PI System for Water Management

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Telemetry Head
Maynilad Water Services Inc
PI System for Water Management
By Almeus E. Almazan
Telemetry Head

In partnership with Information Technology Services
I. Corporate Background
II. Telemetry
III. Challenges and Benefits
IV. Processes and Developments
V. Future Plans
Maynilad Water Services, Inc.

- Largest water concessionaire in terms of customer base in the Philippines
- Serves 8.2 million people
- Has exclusive rights to provide water and wastewater services in the West Zone of the greater Metro Manila area until year 2037
- Re-privatized on January 24, 2007
- Owned and operated by Metro Pacific Investments Corp., DMCI Holdings Inc. and Marubeni Corp.
Operations Snapshot

Service Area: 540 sq km

Coverage: 17 cities and municipalities in Metro Manila and Cavite

Key facilities: 3 water treatment plants (2500 MLD combined) 6 sewerage treatment plants 1 septage treatment plant 21 pumping stations 23 reservoirs

Distribution: Around 500 km sewer line 7,085 km water pipeline
Telemetry

• Part of the Maynilad Technical Services Division

• Major Thrusts
  – 24/7 operations monitoring
  – Centralized acquisition & management of operations data
  – Reliable operations information
  – Continuous improvement through innovations

• Services provided:
  – Field operation’s measurements
  – Operation’s data collection and handling
  – Maynilad Operations Data Summary Report
1. Established Telemetry using radio communication

2. Began using data logger with separate flow and pressure sensing instrument

3. Introduced cellular base communication

4. Upgraded measurement using flowmeters with higher reliability and accuracy. Adopted SMS data protocol for all distribution systems

5. Developed in-house Data Management System

6. Began research and development focusing on:
   a. Fast paced technology
   b. Changes in monitoring scheme.
   c. Area coverage expansion
   d. Integration with other systems

7. Introduced PI System

8. Developed architecture for Integrated Telemetry and Automation Systems
   - Remote Alarm and Notification System
   - Creation of centralized field monitoring system (FieldMOUS Project)
   - 2000 remote monitoring points being supervised and measured
Field Data Acquisition
(Before PI System)

Data Sources
- Field Instruments
- Operations Activity

Communication Device

Manual data retrieval

Central Collecting Device

Telemetry Database

Report Generation

Data Management Analysis
Our Challenges

- Reports are manually sent via e-mail or FTP
- Non real-time data sharing
- Limited storage capacity
- Decentralized database management
- Manual system and data integration from different sources
- Non-standard data & report format
Addressing Challenges

Telemetry System

Back End
- MS Access
- MS Excel
- 3rd Party Data Mgt Software (ex. PMAC, Netbase data)

Front End
- OSIsoft PI System

System Architecture

Thick Client (TELEMETRY&IT) Administrators

Thin Clients – End Users
Results

(Maynilad with PI System)

- View up-to-date operations information remotely via web browser
- Automation of Treatment Plants, STPs and Pumping Stations data acquisition and monitoring
- Integration of Main distribution network to customer service line information
- Centralization of operations activity data
- Ease of access on real time data
- Developments - Customizable displays and reports
Developments
(Using PI System)

FieldMOUS Project
Field Monitoring User System

A joint project of Telemetry & ITS
Overview

• Provides details of Operation’s information from Production to Distribution line level
• Delivers detailed and updated operational data about the company’s current progress that shows Operation’s efficiency
• Serves as a data historian
• Provides an automated, synchronized and centralized operations data monitoring from a single centralized repository
Data Acquisition
(Methodology)

- Data Collection
- System Interfacing
- Data Integrity Checking
- Preventive, reactive & proactive maintenance of data loggers
Distribution Network Setup

- Field Instruments
- Data Collecting Software
- PI Interface
- Reports
Plant Setup

- Plant 1 OPC
- Plant 2 OPC
- Potable Water
- STP 1 OPC
- STP 2 OPC
- Waste Water

Gateway

- PI Server
- End-Users

PI System Regional Seminars
Architecture

- Distribution Flow
- Treatment Plants
- Pressure & Level Transducer
- Pumping Stations
- Data Center
- PI Server
- PI Interface
Developments

(PI Webparts)
Developments
(PI Webparts)
# Developments

## (PI Webparts)

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### RESERVOIR MONITORING

- **NORMAL**
- **CRITICAL (LOW)**
- **CRITICAL (HIGH)**

* Bagbag elevation (RSL) is equal to 81 meters + current water level.
Developments

(PI Webparts)
Developments
(PI Webparts)
Developments
(PI Datalink)
Developments
(PI Asset Framework)
Benefits

✓ Quick response to unusual distribution network changes
✓ Better asset condition management
✓ Faster assessment on operations efficiency
✓ Cost on Operations
  ✓ Less outsourcing
  ✓ Reduced downtime
  ✓ Less manpower
✓ Secure, scalable and redundant data management system
Future Plans

Telemetry Database

Distribution Network monitoring

Maynilad Network

SCADA Database

Treatment Plant and Pump Stations data

PI Server
Future Plans

- **Interface**
  - Water Treatment Plants
  - Sewage Treatment Plants
  - Sewerage Lift Stations
  - District Meters

- **Creation of Central Monitoring Station**
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THANK YOU