



Enriching Lives

Sardar Sarovar Narmada Nigam Limited: Saurashtra Branch Canal



SSNNL

Fluid Management
Solutions for
one of the World's
Largest Pumping
Scheme

Narmada is the largest westward flowing river in India. However, only 10 % of the Narmada river basin is utilized today. The Saurashtra Branch Canal Project by Kirloskar Brothers Limited, for Sardar Sarovar Narmada Nigam Limited, was envisaged to change this scenario and make the most from the benefits of irrigation and hydropower.

Kirloskar Brothers Limited (KBL) worked as consultants for the state Government of Gujarat in designing the scheme for Sardar Sarovar Narmada Nigam Limited

(SSNNL). Detailed study of the geographical terrain was undertaken in order to custom design the pumping schemes and other aspects of the project. The main challenge was the flow of the canal on the ascending region of Saurashtra. The KBL team faced the daunting task of commissioning pumps which will pump the entire volume of the water up the ascending Saurashtra branch which is 104 kilometers long.

The Saurashtra Branch Canal has 26 Concrete Volute Pumps (CVP)

(each of 72,000 m³/hr flow), 22 Vertical Turbine Pumps (VTP) (each of 18,000 m³/hr flow) and drive motors, 3 Power stations and 5 pumping stations with over 630000 liters of water being pumped per second. It incorporates state of the art technology of CVPs driven by the highly efficient HT motors and reliable vertical epicyclic gear box.

The innovative design for siphon creation and breaking arrangement by KBL was granted a United States patent. This innovation in design lead to minimizing head loss in discharge ducts between a supply and a delivery reservoir. The siphon arrangement has lead to an 8.5 MW saving in rating, 34.96 Mn units of annual energy conservation and a INR 122.3 million annual saving in electricity.

The major learning point for us were as follows The geographical terrain plays an important part in designing the pumping scheme. The design thus created is better and cost effective.

Constructing 26 CVPs on site taught that critical components should be procured in advance so as to meet deadlines on time.

At times delay was inevitable due to highly specific and precise requirement of spare parts, therefore it was best to rely on multiple vendors and keep the client abreast with the developments in the supply.

The most important learning of this project was Teamwork, which was the key to the success of this project

Application Engineering Capacities, proficiency in System Engineering and Teamwork lead to the accurate execution of the Sardar Sarovar Project. The innovative design and meticulous planning and execution by KBL resulted in 25% cost reduction. With lowest capital cost, high efficiency, high reliability, design simplicity, excellent corrosion resistance; KBL concrete volute pumps have proven their merit in this project. Over 4620 villages have benefited from this canal and 5.4 lakh hectares of land has been brought under irrigation. Giving the gift of water to a parched land and people, Kirloskar Brothers Limited has played a pivotal role in building the world's largest pumping scheme.