

## **POLYMER - THE BACKBONE OF COOLING WATER TREATMENT PROGRAMMES.**

Today, polymers form the most important and integral part of any successful cooling water treatment programme. It has particularly assumed significance after the advent of non-chromate programmes where scale and fouling control is extremely critical while corrosion has still to be restricted to minimum limits. There are various different polymers available, each with its strengths and weaknesses, and it is vital that the right polymers are selected in a treatment programme, taking into account the specific system needs and demands. The most widely used polymers are low molecular weight (2000 to 20,000) and usually use acrylic acid as one of the monomers. Polymers can be homopolymers (using a single monomer), copolymers (two monomers), ter polymer (three monomers), tetra polymer (four monomers) and so on. It is very important to know what the polymers specifically function as, in the selected programme. Just being a new creation is not enough; it has to provide value and improved performance besides being cost effective. One can have any number of monomers to create a polymer and give a corresponding geometric name but the creation has to be function specific with improved performance. Most polymers exhibit multifunctional properties like dispersion, threshold inhibition, crystal distortion and chelation. However each one excels in one particular aspect of control and should be evaluated as such. A polymer may exhibit excellent control of suspended matter while another may excel as an inhibitor of phosphate fouling while providing multifunctional benefits of other control properties to varying degrees. Even today the best and field proven calcium carbonate inhibitor is an organophosphonate (Phosphono Butane Tricarboxylic acid) and it would be suicidal to consider a polymer for the control of that function. Specific polymers are available for the control of individual scale forming salts, phosphate, metal ion foulants and suspended matter. Also well-defined application tests are available to evaluate the superiority as well as determine the optimum feed levels of polymers for specific applications. A well-designed cooling water treatment programme takes account of all these aspects and selects components depending on the actual system needs established after a thorough survey. This provides the basis of selection and includes the application specific polymers along with other scale and corrosion inhibitors. This, coupled with the total microbial control programme forms the cooling water treatment package. WEX manufactures a number of low molecular weight anionic polymers with different monomer combinations for a wide range of water treatment control applications and accordingly selects system cum function specific