

DEP NYC TRIAL
Disintegration of Struvite Molecule
Using Merus Oscillation Technology
Year 2007/8
NYC Water Pollution Control Plant
Rockaway

PURPOSE OF THE TRIAL:

The purpose of the trial was to **test the efficacy of the Merus Ring technology on pipes that regularly clogged up by Struvite.** These pipes have had to be manually or chemically cleaned or sections to be replaced at high cost and down time. Chemical treatments were and are not used at the WPCP at Rockaway. **Ferric Chloride is used at WPCP facilities for removal of Struvite and this corrodes the pipes, pumps and the impellers, besides being highly corrosive chemical and a possible danger to personnel. Basically the Ferric Chloride treatment is not conducive to pollution control.** Thus Merus ring proposal was seen as a very promising new and truly **GREEN AND BMP** technology for removal and keeping further deposits of Struvite from forming.

LOCATION:

NYC DEP Water pollution Control Plant
106-21 Beach Channel Driver,
Rockaway NY 11694

This facility is located at Rockaway processing millions gallons of sewage per day from Brooklyn, New York.

PERSONNEL:

The following NYC DEP Personnel were involved in the actual testing of Merus Technology.

Mr. Frank Esposito
Plant Superintendent

Mr. Pate Zeppa
Deputy Plant Superintendent

Mr. Tom Clarson
Maintenance Engineer

APPLICATION LOCATION AND GEN INFORMATION:

It was proposed by the above senior members of the WPCP Staff to install Merus ring on one pipe that had been an internal problem, clogging every so often. This pipe, from the digester over flow from the tank drops down from the ceiling and proceeds to the basement from the ground level. If this particular pipe was not cleaned on time the Struvite would form a very hard deposit and pipe replacement would remain the only solution. This pipe has been replaced before for the same reason. It is a non-pressurized pipe. Merus technology works even better with pressurized pipes.

The pipe carries digested sludge with some solids contained in its liquid and is deposited into the secondary Sludge Storage

This is a metal pipe but Merus rings can be installed on pipes of all the materials such as rubber, PVC, Brass etc.

General Information on Oscillation technology

The technology associated with the Merus rings is based on the fact that all elements in nature oscillate and each oscillation is specific. If these specific oscillations are cancelled,

altered or overlaid, the targeted molecule will disintegrate into original atoms or will transform into a substance that would behave inherently different from the original molecule. Calcium deposit is a good example of the latter whereby, it becomes more soluble and as such, will be washed away with the medium flow.

Merus ring technology also emits oscillations that would target the original atoms to transform them into inert substances thus curbing the resultant atoms from regrouping into the original molecule whilst under the range of Merus ring oscillations.

Thus Magnesium, Hydrogen, Phosphorus, Nitrogen and Oxygen in Struvite, once disintegrated would cease to recognize each other as their recognition of each other is dependent upon them emitting their original oscillations. Thus Iron Oxide once disintegrated would not regroup, as Iron and Oxygen have either become inert or their oscillations altered.

Merus has mapped, stored and collected original oscillations from world over and by a proprietary computer technology created new oscillations to counter or alter the original oscillations to disintegrate the original molecules and turn their resultant atoms into inert ones. These oscillations are then programmed into our Merus rings by proprietary computer technology. These oscillations are triggered by any movement in the medium in pipes, tanks, Heat exchangers, boilers, cooling towers etc. In this manner most equipment do not need any cleaning or the cleaning intervals are much longer than under normal conditions without the presence of Merus oscillations.

For more information please visit our website:

www.MerusUSA.com

Method of Testing:

It was decided that the ring would be installed on the pipe at a time when it is almost fully clogged thus providing a challenge to the theory that the Oscillations emitted by the Merus ring would actually disintegrate the existing Struvite in the pipe.

The ring would also be installed at a point to treat only lower half of the pipe thus treating the upper half as a control. The Merus ring oscillations are emitted only in one direction, the water flow. Thus if the ring cleaned the lower section and upper would continue to clog further, the positive proof that the Merus ring does what is expected would be an acceptable inference

Positive proof of the ring function would be recorded in pictures. For this, the pipe was opened at the flanges and pictures taken of how it appeared before the installation of the ring. These pictures Provided by WPCP Personnel are available and attached with this report or have been sent under another way.

Installation and Period of Test:

One Merus ring was installed on an 8" HCI Bio pipe discussed above, about 15 ft high, just above the flange. Since the Merus ring oscillates in one direction, the medium flow direction, its oscillations were set to treat the pipe half way below the Merus ring and into the basement.

The Merus ring was installed on July 2nd 2007 with a target date of opening up the flanged section about 4 months down the line. A visual inspection would then be done to affirm the success of the Merus technology.

During this period the said pipe was not chemically or mechanically treated.

AS OF October 25th 2007

The Pipe under test was opened at both flange ends and visually inspected for the presence of any Struvite. This was done in the presence of Mr. Frank Esposito, Mr. Pete Zeppa and Mr. Tom Clarson. No Struvite could be seen and the section below the Merus ring was completely clean. The upper section could not be inspected as it was hard to peep up into the pipe. One aspect of the trial was proved beyond doubt that the Oscillations from Merus ring had disintegrated the Struvite that was deposited in the pipe in the direction of the medium flow.

Pictures of the same were taken and shared with our Merus Senior Technician, Shashi H Dave. The pictures are available for inspection and attached.

FURTHER POSITIVE PROOF:

Approximately 3 months down the line the upper section that was the control part of the trial and not treated by Merus Oscillations did clog and Struvite had to be manually dislodged while at the same time the lower pipe section that was being treated by Merus oscillations remained clean. Thus, providing a second positive proof of the efficacy and success of the Merus Technology.

The ring was then moved to a much higher location to treat the whole pipe from the ceiling downwards to the pipe sections leading down into the basement level to avoid the upper half from clogging.

As of today August 14th 2008, more than a year from installation of Merus ring the pipe from the ceiling down to the whole basement level, has not shown any sign of clogging. This pipe is approximately 400 ft in length

FURTHER USES OF MERUS RINGS IN DEP WPCP PLANTS

There are many uses of the Merus rings that are foreseen in DEP WPCP Plants. Besides Struvite problems in the standard piping systems and the underground pipes where Ferric Chloride is used in large quantities, there are also numerous Heat exchangers that have not been cleaned for ages. Their efficiency in terms of heat transfer must have diminished and will continue to do so. Merus ring has proved in one case in Consolidated Edison Co of New York in similar condition that its efficiency was improved by 266%.

There are a number of DEP boilers that are also being cleaned periodically for corrosion, lime scale and bio film. Cleaning of such equipment would be found unnecessary or may have to be done at much longer periods.

ADVANTAGES OF MERUS TECHNOLOGY

In case of piping systems the flow rate of the medium will be enhanced creating a much more efficient transportation of the liquids in transit.

The use of Ferric Chloride will be reduced to minimum if not eliminated completely. This will provide for a safe work place for the personnel, reduce the cost of the chemical to almost nil and help DEP NYC WPCP go GREEN and be using a BMP Product. (Merus Rings)

Since the Chemical is corrosive, the damage to pipes, pumps and impellers will be eliminated. It is not hard to imagine the damage already done to the equipment due to Ferric Chloride treatment.

Such damage has already been recorded by senior personnel at Coney Island WPCP

Merus rings will not only eliminate the corrosion resulting from the Chemical but will stop Oxidation created by iron/oxygen in the TDS in sewage water.

In cases of Heat exchangers and boilers the cost of cleaning each is generally more than the price of a ring that would keep the system clean, functional and efficient. The corrosion/leaks by rust in tubes in boilers and HE also are an added cost at the time of cleaning. Merus Oscillations will clean out the rust and stop further from developing.

Merus ring will stop lime scale and bio film from depositing on the tubes for an efficient transfer of heat.

The level of efficiency of heat transfer under normal circumstances will diminish at the continuous use of the equipment. The level of efficiency with Oscillation treatment will remain the same over a long period of time.

The saving in energy would be tremendous even without the present day high pricing.



Jul 2nd 2007
DEP Far Rockaway, NY

