



# “NEXTGEN” WATER TREATMENT SYSTEMS FOR MACHINE COOLANT & PARTS WASHING MACHINES

***It is different!!!*** Because it produces  
the *right quality of water* unlike  
conventional R.O / D.M plants.

State of the art *user friendly* water treatment  
System for selective removal of salts

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## The right quality of water:

### Importance of adequate water quality for preparing machine coolants:-

The quality of water is of extreme importance to the efficient use of aqueous metal cutting fluids. More than 90% of aqueous based metal working fluid consists of water. The life of the system, filter efficiency, foam characteristics and even tool life and finish are influenced by the quality of the water. It is essential that the quality of the available water is studied and the proper water miscible metal removal fluid be selected on the basis of the local water characteristics.

Water used for making metal working fluid mixtures should have particular property for the most economical and trouble free use, but even the cleanest of shop water is rarely pure. Water is usually contaminated with hardness minerals and other salts which have detrimental effect upon the cutting and grinding fluid mixtures prepared from them. Rain water is soft containing no minerals. Water obtained from lakes and rivers may be relatively free of minerals or be heavily contaminated, depending upon whether or not the waters have been able to dissolve minerals during natural course. Water from bore wells may be relatively free from suspended solids but may have high contamination with minerals.

Minerals/salts in metal working fluids can cause corrosion of machine tools and machined parts, can aggravate deposition of residues on machine tools and can increase the rate at which the bacteria and fungi grow in the metal working fluid.

Water hardness contributed by Calcium and Magnesium salts present in the water "uses up" metal working fluid concentrate and tends to force it out of solution. The net effect is part of the concentrate does not contribute to cutting efficiency; instead, it may appear as a gummy deposit or residue on the machine and parts. In addition, the lost concentrate cause parts machines to rust.

Minerals other than hardness "salts" such as chlorides and sulphates, contribute to rust and, the higher their concentration; the more of the metal working fluid concentrate is required to prevent corrosion. The sulphates are particularly detrimental because they promote the growth of the sulphate-reducing bacteria *Desulfovibrio desulfuricans* which produce a "Rotten Egg" odour. Machine metal working fluid sump works like a "Still", the more the fluid is aerated the more the water evaporates. Especially in warmer climates and due to continuous recirculation and heat generated due to machining operation the evaporation increases and due to this the concentration of minerals increase causing more residues to form and corrosion to increase. Usually, fluid makeup or additions to the sump are on the order of 5-

20% per day depending on the sump capacity and severity of the operation. Hence, over a period of months, solids and mineral salts build up in the metal working fluid concentrates and it can be 3-4 times than the original salt/mineral concentration. Therefore, the purer the water for preparing metal working fluids initially, the longer the fluid can be used before gumming and corrosion starts. Hardness salts reacts with emulsifiers present in the concentrate and tend to degrade the performance of emulsifiers.

Minerals in water not only cause residues to form and corrosion to occur, but they also help bacteria grow. Very high uncontrolled growth of bacteria in metal working fluid can cause rapid changes of the pH of the metal working fluid and destabilize the metal working fluid.

### Our recommendations:-

Right make up water characteristics is very important. Too soft/pure water is not recommended as it will increase the tendency for foaming or will increase corrosive tendency of the water. Right pH, TDS, Chloride and Sulphate content is essential to avoid the above mentioned problems.

### *This is the right time to ask the right questions*

Besides the Capital costs, there are many other parameters that goes in determining the economics of operating a water treatment plant.

1. **Energy Consumption** – what does it take to operate a treatment plant can it be run using alternate energy sources?
2. **Reducing water consumption / wastage** – How much input water do we need to treat? - Can we reduce the wastage given that water is so scarce?
3. **What kind of consumables** are required to operate the plant daily.
4. Does the water treatment plant require **skilled personnel** to operate it.
5. **How dependable** is the water treatment plant to produce the yield consistently - can it run smoothly for a long duration of time?

### Bottom line:

*Ionic with it's in-depth knowledge in water treatment and experience gathered over 2 decades has developed a system to produce the right quality of water, based on electro adsorption process. Contact us today to get "Peace of Mind"*