

GOSIKURD PROJECT

Budgetary offers are invited for Design , Supply, Installation, Commissioning & Testing of SCADA operated integrated automation system for operation of Dam gates for Gosikhurd Project.

Radial Gate Size- 18.2x16.5- 33 Nos.

Sr. No.	Work Description	Unit	Qty.
1	Providing and Installing Drives on motors of Radial Gates	Sets	33
*	<p>VFD offered shall conform to the following : Make : Danfoss / Siemens / L&T (Yaskawa) / ABB/Equiv.</p> <p>to ensure smooth starting, optimal motor application speed, optimal control of the motor's frequency and voltage, better protection of motor from issues such as electro thermal overloads, phase protection, under voltage, overvoltage, etc..</p> <p>VFDs will be supplied housed in suitably sized CRCA sheet steel panel with Common Incomer MCCB (Rating : No. of VFDs x Rated Current of VFD x 1.5, Individual Isolator MCB of 20A, Run / Fault Indications, Remote / Local Selector, Run / Stop / Reset Push Buttons, Terminal Blocks, all wired with right cross section wires with printed ferrules flexible for interfacing to SCADA syatem</p>		
2	Level and Open channel Flow monitoring instruments	Sets	1
2.1	<p>Radar Level Transmitter for Upstream Level Power : Nominal 24 Vdc with max. 550 ohm Maximum Performance Range: 0.3 to 20 meters. Accuracy: ± the greater of 0.1% of range or 10 mm Mechanical Enclosure: PBT (Polybutylene Terephthalate) Sensor: Antenna material: polypropylene rod, hermetically sealed construction.</p> <p>Process Conditions : Ambient Temp: -40 to 80 deg. C Process Temperature : -40 to 85 deg C</p>	Sets	1
2.2	<p>Ultrasonic Level Transmitter, one each at LBC & RBC also on sump in L & R gallery to measure level in Open channel flow</p> <p>Performance : Range: 0.25 to 12 m</p>	Sets	4

	<p>Accuracy : +/- the greater of 0.15% range or 6 mm</p> <p>Mechanical Enclosure : PBT (Polybutylene Terephthalate)</p> <p>Process Conditions : Ambient Temp: -40 to 80 deg. C</p> <p>Process Temperature : -40 to 85 deg C</p> <p>Infrared Hand Held Programmer ONE set for 2 Transmitters</p>		
3	Rain Gauge :	Qty	5
	<p>Providing Installing and commissioning of outdoor temperature and rainfall quantity (max.30m) with temperature tendency ,indication of total rainfall quantity,of the last hour,the last 24 hour and the last rain with time and date of recording ,bar graph indication and history the last7 days ,weeks & months,rain sensor with alarm ,indication of indoor temperature ,max.-min. function , adjustable temperature alarm, Clock and date along with making proper arrangement for erection of tower at least 5 M along with fitting rain gauge & its ancillary instruments/ equipments for proper functioning of rain gauge such as solar panel with battery & wireless communication system along with the safety & anti theft arrangement for aforesaid instruments/equipments.</p>		
4	Providing, Installing, Programming and Commissioning of Various Sensors on Radial Gates & Service Gates	Sets	1
*	<p>To compute and display the following data in HMI :</p> <p>a Actual Discharge of Each Gate</p> <p>b Total Discharge per Hour / per Day</p> <p>c Area under Irrigation in Hectares / Acres</p> <p>d % Opening of Each Gate and Gate Fully Open / Closed sensing</p> <p>e Total Electrical Energy Consumption</p> <p>f Energy Consumption of Each Gate per Hour / per Day</p> <p>g Flood Sensing and remote opening/closing in Emergency</p> <p>h Remote control of Each Gate</p> <p>The following sensors are envisaged, signals includes 2 and 3:</p> <p>c Encoder for Each Gate Motor Make : Kubler / Autonix / Delta/Equiv.</p> <p>d Limit Switches for Each Gate for Open & Closed position IP67, Heavy duty, 2 NO + 2 NC Make : BCH / Jayashree/Equiv.</p> <p>e Energy Meter for Each VFD (Gate Motor)</p>		
		Nos.	33
		Nos.	66
		Nos.	33

	Multi-function Meter for measurements of Phase-wise Voltages, Phase-wise Currents, Power Factor, Frequency, Energy, Active Power, Reactive Power, communications with standard protocol Make : Schneider / Socomec / L&T/Equiv.		
5	Providing, Installing, Programming and Commissioning of Local Monitoring Panel comprising :	Sets	1
a	Alarm Annunciator - 1 No. 36 Window Make : Minilec / Proton		
b	Digital Panel Meters - 8 Nos. Make : Masibus / Selectron / Delta		
c	Necessary Power Supply - 1 Lot		
6	Providing, Installing, Programming and Commissioning of PLC / RTU	Sets	1
a	All field instruments within the vicinity of the dam shall be hard-wired to the PLC / RTU while remaining instruments shall be provided with Wireless Signal Transmission facility via GPRS / GSM. The PLC / RTU shall have the necessary Wireless Modem to demand & receive the data from these instruments via GPRS / GSM at user specified time interval. The PLC / RTU shall have 128 Digital Inputs, 80 Digital Outputs & 4 Analog Inputs for all hard-wired signals leaving approximately 20% spare I/Os over and above those used. The PLC / RTU shall have sufficient communication channels to receive data from remote field instruments over wireless network. The PLC / RTU shall have built-in Ethernet communications for interfacing to SCADA. Make : ABB / Siemens / Schneider / L&T		
b	The PLC / RTU shall be housed in suitably sized CRCA sheet steel panel with all essential components such as 24VDC SMPS, Relays, Terminal Blocks, Signal Conditioners, etc.		
7	Providing, Installing and Commissioning of Computers of SCADA :	Sets	1

	<p>a 4 U Industrial Chassis with front accessible USB/PS2 Connectors; Intel® Core™ i3 / i5 / i7 ATX with DVI/VGA, Dual Gigabit LAN, DDR3, SATA III RAM: 4 GB DDR-3, 1333 Hard Disk: 500 GB SATA Drive: DVD R/W drive Keyboard: PS/2 110 Keys Logitech Mouse: PS/2 Optical Scroll Logitech Ports: 4 Serial, 2 GLAN, 6 USB (2 front side), 1 VGA, 1 DVI and 2 PS/2 for KB & mouse Slots: 4 PCI, 1 PCIe1, 1 PCIe4, 1 PCIe16</p> <p>b Make : Advantech / Equivalent 22" TFT Color Monitor - Commercial grade Make : Samsung / LG / Philips/Equiv.</p> <p>c Latest Microsoft Windows Operating System License</p> <p>d UPS with Sealed Maintenance-free Batteries, 3kVA, Input : 415VAC, Output : 230VAC, Back-up - : 1 Hr, along with suitable power distribution panel Make : Emerson / Equiv.</p> <p>e Laser Printer, B&W, A4 Make : Canon / HP/Equiv.</p> <p>f Console for PC installation; in sheet metal, suitably designed</p> <p>g Swivel type Executive Chairs</p>	<p>Nos.</p> <p>Nos.</p> <p>Nos.</p> <p>Sets</p> <p>Nos.</p> <p>Nos.</p> <p>Nos.</p>	<p>2</p> <p>2</p> <p>2</p> <p>1</p> <p>1</p> <p>1</p> <p>3</p>
8	Providing, Installing and Commissioning of SCADA Software :	Sets	1
	<p>SCADA software in 1 Server 1 Client configuration for Graphical Display of all parameters, Alarms, Current & Historical Trends, Data Logging using suitable integral database like SQL Server or Historian, User defined Reports (Shift / Day / Month, etc.), Web based Data Availability to Remote Locations, etc. SCADA software shall be from field proven manufacturers such as GE or Wonderware or Siemens and shall have sufficient tags for covering all measured & calculated parameters as well as alarms with minimum 25% expandability in future without the need to pay extra cost for license modification. The contractor shall bear full responsibility of this requirement and incorporate the same in his proposal. SCADA software shall have hardware lock (USB key).</p> <p>Make : GE / Wonderware / Siemens</p>	Nos.	2

9	Providing and Installing Cabling & Accessories :		1
	Power Cables between VFDs & respective motors so as to make whole system functional. Any change in cable length in accordance with actual site condition viz. distance, direction has to be considered while quoting the budgetary offer.	Lot	1
	Control & Signal Cables between all hard-wired sensors to VFD Panel or PLC / RTU Panel	Lot	1
	Network & Data Cable between PLC / RTU Panel & SCADA	Lot	1
	Cabling Accessories such as Glands, Lugs, Ferrules, etc.	Lot	1
10	CCTV System	Qty	33
	CCTV Camera with Whetherproof Enclosure for each Radial gates with 90m cable each and DVR		35 Nos for 33 nos. Radial gates
11	Providing, Installing and Commissioning Wireless Network :	Sets	1
	GPRS / GSM based Modems, Serial or TCP/IP with Antenna and below minimum specifications : TCP/UDP selectable for different application DTU ID, Device ID and Password for secure connection Suitable station manager software for easy integration with SCADA Make : TCAM / Elpro / Motorola	Sets	1
12	Air-Conditioner Unit for Control Room	Qty	2
	Supplying & erecting split type room air conditioning unit 2 ton capacity 250 Volts , 50 cycles , A.C. supply having 2 Nos. of air handing units hi wall mounting type complete at position		
13	UPS	Qty	1
	UPS / Survo Stabiliser 4 KVA		
14	Power Supply cable	Per mtr.	2000
	Armoured copper 4 sq mm		
15	Providing, installing and comissioning of VFDs at Service Gates		7

	Providing, installing and comissioning of VFDs at Service Gates to be installed near Service gate, Local panel provided. Local Mains power to the existing motor considered fo Supply. Manual operation, with VFD Bypass also considered. Service Gate control Signals from VFD, Limit switch/Encoder/Level Sensors shall be via Wireless to Main Control Room.		
16	Existing DG Set Interlocking		1
	DG Set Interlock, when main power fails, system will switchover to DG, Using fast acting ATS, Automatic transfer switch OR AMF Panel		
17	Solar Power Supply in Catchment area		5
	Solar Power panels with battery and Voltage Controllers for powering Rain Gauge and Wireless transmitters		
18	Operation and Maintenance	Year	1
	Includes technical and semi-technical manpower. Local lodging (quarters) to be provided		
Notes	The contractor shall undertake full responsibility to supply, install, program, configure, test and commission the above described equipments in totality as a whole integrated system for achieving the desired functional and technical results.		

SHIRPUR PROJECT

Budgetary offers are invited for Design, Supply, Installation, Commissioning & Testing of SCADA operated integrated automation system for operation of Dam gates for Shirpur Project.

Radial Gate Size- 12.19 x 4.88 m- 7 nos

Sr. No.	Work Description	Unit	Qty.
1	Providing and Installing Drives on motors of Radial Gates	Sets	7
*	<p>VFD offered shall conform to the following :</p> <p>Make : Danfoss / Siemens / L&T (Yaskawa) / ABB</p> <p>to ensure smooth starting, optimal motor application speed, optimal control of the motor's frequency and voltage, better protection of motor from issues such as electro thermal overloads, phase protection, under voltage, overvoltage, etc..</p> <p>VFDs will be supplied housed in suitably sized CRCA sheet steel panel with Common Incomer MCCB (Rating : No. of VFDs x Rated Current of VFD x 1.5, Individual Isolator MCB of 20A, Run / Fault Indications, Remote / Local Selector, Run / Stop / Reset Push Buttons, Terminal Blocks, all wired with right cross section wires with printed ferrules flexible for interfacing to SCADA system</p>		
2	Level and Open channel Flow monitoring instruments	Sets	1
2.1	<p>Radar Level Transmitter for Upstream Level</p> <p>Power : Nominal 24 Vdc with max. 550 ohm Maximum</p> <p>Performance Range: 0.3 to 20 meters.</p> <p>Accuracy: ± the greater of 0.1% of range or 10 mm</p> <p>Mechanical Enclosure: PBT (Polybutylene Terephthalate)</p> <p>Sensor: Antenna material: polypropylene rod, hermetically sealed construction.</p> <p>Process Conditions : Ambient Temp: - 40 to 80 deg.C</p> <p>Process Temp: - 40 to 80 deg.C</p>	Sets	1

2.2	<p>Ultrasonic Level Transmitter, one each at Service gate for Open channel flow</p> <p>Performance : Range: 0.25 to 12 m Accuracy : +/- the greater of 0.15% range or 6 mm Mechanical Enclosure : PBT (Polybutylene Terephthalate)</p> <p>Process Conditions : Ambient Temp: -40 to 80 deg. C Process Temperature : -40 to 85 deg C</p> <p>Infrared Hand Held Programmer ONE set for 2 Transmitters</p>	Sets	3
3	Rain Gauge :	Qty	5
	<p>Providing Installing and commissioning of outdoor temperature and rainfall quantity (max.30m) with temperature tendency ,indication of total rainfall quantity,of the last hour,the last 24 hour and the last rain with time and date of recording ,bar graph indication and history the last7 days ,weeks & months,rain sensor with alarm ,indication of indoor temperature ,max.-min. function , adjustable temperature alarm, Clock and date along with making proper arrangements for erection of tower at least 5 m along with fitting rain gauge and its ancillary instruments/ equipments for proper functioning of rain gauge such as solar panel with battery and wireless communication system along with the safety and antitheft arrangement for aforesaid instruments/ equipments.</p>		
4	Providing, Installing, Programming and Commissioning of Various Sensors on Radial Gates & Service Gates	Sets	1
*	<p>To compute and display the following data in HMI :</p> <p>a Actual Discharge of Each Gate b Total Discharge per Hour / per Day c Area under Irrigation in Hectares / Acres d % Opening of Each Gate and Gate Fully Open / Closed sensing e Total Electrical Energy Consumption f Energy Consumption of Each Gate per Hour / per Day g Flood Sensing and remote opening/closing in Emergency h Remote control of Each Gate</p> <p>The following sensors are envisaged, signals includes 2 and 3:</p> <p>c Encoder for Each Gate Motor Make : Kubler / Autonix / Delta</p> <p>d Limit Switches for Each Gate for Open & Closed position IP67, Heavy duty, 2 NO + 2 NC</p>	Nos.	7 14

e	<p>Make : BCH / Jayashree</p> <p>Energy Meter for Each VFD (Gate Motor)</p> <p>Multi-function Meter for measurements of Phase-wise Voltages, Phase-wise Currents, Power Factor, Frequency, Energy, Active Power, Reactive Power, Total Harmonics</p> <p>RS-485 / RS-232 communications with standard protocol</p> <p>Make : Schneider / Socomec / L&T/ equivalent</p>	Nos.	7
5	Providing, Installing, Programming and Commissioning of Local Monitoring Panel comprising :	Sets	1
a	<p>Alarm Annunciator - 1 No.</p> <p>36 Window</p> <p>Make : Minilec / Proton</p>		
b	<p>Digital Panel Meters - 8 Nos.</p> <p>Make : Masibus / Selectron / Delta</p>		
c	<p>Necessary Power Supply - 1 Lot</p>		
6	Providing, Installing, Programming and Commissioning of PLC / RTU	Sets	1
a	<p>All field instruments within the vicinity of the dam shall be hard-wired to the PLC / RTU while remaining instruments shall be provided with Wireless Signal Transmission facility via GPRS / GSM. The PLC / RTU shall have the necessary Wireless Modem to demand & receive the data from these instruments via GPRS / GSM at user specified time interval.</p> <p>The PLC / RTU shall have 128 Digital Inputs, 80 Digital Outputs & 4 Analog Inputs for all hard-wired signals leaving approximately 20% spare I/Os over and above those used.</p> <p>The PLC / RTU shall have sufficient communication channels to receive data from remote field instruments over wireless network.</p> <p>The PLC / RTU shall have built-in Ethernet communications for interfacing to SCADA.</p> <p>Make : ABB / Siemens / Schneider / L&T</p>		
b	<p>The PLC / RTU shall be housed in suitably sized CRCA sheet steel panel with all essential components such as 24VDC SMPS, Relays, Terminal Blocks, Signal Conditioners, etc.</p>		
7	Providing, Installing and Commissioning of Computers of SCADA :	Sets	1

	<p>4 U Industrial Chassis with front accessible USB/PS2 Connectors; Intel® Core™ i3 / i5 / i7 ATX with DVI/VGA, Dual Gigabit LAN, DDR3, SATA III CPU cooler for 4U and wall mount chassis CPU: Intel Core i3, 3.3GHz -2120 RAM: 4 GB DDR-3, 1333 a Hard Disk: 500 GB SATA Drive: DVD R/W drive Keyboard: PS/2 110 Keys Logitech Mouse: PS/2 Optical Scroll Logitech Ports: 4 Serial, 2 GLAN, 6 USB (2 front side), 1 VGA, 1DVI and 2 PS/2 for KB & mouse Slots: 4 PCI, 1 PClex1, 1 PClex4, 1 PClex16</p> <p>Make : Advantech / Equivalent</p> <p>b 22" TFT Color Monitor - Commercial grade Make : Samsung / LG / Philips</p> <p>c Microsoft Windows Operating System License</p> <p>d UPS with Sealed Maintenance-free Batteries, 3kVA, Input : 415VAC, Output : 230VAC, Back-up - : 1 Hr, along with suitable power distribution panel Make : Emerson / Equiv.</p> <p>e Laser Printer, B&W, A4 Make : Canon / HP</p> <p>f Console for PC installation; in sheet metal, suitably designed</p> <p>g Swivel type Executive Chairs</p>	<p>Nos.</p> <p>Nos.</p> <p>Nos.</p> <p>Sets</p> <p>Nos.</p> <p>Nos.</p> <p>Nos.</p> <p>Nos.</p>	<p>2</p> <p>2</p> <p>2</p> <p>1</p> <p>1</p> <p>1</p> <p>2</p>
8	Providing, Installing and Commissioning of SCADA Software :	Sets	1

	<p>SCADA software in 1 Server 1 Client configuration for Graphical Display of all parameters, Alarms, Current & Historical Trends, Data Logging using suitable integral database like SQL Server or Historian, User defined Reports (Shift / Day / Month, etc.), Web based Data Availability to Remote Locations, etc. SCADA software shall be from field proven manufacturers such as GE or Wonderware or Siemens and shall have sufficient tags for covering all measured & calculated parameters as well as alarms with minimum 25% expandability in future without the need to pay extra cost for license modification. The contractor shall bear full responsibility of this requirement and incorporate the same in his proposal. SCADA software shall have hardware lock (USB key).</p> <p>Make : GE / Wonderware / Siemens</p>	Nos.	2
9	Providing and Installing Cabling & Accessories :		1
	Power Cables between VFDs & respective motors	Lot	1
	Control & Signal Cables between all hard-wired sensors to VFD Panel or PLC / RTU Panel	Lot	1
	Network & Data Cable between PLC / RTU Panel & SCADA	Lot	1
	Cabling Accessories such as Glands, Lugs, Ferrules, etc.	Lot	1
10	CCTV System	Qty	7
	CCTV Camera with Weatherproof Enclosure for each Radial gates with 90m cable each and DVR		7 Nos for 7 nos. Radial gates
11	Providing, Installing and Commissioning Wireless Network :	Sets	1
	<p>GPRS / GSM based Modems, Serial or TCP/IP with Antenna and below minimum specifications :</p> <p>TCP/UDP selectable for different application</p> <p>DTU ID, Device ID and Password for secure connection</p> <p>Client / Server mode</p> <p>Self diagnose and self recovery</p> <p>GPRS class 10</p> <p>TCP/UCP protocol</p> <p>5K data buffer for reliable transfer</p> <p>Suitable station manager software for easy integration with SCADA</p> <p>Make : TCAM / Elpro / Motorola</p>	Sets	1
12	Air-Conditioner Unit for Control Room	Qty	2

	Supplying & erecting split type room air conditioning unit 2 ton capacity 250 Volits , 50 cycles , A.C. supply having 2 Nos. of air handing units hi wall mounting type complete at position		
13	UPS	Qty	1
	UPS / Survo Stabiliser 4 KVA		
14	Power Supply cable	Per mtr.	1000
	Armoured copper 4 sq mm		
15	Providing, installing and comissioning of VFDs at Service Gates		2
	Providing, installing and comissioning of VFDs at Service Gates to be installed near Service gate, Local panel provided. Local Mains power to the existing motor considered fo Supply. Manual operation, with VFD Bypass also considered. Service Gate control Signals from VFD, Limit switch/Encoder/Level Sensors shall be via Wireless to Main Control Room.		
16	Existing DG Set Interlocking		1
	DG Set Interlock, when main power fails, system will switchover to DG, Using fast acting ATS, Automatic transfer switch OR AMF Panel		
17	Solar Power Supply in Catchment area		5
	Solar Power panels with battery and Voltage Controllers for powering Rain Gauge and Wireless transmitters		
18	Operation and Maintence	Year	1
	Includes technical and semi-technical manpower. Local lodging (quarters) to be provided		
Notes	The contractor shall undertake full responsibility to supply, install, program, configure, test and commission the above described equipments in totality as a whole integrated system for achieving the desired functional and technical results.		

NAND PROJECT

Budgetary offers are invited for Design, Supply, Installation, Commissioning & Testing of SCADA operated integrated automation system for operation of Dam gates for Nand Project.

Radial Gate Size- 12 x 6.5 m - 7 nos

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1	Providing and Installing Drives on motors of Radial Gates	Sets	7
*	<p>VFD offered shall conform to the following :</p> <p>Make : Danfoss / Siemens / L&T (Yaskawa) / ABB</p> <p>to ensure smooth starting, optimal motor application speed, optimal control of the motor's frequency and voltage, better protection of motor from issues such as electro thermal overloads, phase protection, under voltage, overvoltage, etc..</p> <p>VFDs will be supplied housed in suitably sized CRCA sheet steel panel with Common Incomer MCCB (Rating : No. of VFDs x Rated Current of VFD x 1.5, Individual Isolator MCB of 20A, Run / Fault Indications, Remote / Local Selector, Run / Stop / Reset Push Buttons, Terminal Blocks, all wired with right cross section wires with printed ferrules flexible for interfacing to SCADA system</p>		
2	Level and Open channel Flow monitoring instruments	Sets	1
2.1	<p>Radar Level Transmitter for Upstream Level</p> <p>Power : Nominal 24 Vdc with max. 550 ohm Maximum Performance Range: 0.3 to 20 meters.</p> <p>Mechanical Enclosure: PBT (Polybutylene Terephthalate)</p> <p>Sensor: Antenna material: polypropylene rod, hermetically sealed construction.</p> <p>Process Conditions</p> <p>Ambient Temp: - 40 to 80 deg.C</p> <p>Process Temp: - 40 to 80 deg.C</p>	Sets	1
2.2	<p>Ultrasonic Level Transmitter, one each at Service gate for Open channel flow</p> <p>Performance : Range: 0.25 to 12 m</p>	Sets	2

	<p>Accuracy : +/- the greater of 0.15% range or 6 mm</p> <p>Mechanical Enclosure : PBT (Polybutylene Terephthalate)</p> <p>Process Conditions : Ambient Temp: -40 to 80 deg. C</p> <p>Process Temperature : -40 to 85 deg C</p> <p>Infrared Hand Held Programmer ONE set for 2 Transmitters</p>		
3	Rain Gauge :	Qty	5
	<p>Providing Installing and commissioning of outdoor temperature and rainfall quantity (max.30m) with temperature tendency ,indication of total rainfall quantity,of the last hour,the last 24 hour and the last rain with time and date of recording ,bar graph indication and history the last7 days ,weeks & months,rain sensor with alarm ,indication of indoor temperature ,max.-min. function , adjustable temperature alarm, Clock and datealong with making proper arrangements for erection of tower at least 5 m along with fitting rain gauge and its anciliary instruments/ equipments for proper functioning of rain gauge such as solar panel with battery and wireless communication system along with the safety and antitheft arrangement for aforesaid instruments/ equipments.</p>		
4	Providing, Installing, Programming and Commissioning of Various Sensors on Radial Gates & Service Gates	Sets	1
*	<p>To compute and display the following data in HMI :</p> <p>a Actual Discharge of Each Gate</p> <p>b Total Discharge per Hour / per Day</p> <p>c Area under Irrigation in Hectares / Acres</p> <p>d % Opening of Each Gate and Gate Fully Open / Closed sensing</p> <p>e Total Electrical Energy Consumption</p> <p>f Energy Consumption of Each Gate per Hour / per Day</p> <p>g Flood Sensing and remote opening/closing in Emergency</p> <p>h Remote control of Each Gate</p> <p>The following sensors are envisaged, signals includes 2 and 3:</p> <p>c Encoder for Each Gate Motor Make : Kubler / Autonix / Delta</p> <p>d Limit Switches for Each Gate for Open & Closed position IP67, Heavy duty, 2 NO + 2 NC Make : BCH / Jayashree/ equivalent</p> <p>e Energy Meter for Each VFD (Gate Motor)</p>		
		Nos.	7
		Nos.	14
		Nos.	7

	Multi-function Meter for measurements of Phase-wise Voltages, Phase-wise Currents, Power Factor, Frequency, Energy, Active Power, Reactive Power, Total Harmonics Make : Schneider / Socomec / L&T/ equivalent		
5	Providing, Installing, Programming and Commissioning of Local Monitoring Panel comprising :	Sets	1
a	Alarm Annunciator - 1 No. 36 Window Make : Minilec / Proton		
b	Digital Panel Meters - 8 Nos. Make : Masibus / Selectron / Delta		
c	Necessary Power Supply - 1 Lot		
6	Providing, Installing, Programming and Commissioning of PLC / RTU	Sets	1
a	All field instruments within the vicinity of the dam shall be hard-wired to the PLC / RTU while remaining instruments shall be provided with Wireless Signal Transmission facility via GPRS / GSM. The PLC / RTU shall have the necessary Wireless Modem to demand & receive the data from these instruments via GPRS / GSM at user specified time interval. The PLC / RTU shall have 128 Digital Inputs, 80 Digital Outputs & 4 Analog Inputs for all hard-wired signals leaving approximately 20% spare I/Os over and above those used. The PLC / RTU shall have sufficient communication channels to receive data from remote field instruments over wireless network. The PLC / RTU shall have built-in Ethernet communications for interfacing to SCADA. Make : ABB / Siemens / Schneider / L&T		
b	The PLC / RTU shall be housed in suitably sized CRCA sheet steel panel with all essential components such as 24VDC SMPS, Relays, Terminal Blocks, Signal Conditioners, etc.		
7	Providing, Installing and Commissioning of Computers of SCADA :	Sets	1

	<p>4 U Industrial Chassis with front accessible USB/PS2 Connectors; Intel® Core™ i3 / i5 / i7 ATX with DVI/VGA, Dual Gigabit LAN, DDR3, SATA III CPU cooler for 4U and wall mount chassis CPU: Intel Core i3, 3.3GHz -2120 RAM: 4 GB DDR-3, 1333</p> <p>a Hard Disk: 500 GB SATA Drive: DVD R/W drive Keyboard: PS/2 110 Keys Logitech Mouse: PS/2 Optical Scroll Logitech Ports: 4 Serial, 2 GLAN, 6 USB (2 front side), 1 VGA, 1DVI and 2 PS/2 for KB & mouse Slots: 4 PCI, 1 PClex1, 1 PClex4, 1 PClex16</p> <p>Make : Advantech / Equivalent</p> <p>b 22" TFT Color Monitor - Commercial grade Make : Samsung / LG / Philips</p> <p>c Microsoft Windows Operating System License</p> <p>d UPS with Sealed Maintenance-free Batteries, 3kVA, Input : 415VAC, Output : 230VAC, Back-up - : 1 Hr, along with suitable power distribution panel Make : Emerson / Equiv.</p> <p>e Laser Printer, B&W, A4 Make : Canon / HP</p> <p>f Console for PC installation; in sheet metal, suitably designed</p> <p>g Swivel type Executive Chairs</p>	<p>Nos.</p> <p>Nos.</p> <p>Nos.</p> <p>Sets</p> <p>Nos.</p> <p>Nos.</p> <p>Nos.</p> <p>Nos.</p>	<p>2</p> <p>2</p> <p>2</p> <p>1</p> <p>1</p> <p>2</p> <p>2</p>
<p>8</p>	<p>Providing, Installing and Commissioning of SCADA Software :</p>	<p>Sets</p>	<p>1</p>
	<p>SCADA software in 1 Server 1 Client configuration for Graphical Display of all parameters, Alarms, Current & Historical Trends, Data Logging using suitable integral database like SQL Server or Historian, User defined Reports (Shift / Day / Month, etc.), Web based Data Availability to Remote Locations, etc. SCADA software shall be from field proven manufacturers such as GE or Wonderware or Siemens and shall have sufficient tags for covering all measured & calculated parameters as well as alarms with minimum 25% expandability in future without the need to pay extra cost for license modification. The contractor shall bear full responsibility of this requirement and incorporate the same in his proposal. SCADA software shall have hardware lock (USB key).</p> <p>Make : GE / Wonderware / Siemens</p>	<p>Nos.</p>	<p>2</p>

9	Providing and Installing Cabling & Accessories :		1
	Power Cables between VFDs & respective motors	Lot	1
	Control & Signal Cables between all hard-wired sensors to VFD Panel or PLC / RTU Panel	Lot	1
	Network & Data Cable between PLC / RTU Panel & SCADA	Lot	1
	Cabling Accessories such as Glands, Lugs, Ferrules, etc.	Lot	1
10	CCTV System	Qty	7
	CCTV Camera with Weatherproof Enclosure for each Radial gates with 90m cable each and DVR		7 Nos for 7 nos. Radial gates
11	Providing, Installing and Commissioning Wireless Network :	Sets	1
	GPRS / GSM based Modems, Serial or TCP/IP with Antenna and below minimum specifications : TCP/UDP selectable for different application DTU ID, Device ID and Password for secure connection Client / Server mode Self diagnose and self recovery GPRS class 10 TCP/UCP protocol 5K data buffer for reliable transfer Suitable station manager software for easy integration with SCADA Make : TCAM / Elpro / Motorola	Sets	1
12	Air-Conditioner Unit for Control Room	Qty	2
	Supplying & erecting split type room air conditioning unit 2 ton capacity 250 Volts , 50 cycles , A.C. supply having 2 Nos. of air handing units hi wall mounting type complete at position		
13	UPS	Qty	1
	UPS / Survo Stabiliser 4 KVA		
14	Power Supply cable	Per mtr.	1000
	Armoured copper 4 sq mm		
15	Providing, installing and comissioning of VFDs at Service Gates		2

Providing, installing and commissioning of VFDs at Service Gates to be installed near Service gate, Local panel provided. Local Mains power to the existing motor considered for Supply. Manual operation, with VFD Bypass also considered. Service Gate control Signals from VFD, Limit switch/Encoder/Level Sensors shall be via Wireless to Main Control Room.

16	Existing DG Set Interlocking		1
	DG Set Interlock, when main power fails, system will switchover to DG, Using fast acting ATS, Automatic transfer switch OR AMF Panel		
17	Solar Power Supply in Catchment area		5
	Solar Power panels with battery and Voltage Controllers for powering Rain Gauge and Wireless transmitters		
18	Operation and Maintenance	Year	1
	Includes technical and semi-technical manpower. Local lodging (quarters) to be provided		
Notes	The contractor shall undertake full responsibility to supply, install, program, configure, test and commission the above described equipments in totality as a whole integrated system for achieving the desired functional and technical results.		

WADGAON PROJECT

Budgetary offers are invited for Design, Supply, Installation, Commissioning & Testing of SCADA operated integrated automation system for operation of Dam gates for Wadgaon Project.

Radial Gate Size- 12 x 6.5 m - 21 nos

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1	Providing and Installing Drives on motors of Radial Gates	Sets	21
*	<p>VFD offered shall conform to the following :</p> <p>Make : Danfoss / Siemens / L&T (Yaskawa) / ABB</p> <p>to ensure smooth starting, optimal motor application speed, optimal control of the motor's frequency and voltage, better protection of motor from issues such as electro thermal overloads, phase protection, under voltage, overvoltage, etc..</p> <p>VFDs will be supplied housed in suitably sized CRCA sheet steel panel with Common Incomer MCCB (Rating : No. of VFDs x Rated Current of VFD x 1.5, Individual Isolator MCB of 20A, Run / Fault Indications, Remote / Local Selector, Run / Stop / Reset Push Buttons, Terminal Blocks, all wired with right cross section wires with printed ferrules flexible for interfacing to SCADA system</p>		
2	Level and Open channel Flow monitoring instruments	Sets	1
2.1	<p>Radar Level Transmitter for Upstream Level</p> <p>Power : Nominal 24 Vdc with max. 550 ohm Maximum</p> <p>Performance Range: 0.3 to 20 meters.</p> <p>Accuracy: ± the greater of 0.1% of range or 10 mm</p> <p>Mechanical Enclosure: PBT (Polybutylene Terephthalate)</p> <p>Sensor: Antenna material: polypropylene rod, hermetically sealed construction.</p> <p>Process Conditions</p> <p>Ambient Temp: - 40 to 80 deg.C</p> <p>Process Temp: - 40 to 80 deg.C</p>	Sets	1
2.2	Ultrasonic Level Transmitter, one each at Service gate for Open channel flow	Sets	2

	<p>Performance : Range: 0.25 to 12 m</p> <p>Accuracy : +/- the greater of 0.15% range or 6 mm</p> <p>Mechanical Enclosure : PBT (Polybutylene Terephthalate)</p> <p>Process Conditions : Ambient Temp: -40 to 80 deg. C</p> <p>Process Temperature : -40 to 85 deg C</p> <p>Infrared Hand Held Programmer ONE set for 2 Transmitters</p>		
3	Rain Gauge :	Qty	5
	<p>Providing Installing and commissioning of outdoor temperature and rainfall quantity (max.30m) with temperature tendency ,indication of total rainfall quantity,of the last hour,the last 24 hour and the last rain with time and date of recording ,bar graph indication and history the last7 days ,weeks & months,rain sensor with alarm ,indication of indoor temperature ,max.-min. function , adjustable temperature alarm, Clock and datealong with making proper arrangements for erection of tower at least 5 m along with fitting rain gauge and its ancillary instruments/ equipments for proper functioning of rain gauge such as solar panel with battery and wireless communication system along with the safety and antitheft arrangement for aforesaid instruments/ equipments.</p>		
4	Providing, Installing, Programming and Commissioning of Various Sensors on Radial Gates & Service Gates	Sets	1
*	To compute and display the following data in HMI :		
a	Actual Discharge of Each Gate		
b	Total Discharge per Hour / per Day		
c	Area under Irrigation in Hectares / Acres		
d	% Opening of Each Gate and Gate Fully Open / Closed sensing		
e	Total Electrical Energy Consumption		
f	Energy Consumption of Each Gate per Hour / per Day		
g	Flood Sensing and remote opening/closing in Emergency		
h	Remote control of Each Gate		
	The following sensors are envisaged, signals includes 2 and 3:		
c	Encoder for Each Gate Motor Make : Kubler / Autonix / Delta	Nos.	21
d	Limit Switches for Each Gate for Open & Closed position IP67, Heavy duty, 2 NO + 2 NC Make : BCH / Jayashree	Nos.	42

e	Energy Meter for Each VFD (Gate Motor) Multi-function Meter for measurements of Phase-wise Voltages, Phase-wise Currents, Power Factor, Frequency, Energy, Active Power, Reactive Power, Total Harmonics Make : Schneider / Socomec / L&T/ equivalent	Nos.	21
5	Providing, Installing, Programming and Commissioning of Local Monitoring Panel comprising :	Sets	1
a	Alarm Annunciator - 1 No. 36 Window Make : Minilec / Proton		
b	Digital Panel Meters - 8 Nos. Make : Masibus / Selectron / Delta		
c	Necessary Power Supply - 1 Lot		
6	Providing, Installing, Programming and Commissioning of PLC / RTU	Sets	1
a	All field instruments within the vicinity of the dam shall be hard-wired to the PLC / RTU while remaining instruments shall be provided with Wireless Signal Transmission facility via GPRS / GSM. The PLC / RTU shall have the necessary Wireless Modem to demand & receive the data from these instruments via GPRS / GSM at user specified time interval. The PLC / RTU shall have 128 Digital Inputs, 80 Digital Outputs & 4 Analog Inputs for all hard-wired signals leaving approximately 20% spare I/Os over and above those used. The PLC / RTU shall have sufficient communication channels to receive data from remote field instruments over wireless network. The PLC / RTU shall have built-in Ethernet communications for interfacing to SCADA. Make : ABB / Siemens / Schneider / L&T		
b	The PLC / RTU shall be housed in suitably sized CRCA sheet steel panel with all essential components such as 24VDC SMPS, Relays, Terminal Blocks, Signal Conditioners, etc.		
7	Providing, Installing and Commissioning of Computers of SCADA :	Sets	1

	<p>4 U Industrial Chassis with front accessible USB/PS2 Connectors; Intel® Core™ i3 / i5 / i7 ATX with DVI/VGA, Dual Gigabit LAN, DDR3, SATA III CPU cooler for 4U and wall mount chassis CPU: Intel Core i3, 3.3GHz -2120 RAM: 4 GB DDR-3, 1333 a Hard Disk: 500 GB SATA Drive: DVD R/W drive Keyboard: PS/2 110 Keys Logitech Mouse: PS/2 Optical Scroll Logitech Ports: 4 Serial, 2 GLAN, 6 USB (2 front side), 1 VGA, 1DVI and 2 PS/2 for KB & mouse Slots: 4 PCI, 1 PClex1, 1 PClex4, 1 PClex16</p> <p>Make : Advantech / Equivalent</p> <p>b 22" TFT Color Monitor - Commercial grade Make : Samsung / LG / Philips</p> <p>c Microsoft Windows Operating System License</p> <p>d UPS with Sealed Maintenance-free Batteries, 3kVA, Input : 415VAC, Output : 230VAC, Back-up - : 1 Hr, along with suitable power distribution panel Make : Emerson / Equiv.</p> <p>e Laser Printer, B&W, A4 Make : Canon / HP</p> <p>f Console for PC installation; in sheet metal, suitably designed</p> <p>g Swivel type Executive Chairs</p>	<p>Nos.</p> <p>Nos.</p> <p>Nos.</p> <p>Sets</p> <p>Nos.</p> <p>Nos.</p> <p>Nos.</p> <p>Nos.</p>	<p>2</p> <p>2</p> <p>2</p> <p>1</p> <p>1</p> <p>1</p> <p>2</p>
8	Providing, Installing and Commissioning of SCADA Software :	Sets	1

	<p>SCADA software in 1 Server 1 Client configuration for Graphical Display of all parameters, Alarms, Current & Historical Trends, Data Logging using suitable integral database like SQL Server or Historian, User defined Reports (Shift / Day / Month, etc.), Web based Data Availability to Remote Locations, etc. SCADA software shall be from field proven manufacturers such as GE or Wonderware or Siemens and shall have sufficient tags for covering all measured & calculated parameters as well as alarms with minimum 25% expandability in future without the need to pay extra cost for license modification. The contractor shall bear full responsibility of this requirement and incorporate the same in his proposal. SCADA software shall have hardware lock (USB key).</p> <p>Make : GE / Wonderware / Siemens</p>	Nos.	2
9	Providing and Installing Cabling & Accessories :		1
	Power Cables between VFDs & respective motors	Lot	1
	Control & Signal Cables between all hard-wired sensors to VFD Panel or PLC / RTU Panel	Lot	1
	Network & Data Cable between PLC / RTU Panel & SCADA	Lot	1
	Cabling Accessories such as Glands, Lugs, Ferrules, etc.	Lot	1
10	CCTV System	Qty	21
	CCTV Camera with Weatherproof Enclosure for each Radial gates with 90m cable each and DVR		21Nos for 21 nos. Radial gates
11	Providing, Installing and Commissioning Wireless Network :	Sets	1
	<p>GPRS / GSM based Modems, Serial or TCP/IP with Antenna and below minimum specifications :</p> <p>TCP/UDP selectable for different application</p> <p>DTU ID, Device ID and Password for secure connection</p> <p>Client / Server mode</p> <p>Self diagnose and self recovery</p> <p>GPRS class 10</p> <p>TCP/UCP protocol</p> <p>5K data buffer for reliable transfer</p> <p>Suitable station manager software for easy integration with SCADA</p> <p>Make : TCAM / Elpro / Motorola</p>	Sets	1

12	Air-Conditioner Unit for Control Room	Qty	2
	Supplying & erecting split type room air conditioning unit 2 ton capacity 250 Volts , 50 cycles , A.C. supply having 2 Nos. of air handing units hi wall mounting type complete at position		
13	UPS	Qty	1
	UPS / Survo Stabiliser 4 KVA		
14	Power Supply cable	Per mtr.	1500
	Armoured copper 4 sq mm		
15	Providing, installing and comissioning of VFDs at Service Gates		2
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