**Various equipment and tasks of SCADA system:**

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|  | Deep Tube-well with substation- Submersible pump house. Pump is places 400 feet deep underground to bring up water. Deep tube well pump house and surrounding facilities costs from 300,000 to 500,000 taka. Each submersible pump cost from 10, 00,000 to 16, 50,000 taka based upon capacity.  There is also electrical power distribution transformer of 150 kva to 250 kva, which costs 750000 to 1500000 takas.  There are also Electrical Cables, 4 inch water pipes and electrical panels and chlorination system in the pump house. |
|  | VFD - While not an essential instrument, a Variable Frequency Drive (VFD) is a field device that frequently interfaces with SCADA systems to control process outputs. VFD’s are used to power motors driving pumps and fans. VFD’s generate analog and discrete signals.  90 kw -110 kw VGD may cost 325,000 to 400,000 takas. |
|  | Bulk water flow meter - Price of turbine type 200 mm Bulk water meter is around 100,000 takas. |
|  | Turbidity meter - This is a turbidity meter used to measure solids in water. Price range 85,000-200,000 takas. |
|  | Valves - A gate valve, also known as a sluice valve, is a valve that opens by lifting a barrier (gate) out of the path of the fluid. Gate valves can be manually operated or automated. Valves of various types may cost 35000 to 150000 takas. |
|  | Pressure Sensor with - Price is 15000 to 45000 takas. |
|  | Water Level Sensor - Borehole Water Level Sensor for Deep Well, cost around 50000-150000 takas. |
|  | Chlorination Sensor and Monitoring - Chlorination Sensor used in DWASA SCADA System shows if the chlorination unit is active or inactive. These can monitor chlorine in the water at the time of injection and residual chlorine in the water network pipelines. Various types of these units may cost 25000 to 50000 takas. |
|  | Limit switches - Limit switches are used to automatically detect the presence of an object or to monitor movement limits of that object have been exceeded or not. Unit cost is 15000 to 65000 takas. |
|  | Float switch - A float switch detects the level of a liquid in a tank or container. Unit cost is 5000 to 40000 takas. |
|  | Relays – Relay Contact switches are used where it is necessary to control a circuit by an independent low-power signal, or where several circuits must be controlled by one signal. It consists of a set of input terminals for a single or multiple control signals, and a set of operating contact terminals. Unit cost 500 to 15000 takas. |
|  | RTU (Remote Terminal Unit) - Sensors and process controller devices are attached to remote terminal units (RTU). Multiple remote terminal units at different sites transmit the data collected to a single master station which displays the information in a browser. RTU package unit price range is 50000 – 500,000 takas. |
|  | PLC (Programmable Logic Controller) - Data from sensors on individual assets is transmitted to the PLC. The PLC translates that data into a format that can be used by the software. If the data crosses certain thresholds, a maintenance work order is created. The Programmable Logic Controller (PLC) was invented in 1968 to support the automobile industry by Bedford Associates’ engineer Dick Morley. PLC and PLC modules unit cost is 10,000 to 50,000 and up-to 100,000 takas. |
|  | OIT – Operator interface terminal OIT’s provide a local interface, typically in a remote location or into an isolated system like skid mounted equipment. Screens to display information have a simple layout since displays are not large, anywhere from 4 inches to 14 inches. Unit price 25000 to 55000 takas, |
|  | HMI (Human-Machine Interface) - An HMI or SCADA Master, can provide several helpful extensions for network alarm management of monitoring equipment. HMI software is used at the Central Control location. HMI modules may cost from 25000 to 50000 takas. |
|  | Server and Memory Storage- Rack server and external memory chips and RAM. SD memory cards, RAM, Rack Servers costs 2000, 5000, 600000 takas. |
|  | Database server, cloud storage, backup server - To store the data and operated the equipment. These may cost 700 to 35,000 takas per month per Terabyte of data - in cloud or external Dedicated backup server respectively. |
|  | Physical and mobile monitoring facility - Reading and analyzing on Desktop Computer, Laptop Computer, mobile, tablet, staff panel - To see the SCADA data and use it accordingly. Mobiles, Laptops or Note pads/tabs costs 15000 to 235000 takas. |
|  | Internet/radio frequency/GPRS - Wireless SCADA systems are the ones in which the communication between the Remote Terminal Unit (RTUs) and Human Machine Interface (HMI) is wireless in nature. General Packet Radio Service (GPRS) is the commonly used wireless technique used in wireless SCADA systems. Prices of unit range is 10,000 to 50,000 to 100,000 takas based upon model, power and capacity. The yagi is for directional transmission and the omni provides 360 degrees of transmission. |
|  | System Monitoring and Controlling Console: Control room equipment and furniture (system console) including but not limited to control console for dual redundant workstations, desk for engineering workstations. Servers, manager workstations and printer compartment along with chairs. It may cost up-to 1,00,00,000 takas to establish a basic SCADA monitoring room for a water treatment plant. |