GPRS/GSM BASED WATER DISTRIBUTION & CONTROL

Presented by Ghaziabad Nagar Nigam

“At Work for Better Life, Better World For All”
Conventional Control

- Increasing population increases demand of water
- Water sources are limited and shrinking
- Situation demands highly reliable water supply
- Frequent break downs in pumping stations
- Erratic power supply
- Delayed information of break down
- Dissatisfied public
- Human errors
Conventional Control

- Operator required on every site
- Manual ON/OFF of pumps
- It is possible that when tube well operators are available, there is no power supply, or else when the power supply is available, there is no operator to start the tube well pump.
- Operation outsourced leading to high financial burden
- Not much protection for the motors
- Scattered locations, no log books
- Total human dependent
- No cross check on rewinded motors
- No check on minimum and maximum hours of operation
- Continuous running and over spill due to neglect.
- No repeatability in operations.
Conventional Control

- Difficulty in locating and informing about the fault.
- Bore-Wells have DOL starter, and do not have Relay protection of short circuit, overload, under-load and phase failure. This can cause equipment failure.
- Bore wells do not have facility of measuring and collecting data such as Pressure, Flow and alarms.
- No provision for Power metering and consumption report for Power
Parameter Monitoring

- Voltage of each phase
- Current in each phase
- Power Consumption
- PF
- KW each phase and total
- Total pumping Hours
- Header Pressure
- Faults
- Any Tripping
- Chlorination Pump control
System Architecture

Central Control Station
SCADA for remote Monitoring & Control
Logging of:
Operation & Faults
for each circuit/zone/district

Printer

GSM Modem

PSTN Modem

Gprs/Gsm

controller

SMS

District #1

Zone #1

District #2

Zone #2

District #3

Zone #3

District #4

Zone #4

District #12

Energy Meter

GSM Fax Controller
ADVANTAGES OF PUMP AUTOMATION

- Programmable Real time operation of pump.
- Avoids unnecessary pumping, prevents over flow and dry runs.
- Ensuring addition of chlorine
- SMS to Maintenance Field staff on event of faults
- Improved Equipment life
- Improved life of Piping, avoids water hammering during start and stop
- Energy saving
- Remote energy Metering
- Report of Operating and Non operating pumps
- Power quality analysis
- Consumption Alarm
- Working Hour report
- Simplified maintenance
ADVANTAGES OF PUMP AUTOMATION

- Real time Control
- Area Specific Settings
- Automatic Report Generation for Day/Month/Year
- One time programming takes care of whole year switching requirements
- No modification required, Just installed and start operation
- Reduce manpower overheads and dependency
- Report for month, or year with one touch of button
- Increased efficiency of water supply
- Satisfied public
- Transparency in the system
- Access to the system can be given to public
- Immediate response
Ghaziabad Nagar Nigam, Uttar-Pradesh Tubewell Automation System

Login

Username

Password

Login
Ghaziabad Nagar Nigam, Uttar-Pradesh
Tubewell Automation System

Welcome You are logged in as: admin

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<table>
<thead>
<tr>
<th>ZONE</th>
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<th>LOCATION</th>
<th>STATION</th>
<th>DESCRIPTION</th>
<th>TIME</th>
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Pump is ON

**Metering**
- Amp R: 25 A
- Amp Y: 23.9 A
- Amp B: 24.5 A
- Voltage R: 228.57 V
- Voltage Y: 229.26 V
- Voltage B: 221.33 V

**Pump Status**
- Pump Mode: Auto

**Pump Schedule**
- T1: 05:00 - 08:00
- T2: 11:00 - 15:00
- T3: 17:00 - 20:00

**Device Status**
- SL Voltage: 24.2 V
- Temperature: 41°C
- Data Stamp: 2011-04-13 12:46:03

**Power Reading**
- Power: ON
- KWH: 4370
- Offset: 0.00

**Pressure & Flow**
- Pressure
Pump is OFF

Metering

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<th>Amp R</th>
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<td>Voltage Y</td>
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Pump Status

- **Pump Mode**: Manual

Pump Schedule

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<tr>
<th>OPTION</th>
<th>On(hrs)</th>
<th>Off(hrs)</th>
<th>Ext(hrs)</th>
<th>Threshold (%)</th>
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<td>T3</td>
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</table>

Device Status

- **SL Voltage**: 24.4 V
- **Temperature**: 26°C
- **Io Stamp**: 2011-04-13 13:03:51
- **Vt Stamp**: 2011-04-13 13:03:51

Power Reading

- **Power**: ON
- **KWH**: 4669
- **Offset**: 0.00

Pressure & Flow

- **Pressure**
### Pump Status

**Pump Mode**: Manual

**Pump is OFF**

### Pump Schedule

<table>
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<tr>
<th>OPTION</th>
<th>On(hrs)</th>
<th>Off(hrs)</th>
<th>Ext(hrs)</th>
<th>Threshold (%)</th>
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</table>

### Device Status

- **SL Voltage**: 3.9 V
- **Temperature**: 30°C
- **Io Stamp**: 2011-04-13 13:05:06
- **Vt Stamp**: 2011-04-13 13:05:07
- **Data Stamp**: 2011-04-13 10:50:37

### Power Reading

- **Power**: OFF
- **KVII**: 11761
- **Offset**: 0.00

### Pressure & Flow

- **Pressure**
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**Report Type**
- Alert Report
- Pump Operation Report
- Detail Report

<table>
<thead>
<tr>
<th>Date</th>
<th>From: 2012-06-13</th>
<th>To: 2012-06-13</th>
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<tbody>
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<td>Zone</td>
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<td>Location</td>
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<tr>
<td>Station</td>
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</table>

[Get Report]
Ghaziabad Nagar Nigam, Uttar Pradesh
Tubewell Automation System

Alert Report

For The Period
From Date: 2012-06-13 To Date 2012-06-13
Zone: City Zone SubZone: Lohia Nagar Location: Dinaghari Park Station: 004

<table>
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<tr>
<th>ALARM NO.</th>
<th>DESCRIPTION</th>
<th>START TIME</th>
<th>END TIME</th>
<th>WORKING</th>
<th>NON WORK</th>
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<tr>
<td>28184460</td>
<td>High voltage Alarm. R:260.959 Y:225.719 B:240.051</td>
<td>2012-06-13 05:02:51</td>
<td>2012-06-13 05:12:51</td>
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<td>28186449</td>
<td>Pump running in manual mode.</td>
<td>2012-06-13 05:24:23</td>
<td>2012-06-13 06:36:59</td>
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### Pump Operation Report

**For The Period**
**From Date:** 2012-06-13 **To Date:** 2012-06-13
**Zone:** All **SubZone:** All **Location:** All **Station:** all

<table>
<thead>
<tr>
<th>Zone</th>
<th>Sub Zone</th>
<th>Location</th>
<th>Station No.</th>
<th>Total hours</th>
<th>Pump Running Hours</th>
<th>Power failure Hours</th>
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### Detail Report

**For The Period**
From Date: 2012-06-13 To Date: 2012-06-13
Zone: City Zone SubZone: Lchia Nagar Location: Dinaghari Park Station: 004

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<tr>
<th>Data Stamp</th>
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<th>Voltage Y</th>
<th>Voltage B</th>
<th>Amp R</th>
<th>Amp Y</th>
<th>Amp B</th>
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<th>Power</th>
<th>Pump Mode</th>
<th>Status</th>
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Thank You

“Every Little Contribution can make our Country Self Dependent”