



Total Process Management from the Cloud at ROXBOROUGH WATER AND SANITATION DISTRICT



30th July 2019



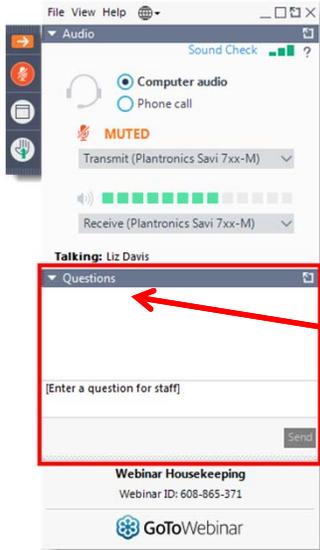

Mark Drake
VWT - Kruger
Product Manager



Barbara Biggs
Roxborough WSD
General Manager

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How to Participate Today



- **Audio Modes**
 - Listen using Mic & Speakers
 - Or, select "Use Telephone" and dial the conference (please remember long distance phone charges apply).
- **Submit your questions using the Questions pane.**
- **A recording will be available for replay shortly after this webcast.**

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AQUAVISTA™
Digitalization is changing the World

AQUAVISTA™
DIGITAL SERVICES

2014 2015 2016 2017 2018 2019

Internet of Things **Artificial Intelligence** **Collaborative Platform** **Robots**

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AQUAVISTA™
Digitalization is changing the Water Industry

AQUAVISTA™
DIGITAL SERVICES

Total spend by application

2021: **\$30.1 billion (CAGR of 7.2%)**

\$21.3 billion (2016)

- Networks \$10,179 million
- Water treatment \$4,975 million
- Wastewater treatment \$4,331 million
- Industry processes \$1,779 million

Direct Savings	Indirect Savings
Reduced Labour Costs	Water Quality Indication
Improved Energy Efficiency	Improved Abstraction Compliance
Reduced Chemical Use	Public Health Benefits
Reduced Downtime	Improved Customer Service/Experience
Leak Reduction	Environmental Protection
Accurate Billing	Reliability

- Potential savings in the region of \$320 billion between 2016 -2020 in capital and operational spending.

Source: GWI - Water's Digital Future

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AQUAVISTA™ -

Digitalization is changing the water industry

Extensive Voice of Customer Studies

Drivers

- Optimize Asset Performance
- Boost Predictive and Preventive Maintenance
- Improve Operation (Stability & Safety)
- Anticipate and Better Manage Environmental Crisis (Flood)
- Eliminate Non-Compliance
- Costs Savings

Barriers

- Culture
- Cybersecurity
- Data Confidentiality

Design & Development of AQUAVISTA

Understand Customer's Needs and Requests, Barriers

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Roxborough Water and Sanitation District

System Overview

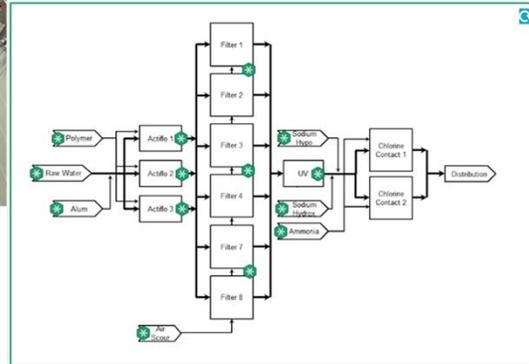
- Located Southwest of Denver in Douglas County, CO
- 6 MGD average treatment capacity
 - 4 MGD for Roxborough
 - 2 MGD for Sterling Ranch, via Dominion Water & Sanitation District
- Opened in 2017
- First CO facility to receive credits for UV as primary disinfectant
 - DBP reduction from 80 ppb to 17 ppb

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Roxborough Water and Sanitation District System Overview



- ACTIFLO
- Filters
- UV Disinfection
- Chloramine for Distribution Residual
- Expandable by 2 MGD by adding 2 more Filters



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Roxborough Water and Sanitation District Decisions... Decisions...



- Explored Several Asset Management Systems
- GOALS
 - Better View of Compliance Parameters
 - Better View of Chemical Consumption
 - Better Tools for Performance Optimization
 - Better View of Equipment Status and Tracking/Scheduling Maintenance

Procedure ID	Spec #	Equipment Type	Procedure Description	Procedure Type	Frequency (Months)	Freq (W)
758	11355-001a	Actiflo	Sludge Scraper: inspect fasteners for proper tension, tighten any loose fasteners, replace any as needed.	Inspect	12	-
759	11355-001a	Actiflo	Sludge Scraper: inspect bearings, check that all are secure, adjust as needed to prevent large amounts of sludge left on floor, replace as needed.	Inspect	12	-
760	11355-001a	Actiflo	Sludge Scraper: inspect bearings. Check the entire coupling system for cracks, wear of wear and nut bolts. Repair any problem areas as needed.	Inspect	12	-
761	11355-001a	Actiflo	Sludge Scraper: inspect any drive or bearing plates as necessary. Replace if there is excessive wear or cracks exist.	Inspect	12	-
762	11355-001a	Actiflo	Sludge Scraper: Change oil filter on primary speed reducer. Refill 30 days of operation.	Replace	-	-
763	11355-001a	Actiflo	Sludge Scraper: Check oil level and for spills on primary speed reducer.	Inspect	-	-
764	11355-001a	Actiflo	Sludge Scraper: Change oil and filter on primary speed reducer.	Replace	6	-
765	11355-001a	Actiflo	Sludge Scraper: Inspect and overhaul primary speed reducer as necessary.	Inspect	120	-
766	11355-001a	Actiflo	Sludge Scraper: Check for spills on the planetary gearbox.	Inspect	-	-
767	11355-001a	Actiflo	Sludge Scraper: Change lubricant and inspect. Overhaul planetary gearbox as necessary.	Lubricate/Oil	120	-
768	11355-001a	Actiflo	Hydrocyclone: Check for smooth interior surfaces. Replace if worn or uneven.	Inspect	-	-
769	11355-001a	Actiflo	Hydrocyclone: Replace gaskets if it opens more than 10% of its original disk. Unless it is disassembled, lubricate the ring joints and fill wither gear Oils Section A.6. Values.	Replace	-	-
770	11355-001a	Actiflo	Turbidity/Solids Sensor: Visually inspect for wear/damage. Replace as necessary.	Lubricate/Oil	-	-
771	11355-001a	Actiflo	Turbidity/Solids Sensor: Check calibration. Recalibrate as necessary.	Inspect	1	-
772	11355-001a	Actiflo	Turbidity/Solids Sensor: Seal change.	Replace	24	-
773	11355-001a	Actiflo	Turbidity/Solids Sensor: Change water based on counter and reset counter.	Inspect	1	-
774	11355-001a	Actiflo	pn Differential Sensor: Clean the sensor.	Inspect	3	-
775	11355-001a	Actiflo	pn Differential Sensor: Inspect the sensor for damage.	Inspect	3	-
776	11355-001a	Actiflo	pn Differential Sensor: Replace the seal O-ring and fill solution if applicable.	Replace	12	-
777	11355-001a	Actiflo	pn Differential Sensor: Calibrate the sensor.	Calibrate	-	-
778	11355-001a	Actiflo	Pressure Analyzer: Inspect for any visible signs of damage. Check the selector of the analyzer when necessary.	Inspect	-	-
779	11355-001a	Actiflo	Pressure Analyzer: Grease lubricate the bearings with both grease that can withstand maximum temperatures of 120 C. Clean, dry and reassemble if water gets into the bearings, and correct the seal factor.	Inspect	6	-
780	11355-001a	Actiflo	If sandblasting with silica sand, use a good fitting forced air Full Face helmet that is fit tested for protection. Check out the Manual of the equipment manufacturer.	Inspect	-	-

The Old: Cumbersome Spreadsheet Manipulation for Managing Maintenance Tanks



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Roxborough Water and Sanitation District

Decisions... Decisions...

AQUAVISTA™
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- Most Platforms Focus Only on One Area
- Reasons for selecting AQUAVISTA
 - Touches on all Goals - Total System Management Tool
 - Consolidated Data from Multiple Plant Processes
 - Not Just Veolia Technologies
 - Data from Any Source
 - Access to Veolia Process Experts



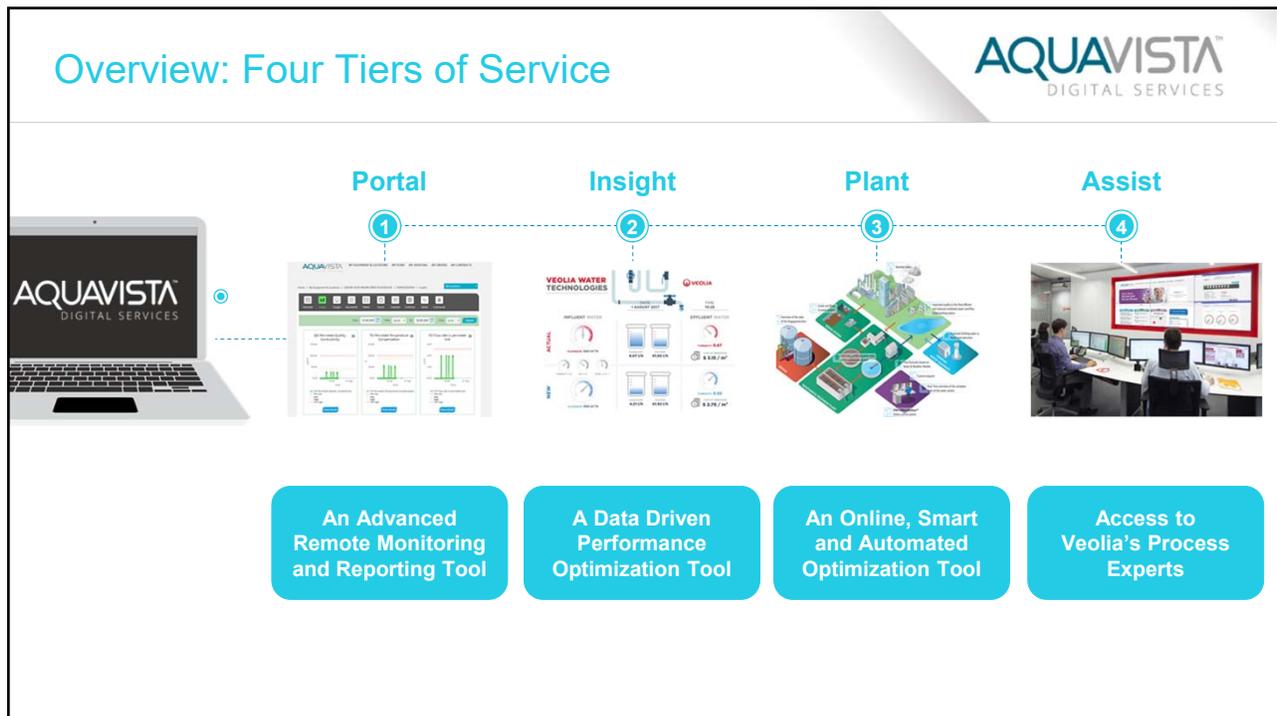
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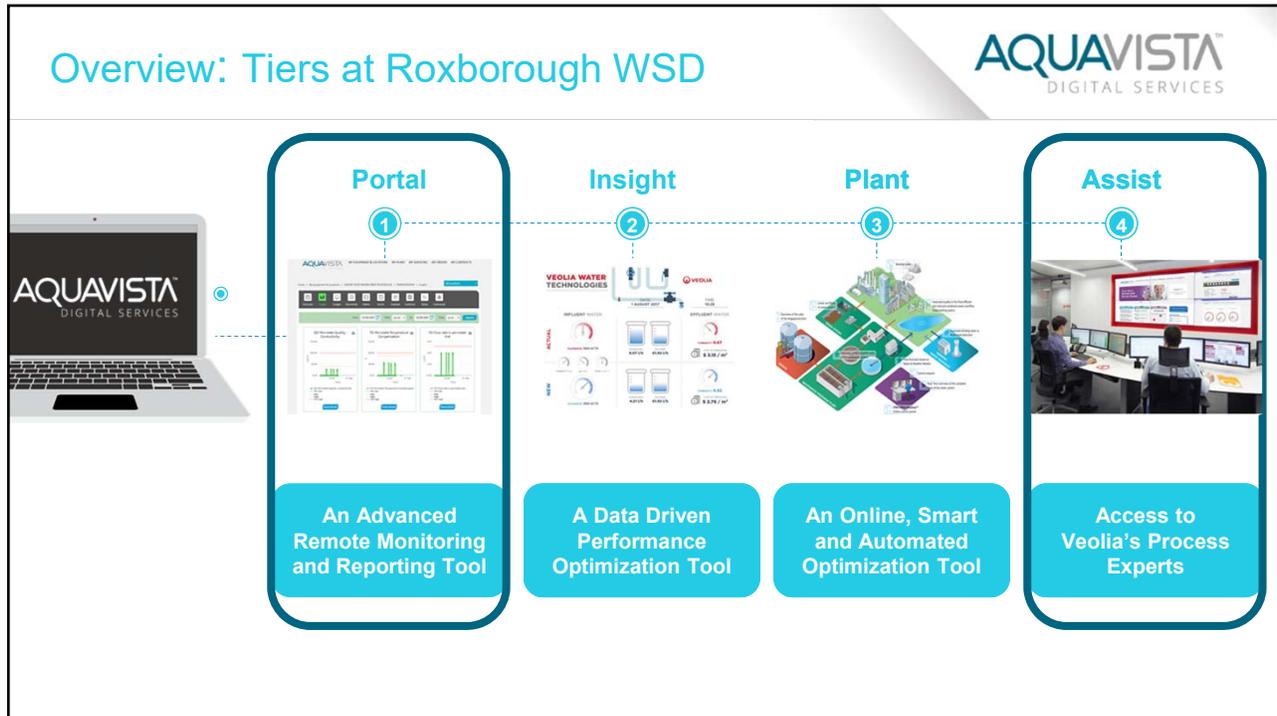
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AQUAVISTA™ Portal - Main Dashboard

Portal (1): Customizable Interface
Acquisition, Aggregation and Cloud Storage of All Data

MY SERVICE CALENDAR

Mon	Tue	Wed	Thu	Fri	Sat	Sun
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4
5	6	7	8	9	10	11

MY KEY EQUIPMENT

- RAW WATER - 5700206403-01
- ACTIFLO TRAIN 1 - 5700206403-02
- ACTIFLO TRAIN 2 - 5700206403-03
- ACTIFLO TRAIN 3 - 5700206403-04
- FILTER EFFLUENT - 5700206403-09
- ALUM & POLYMER - 5700206403-11

MY LOCATIONS

- ROXBOROUGH WATER & SANITATION DISTRICT 8678 N. ROXBOROUGH PARK RD LITTLETON 80125

MY SERVICE REPORTS

No Service Reports Found

MY EVENTS

No Events Found

USEFUL LINKS

- Case Studies
- Manuals & Datasheets
- Veolia Profile
- Veolia Website

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AQUAVISTA™ Portal - Main Dashboard



An Advanced Remote Monitoring and Reporting Tool

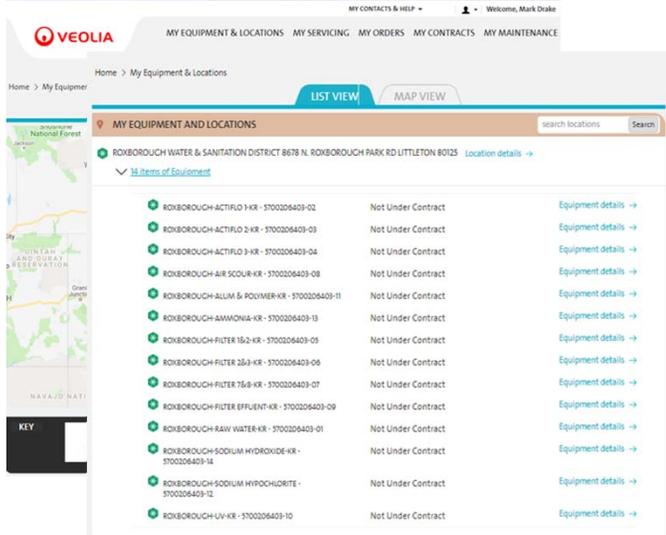
Portal

1



Manage Multiple Sites

Easy Navigation to Equipment Items



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Simple PFD/PID View with Status



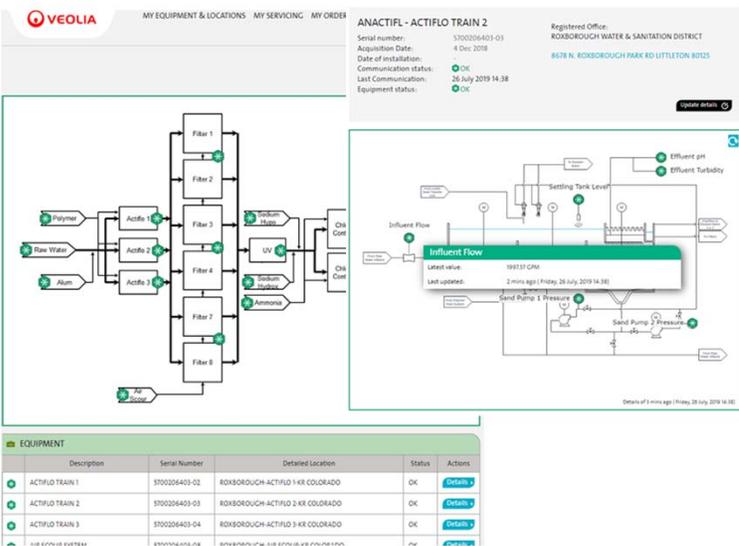
An Advanced Remote Monitoring and Reporting Tool

Portal

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REMOTE MONITORING



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AQUAVISTATM DIGITAL SERVICES

Data Display

An Advanced Remote Monitoring and Reporting Tool



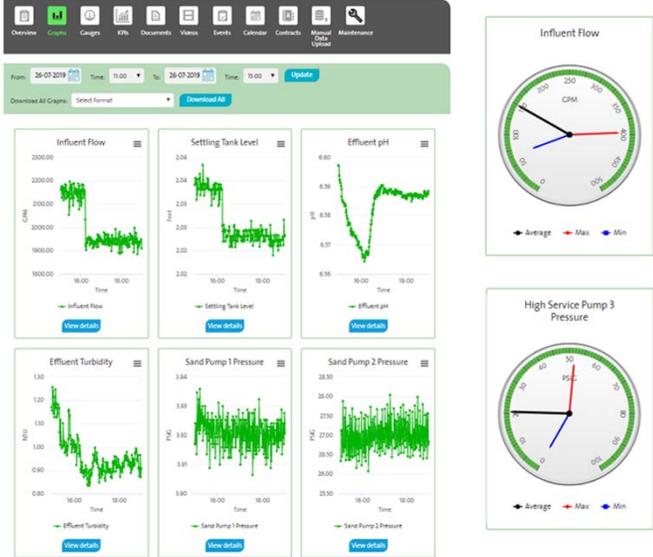
Instant insights into trends (with selection of data visualization tools)
Management of multiple sites online through an interactive view with status indicators;

Portal

1



REMOTE MONITORING



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AQUAVISTATM DIGITAL SERVICES

Data Display

An Advanced Remote Monitoring and Reporting Tool



Instant insights into trends (with selection of data visualization tools)
Management of multiple sites online through an interactive view with status indicators;

Portal

1



REMOTE MONITORING



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Manual Data Upload

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DIGITAL SERVICES

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Portal

Manual Data Upload

Individual Lab Data Results
or
Bulk Data Upload from .csv

Home > My Equipment & Locations > ROXBOROUGH WATER & SANITATION DISTRICT > 5700206403-09 > Manual Data Upload

All Locations

Overview | Graphs | Gauges | KPIs | Documents | Videos | Events | Calendar | Contracts | Manual Data Upload | Maintenance

Type of upload
Record Entry

Date: mm/dd/yyyy | Hours: 00 | Minutes: 00

EDT field: - Select - | Actual Value:

Unit: | Updated By: Mark Drake

Range Max: | Range Min:

Additional Remarks:

Submit

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Data Export

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DIGITAL SERVICES

An Advanced Remote Monitoring and Reporting Tool

Portal

Easily Export in Multiple Formats

Back to Graphs

Compare with: --No--

Influent Flow (Common)

Print chart

- Download PNG image
- Download JPEG image
- Download PDF document
- Download SVG vector image
- Download CSV
- Download XLS

Easily export to PDF or Excel

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Alarm and Alert Management



An Advanced Remote Monitoring and Reporting Tool



Full alarm management and threshold alerting in real time;
Notification of events for equipment such as service renewal, Hydrex chemicals re-ordering and other consumable replacement, etc;

Portal

1



ALARM MANAGEMENT
PLC/SCADA/...
ALARM CONDITION EDITOR
ALARM PRIORITY EDITOR

Overview Graphs Gauges Documents Videos Events Calendar Contracts Status Commands

ENTERING AN EVENT MANUALLY

Date: 09/12/2017 Hour: 08 Minute: 09 Message of the event:

Submit

All Service Reports Note on Equipment Alarms Active Alarms Modes of change

EQUIPMENT EVENT LOG		
Wednesday 23 August 2017 07:08	Note on Equipment	Testing the Equipment...Looks OK.
Thursday 1 June 2017 02:13	70 REPLACE_UV-Notification (yellow)-	Alarm started
Monday 29 May 2017 22:12	Mode change	RUN Normal Process Run
Monday 29 May 2017 21:48	Mode change	
Thursday 23 March 2017 15:34	Mode change	RUN Normal Process Run
Wednesday 22 March 2017 05:28	Mode change	OFF Process OFF State
Wednesday 22 March 2017 05:28	Check Modus, leakage	Alarm ended
Wednesday 22 March 2017 03:58	Check Modus, leakage	Alarm started
Tuesday 21 March 2017 09:02	Q52_ALARM	Alarm ended
Tuesday 21 March 2017 09:00	Q52_ALARM	Alarm started

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Alarm and Alert Management



An Advanced Remote Monitoring and Reporting Tool



Full alarm management and threshold alerting in real time;
Notification of events for equipment such as service renewal, Hydrex chemicals re-ordering and other consumable replacement, etc;

Portal

1



ALARM MANAGEMENT
PLC/SCADA/...
ALARM CONDITION EDITOR
ALARM PRIORITY EDITOR

Gmail
from: Aquavista

VEOLIA

AQUAVISTA

DIGITAL SERVICES

WATER TECHNOLOGIES

Dear Mark,

Maintenance event had occurred : Closed

Location : ROXBOROUGH WATER & SANITATION DISTRICT
Equipment : 5700206403-02

Task

Description : Coagulation/Maturation Mixer: Check the mixer drive for unusual sounds, excessive vibration, excessive heat (above 200 F) or oil leakage.

Action

Status : Closed

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Documents and Videos

An Advanced Remote Monitoring and Reporting Tool



Portal

1

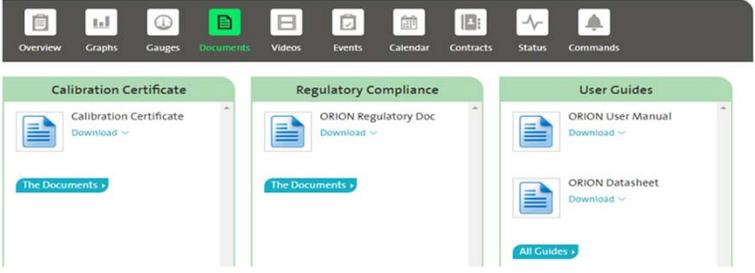


DOCUMENT MANAGEMENT

Online access to useful links, documentation and videos, stored in one place for increased convenience:



- Archive and consult service reports, orders, contracts, warranty documents;
- Track the history of purchase orders;
- Review equipment/plant data: training materials, user guides, operation & maintenance manuals, performance documents, calibration certificates, product data sheets;
- Compliance information: health & safety sheets, regulatory specifications, etc.;



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Asset Management

An Advanced Remote Monitoring and Reporting Tool



Portal

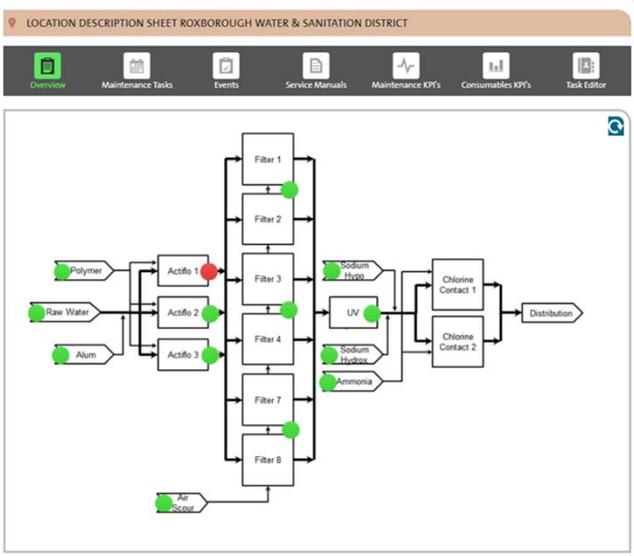
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Maintenance

MAINTENANCE MODULE

Traffic Light Style Overview



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Asset Management

An Advanced Remote Monitoring and Reporting Tool



Portal

1



Maintenance

MAINTENANCE MODULE

Task Customization

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DIGITAL SERVICES

Home > Location Maintenance Tasks

LOCATION DESCRIPTION SHEET ROXBOROUGH WATER & SANITATION DISTRICT

Overview
Maintenance Tasks
Events
Service Manuals
Maintenance KPIs
Consumables KPIs
Task Editor

Title: Serial Number: Part Number: Task Description: Task Priority:

From: To: Task Category: Maintenance Part: Maintenance Cycle:

Apply Filter

Title	Task ID	Task Priority	Maintenance Cycle	Equipment	Part Number	Maintenance Part	Task Category	Task Description	Part Description	Task Status	Action
pH Sensor	62469458	High		5300206403-02				pH Differential Sensor. Replace the Salt Bridge and fill solution if applicable.	pH Differential Sensor	Open	<input type="checkbox"/>
Actiflo 2 Sludge Scrapers: Inspect Skimmer Tension	62492483	Low		5300206403-03				Sludge Scraper: Inspect skimmer tension so that it stays in contact with the scum through the entire rotation	Actiflo	Open	<input type="checkbox"/>

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Asset Management

An Advanced Remote Monitoring and Reporting Tool



Portal

1



Maintenance

MAINTENANCE MODULE

Task Status Features

AQUAVISTATM
DIGITAL SERVICES

Overview
Maintenance Tasks
Events
Service Manuals
Maintenance KPIs
Consumables KPIs
Task Editor

Click here to create or manage maintenance tasks KPIs for this location/customer.

Ratio of Open Tasks vs All Tasks per day in %

Legend: Open Tasks (blue), Closed Tasks (black)

Ratio of Open Tasks vs All Tasks per Week in %

Average duration between appearance and check for all daily tasks (in minutes)

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Consumable Insights

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Portal

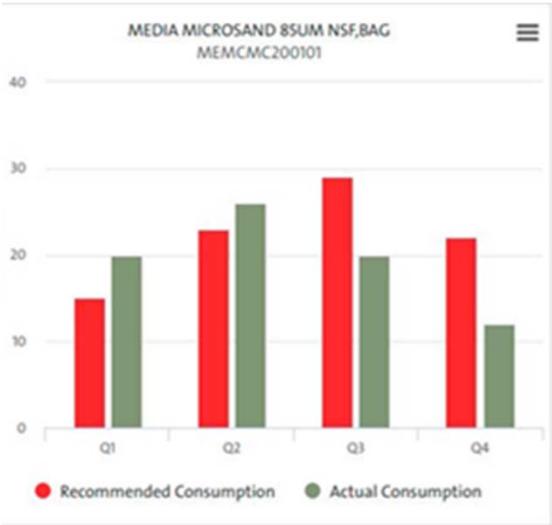
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Maintenance

MAINTENANCE MODULE

View of Consumables Performance



Quarter	Recommended Consumption	Actual Consumption
Q1	15	20
Q2	23	26
Q3	29	20
Q4	22	12

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Customer Service Connection

An Advanced Remote Monitoring and Reporting Tool



Portal

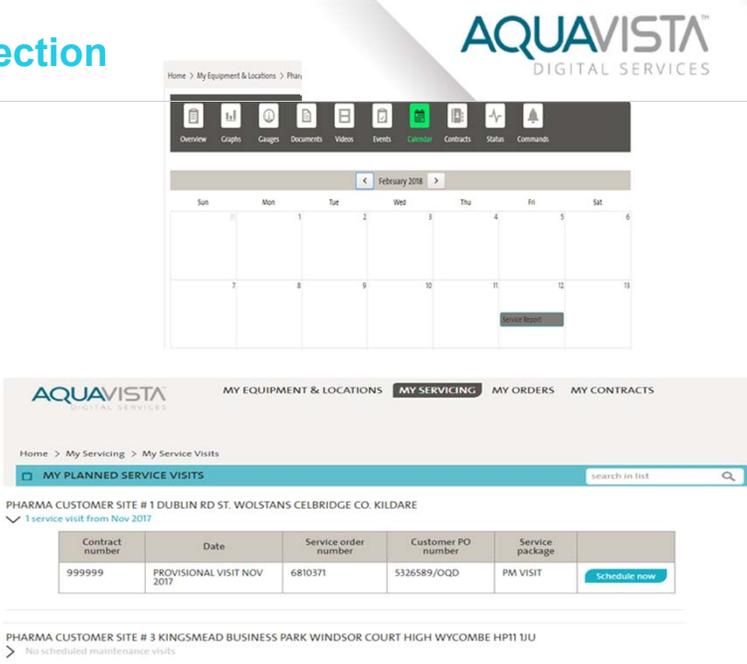
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Order Management

ORDER MANAGEMENT

Place spare parts and consumables orders online, Book online visits for Veolia consultancy services, maintenance, troubleshooting, etc.



MY PLANNED SERVICE VISITS

PHARMA CUSTOMER SITE # 1 DUBLIN RD ST. WOLSTANS CELBRIDGE CO. KILDARE

1 service visit from Nov 2017

Contract number	Date	Service order number	Customer PO number	Service package	
999999	PROVISIONAL VISIT NOV 2017	6810371	5326589/OQD	PM VISIT	Schedule now

PHARMA CUSTOMER SITE # 3 KINGSMEAD BUSINESS PARK WINDSOR COURT HIGH WYCOMBE HP11 1UJ

> No scheduled maintenance visits

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Customer Service Connection

[MY EQUIPMENT & LOCATIONS](#)
[MY SERVICING](#)
[MY ORDERS](#)
[MY CONTRACTS](#)

Home > My Servicing > My Service Visits

MY PLANNED SERVICE VISITS

PHARMA CUSTOMER SITE # 1 DUBLIN RD ST. WOLSTANS CELBRIDGE CO. KILDARE
 ✓ 1 service visit from Nov 2017

Contract number	Date	Service order number	Customer PO number	Service package	
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PHARMA CUSTOMER SITE # 3 KINGSMEAD BUSINESS PARK WINDSOR COURT HIGH WYCOMBE HP11 1JU
 > No scheduled maintenance visits

PHARMA CUSTOMER SITE # 2 2440 THE CRESCENT BIRMINGHAM B37 7YE
 > No scheduled maintenance visits

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Customer Service Connection

An Advanced Remote Monitoring and Reporting Tool

Assist

4

Streamlined Access to Veolia Experts

- Process Expert Data Review
- Recommendations for Optimization
- Troubleshooting Assistance
- Augmented Reality
- Ease Issues Related to High Turnover of Staff

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AQUAVISTA™ Smarter Water Solutions for Roxborough





Veolia's digital tool designed & developed by Water Treatment Experts

- **Full overview** of your equipment from remote locations and **online access to documentation**
- **Convenience** of monitoring **anywhere, anytime, at any device** through a **secure** cloud-based system and a single & intuitive portal
- **Improved asset performance**, higher plant efficiency and stability, improved preventive and predictive maintenance, decrease downtime through **customized KPIs and Maintenance Module**
- **Lower capital and operational costs**, reduced maintenance, chemical use and energy consumption with **Kruger support through ASSIST** offering.
- Easily **upgrade to Insight or Plant** platforms to further enhance system efficiencies



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Thank you!

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DIGITAL SERVICES

Any questions?

WATER TECHNOLOGIES

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