Sea Water Application

Sea Water cooling tower construction is a very specialized task and different from fresh water application. Heat transfer coefficients of sea water is different from fresh water. Sea water is corrosive and contains lots of dissolved salts which need to take care of. Action of sea water on steel rebar causes it to degrade. Sea water splashing on RCC structure and wall causes it to peel off with time. To tackle such problems a different approach is required for surface protection, rebar protection and thermal efficiency.

The approach to build such cooling tower is to prevent the surface corrosion by applying special Polyurea/Polyurethane coating on all surfaces in contact with sea water. To protect rebar in RCC structure of foundation and superstructure Impressed current corrosion prevention system may be used.

Polyurea/Polyurethane Coating

Sea Water Cooling Tower surface is protected by polyurea/polyurethane coating . For this surface preparation, selection and application of Polyurea lining on internal surfaces of concrete tanks, and RCC structure is done.

- Surface Preparation

The concrete surface is made dry and clean. Any loose particles of sand, cement, aggregate etc. is removed by wire brush or by light sand blasting.

- Application of Polyurea/polyurethane coating

After surface finish special primer is applied to prepare the surface for final coating of polyurea/ polyurethane coating. The primer has base and hardener.

Appropriate thickness of Polyurea/Polyurethane coating is spray applied on the base of primer. Poly urea coating is a flexible, two component and rapid curing coating system providing high corrosion, abrasion and thermal shock resistance. This lining is made by using base and hardener.

Impressed Current Corrosion Prevention System

For sea water cooling tower , all RCC structure and their rebars are protected against corrosion by Impressed Current Cathodic Prevention (CP) system installed during construction. The system is designed and installed in accordance with the European standard for cathodic protection of steel in concrete EN12696. The anode material offered is Mixed Metal Oxide (MMO) Titanium ribbon anode which shall be installed into the steel cage using cementatious spacers or equivalent. Silver/Silver Chloride and pseudo reference electrodes are embedded in the concrete for monitoring purposes.

Foundation Protection

Foundation protection system is offered as per soil testing data for chloride and sulphate content. Accordingly coating for rebar and corrosion prevention system is offered to protect the foundation. Super sulphate/sulphate resistant portland cement conforming to high standards is used for sea cooling tower, basin , sump, and other RCC structure which is contact with sea water.

Epoxy coated high strength deformed steel bars conforming to high standards is used for all sub

and super structure. Impressed Current Cathodic Prevention (CP) system is used for sea water cooling tower system to protect foundation and superstructure.