



Project at a Glance

Project Type

- *Infrastructure- IC&Ts Works*

Location

- *Wazirabad, Pakistan*

Main Products & System

- *High Available Architecture*
- *Redundant Quantum Controller*
- *Dual Redundant Ring/Ring Coupling*
- *Redundant SCADA servers*
- *IP55- Outdoor Class Enclosures*
- *Surveillance Cameras*

Main Services

- *Design, Engineering & supply of complete IC&Ts works*
- *Seamless integration of each & every equipment on barrage*
- *Controlling of 71 No. of Barrage gates*
- *Video Surveillance & Voice communication*
- *Communication with multiple nodes at distance of 200km*



Khanki headworks was constructed in the year 1892 and is one of the oldest weirs in the Subcontinent. The weir has deteriorated and outlived its life.

A new barrage is, therefore, being constructed at a distance of 900 ft. from the existing weir on the downstream side Replacement of existing headworks with a new barrage 900 feet downstream is proposed on the following basis:

- *Severe aging effect*
- *Capacity constraint*
- *Lack of effective control on river regulation*
- *Inefficient and insufficient physical communication between the two banks*

The Challenges

- *Harsh & rugged environment compliance*
- *Outdoor Enclosure passive thermal management*
- *Discharge Flow calculations of barrage*
- *Designing of High available architecture/Compliance*

Solution Implementation Methodology

The IC&T system at Khanki Barrage requires;

- Monitoring & control of Barrage Gates (main weir & under sluices)
- Monitoring & control of Lower Chenab canal gates
- Monitoring water level at upstream & downstream of barrage
- Monitoring Water discharge calculation
- Integration of supported systems (CCTV)
- Integration of logger-net in SCADA
- Monitoring of Barrage power from SCADA
- Centralized UPS for all IC&Ts equipment

Based on the system requirements a control system based on Planstructure high available architecture are provided to customer with 15 sets of redundant Quantum PAC & Vijeo Citect at front end. Process instrumentation for gate position monitoring, Water level & discharge information is interfaced with PLC. The entire network is based on Ethernet backbone where CCTV, PLC, LCP's, logger net, UPS, PCP and SCADA stations are connected.

The Solution Overview

To implement centralized Monitoring & Control system **Accrescent Engineers** proposed communication network based on the single mode fiber optic which serve as backbone of Central SCADA. Keep in mind the criticality of the system High available architectures are provided to control & monitor the whole barrage

- Quantum conformal coated control system to serve for rugged & harsh environment
- Design & Implementation of High available architecture at each level(Control, Network & SCADA)
- **Control & Monitoring System is also responsible to provide** consolidated daily report for analysis of barrage flow using Vijeo Historian
- Integration of barrage power system & communication with substation equipment
- Auxiliary system integration, Cameras & Piezometer Integration

The Benefits of Project

- Sustainable irrigation supplies to about three million acres of fertile land in seven districts of Punjab;
- Ensured safe passage of floods due to enhancement in design capacity of the new barrage; and
- Provision of communication link across the river.

The Benefits of IC&Ts

- Monitoring & control of whole field on single screen
- Low MTTR
- Trouble-free Integration & Architecture, Scalable for future expansions
- Automatically generating daily report of critical data of barrage and sending to authorized recipients

The Architecture

Please click on the attachment button for larger view.

