No More Travel – Remote Control & Monitoring of Water and Wastewater Facilities

Dakshina Silva – Electrical Engineer (PLC/SCADA)
Concept of Online Monitoring and Control

Manual operation can be unsafe, unpredictable and expensive.

- Manual sampling
- Manual Control
- Manual Report
Concept of Online Monitoring and Control

Process automation, remote monitoring & control provide safe, reliable and cost effective operation.
Automated Plant Operation

Existing manual controlled plant can be integrated to fully automatic operation.
Four key areas to achieve an effective remote control & monitoring system

- HAZOP & CHAZOP
- Life Cycle Cost Analysis
- Reliability & Maintainability Analysis
- Process Quality & Performance
State of the art sewage treatment plant - Young Shire Council
Safe, Quality Performance, Reliable, Low Operating Cost – Young STP

Facility Management System

IDEA Tanks

Reuse Water

Internet

SMS/Email Alerts

Automatic Report Generation

Remote Monitoring & Control

SCADA & TELEMETRY

Dewatering System
Retrofitting

Benefits of retrofitting existing plants after a systematic process review.

- Review process
- Evaluate asset condition
- Recognise opportunities
- Benefit analysis

SAFETY | QUALITY | COST
Case Study– NEW RESUSE PUMP

Installation of additional pump to transfer reuse effluent to the turf farm and sporting field.

<table>
<thead>
<tr>
<th></th>
<th>Before</th>
<th>After</th>
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<tbody>
<tr>
<td></td>
<td><img src="image1.png" alt="Before Image" /></td>
<td><img src="image2.png" alt="After Image" /></td>
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<table>
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<tr>
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<td>WHS Benefits</td>
<td>Yes</td>
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<tr>
<td>Improved Reliability</td>
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Internet

Existing PLC/SCADA

WHS Benefits

Improved Reliability

Public Works
NSW Water Solutions
Case Study – PLC/SCADA UPGRADE of WTP

Upgrading 30 Years old semi automatic process to fully automatic operation - Water Treatment Plant

- No logistic/technical support
- Manual back wash operation of 3 filters
- Manual adjustments of chemical dosing systems
- SCADA is developed for monitoring

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<td>Improved Reliability</td>
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</table>

Existing Telemetry SCADA

OLC PLC & SCADA

Fully automated process PLC & SCADA
Case Study – VARIABLE SPEED DRIVES

Installation of variable speed drives and DO sensor – Reducing IDEA tank aeration electricity cost

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<td>Low Green Gas Emission</td>
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Case Study – NEW LIQUID DOSING SYSTEM

Replace bagged soda with liquid caustic system for process pH control.

- Automated and optimised pH correction.
- Eliminate manual handling (WHS)

Total Project Cost

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<th>Benefit</th>
<th>Value</th>
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<td>Improved Reliability</td>
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Take Home Message

SCADA/Telemetry Benefits

• SCADA/Telemetry is current industry best practice and trend.
• Reduced operational costs; improved safety, reliability and water quality.
• Allows Local Water Utilities to demonstrate due diligence in operation.

NSW Water Solutions

• Solutions tailored to site/location.
• Software Programming, Site Commissioning & Testing, Operator Training.
• System Integrators and Process Engineers can provide online technical support.
Thank You.
Building Telemetry Network

- Satellite BB
- DATA LOGGER
- PLC 1
- PROCESS SCADA 1
- PLC 2
- PLC 3
- PLC 4
- PROCESS SCADA 2
- PLC 4
- PROCESS SCADA 3
- PLC 5
- TELEMETRY SCADA
- DATA SERVER
- Internet
- 4G
- NETWORK
- REMOTE ACCESS

Process SCADA 1
PLC 4
Remote Access
Telemetry SCADA
Network
Internet
Satellite BB
Data Logger
PLC 5
PLC 1
PLC 2
PLC 3
PLC 4
PLC 5
Public Works NSW Water Solutions