION

a) The pipes bringing cold water to the sprayers must be re-enforced with the ECOBEAM XL TECHNOLOGY.

b) This will keep the water flowing free of dissolved solids and keep the sprayers clean too.

c) Efficient spraying with THE ECOBEAM XL CONDITIONED WATER will improve the heat transfer into the air.

d) All existing deposits will gradually come off and new deposits will never occur, as long as the ECOBEAM XL UNITS remain applied.

e) A filter unit must be installed before the water returns to the Holding Tank, so that debris removed by the ECOBEAM XL UNITS does not migrate back to the Holding Tank.

Before and after condition of a Cooling Tower Sump

VISIBLE BENEFITS

a) Eventually, all existing scale, rust/corrosion and other buildup will completely come off. This will be evidenced by accumulation in the filters.

b) No new scale, rust or corrosion will occur.
c) Heat Transfer ratios will improve.
d) Over time, energy usage will reduce.
e) Equipment life will increase.
f) Maintenance will reduce dramatically.
g) With efficient heat transfer, the eventual usage of water will reduce.
h) Over all efficiency will improve.
i) (Where applicable) all bacteria shall be destroyed
j) No chemicals shall be required, which will be a huge savings
k) The entire operation will become ecological and environment friendly
l) There will be measurable cost savings.

The Gift of Living Waters
The Science of Magneto Hydro Dynamics

Ecological Technologies for the New Millennium!!!

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