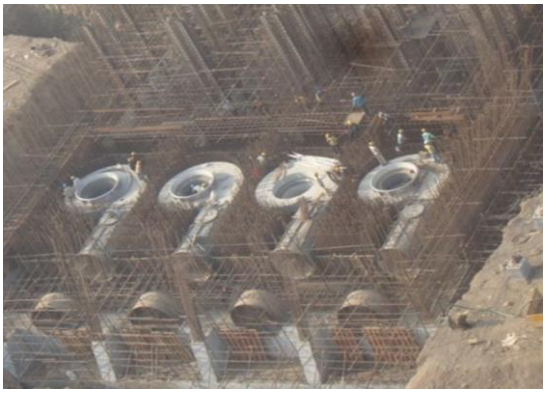
Enriching Lives

Essar 2X600 MW Salaya Thermal Power Project

Introduction

Essar Projects India was planning a 2x600 MW Power Project at Salaya Gujrat. The project was to have a sea water based cooling water system. The contract for the supply of 4 Concrete Volute Pumps (CVP), Vibration Monitoring System, REJ, Civil design of pump house, Sump Model Test, Transient Analysis, Pump Spares, erection and supervision was given to the Kirloskar Brothers Limited (KBL) in the year 2008.



Challenge

This project had a requirement of designing a cooling water system. The CVPs were to circulate water through the plant for cooling. Sea water was to be used as the circulating water. The main challenge faced in this case, was due to corrosion. Corrosion is always a problem in a saltwater environment, particularly when the friction or mobility of parts is the essential for working in case of pumps. One more challenging aspect was the procurement and costing of CV pump impellers. Earlier CV pump impellers were procured from Italy due to stringent quality checks like radio graph test. The procurement and cost of the cardon shaft is very high in India.

Solution

Salaya is the first project where CPVC (Chlorinated polyvinyl chloride) piping & fittings for bearing & sealing cooling of concrete volute pump in place of SS duplex pipe for sea water application has been used by Kirloskar Brothers. CPVC can withstand corrosive water at

temperatures greater than PVC. The CV pump impellers were manufactured in-house at our Kirloskarvadi plant. The castings for the same were from 'The Kolhapur Steel Limited', a KBL subsidiary, under stringent quality specifications. The butterfly valve (3600 mm-electrically operated) supplied in this project by KBL is the largest in India. This valve is situated in the recirculation after Circulating Water pump discharge line. KBL also supplied 3 sea water intake pumps with Hydraulically Operated Pressure Device Valves and REJs. 41 small and medium type pumps were supplied for usage throughout the plant. Cardon shafts were procured from China for the first time and the cost was negotiated with the vendors.

Learning

In the Salaya project, cardon shafts were procured from China for the first time. It was due to this that we saved substantial cost by negotiating with the vendor. Manufacturing CVP impellers has opened new doors in spare parts supply for KBL in the upcoming years. Manufacturing CV pumps impeller is possible at domestic sites instead of importing from outside, this has resulted in substantial cost saving. Use of CPVC piping and fittings for bearing and sealing cooling of CVPs was found to be easier to erect/fit at site than metallic pipe to improve performance to resist corrosion.

Conclusion

KBL has successfully commissioned 2 CVPs in the month of September 2011. Concrete Volute pumps are the most reliable solution for Circulating Water systems in any mega/ ultra mega power plants. In this project, KBL has successfully managed to manufacture CV pump impellers indigenously. However, we need to strengthen the in house man power for supervision of erection of these pumps. CPVC is suitable for use in high temperatures and in case of salt water and can replace PVC. Development of CV pumps needs to be our focus with respect to the design, operation and maintenance.