

SCADA Data: Getting Past the Trends

10/18/2017



Agenda

- Existing Data Usage
 - LGH Files (HMI) Optimization
 - Historian
- What Next? and Why?
 - Reporting
 - Cloud
 - Multiple Databases
 - Real-Time Analytics

HMI – my data at this exact moment

Map | Alarms | Events | Trends | Reports | System | Process

LIFT PUMP STATION

Trabuco Pump Station #1

Pump Faceplate

Out of Service

Oper. | Details | Maint.

Pump 03

Fail | Intlk

Hours Running

56271.30

Remote Mode

Start | Stop

Pump 004

Maint | Alarms

Life Is On

How do we put that data into Context?

5A_Example1

Which visualization style gives the best understanding how FIT123 is performing?



- Is it close to setpoint?
- Is it outside operational limits?
- Is it nearing an alarm limit?
- How well is it being controlled?
- Does the operator need to intervene?
- What will happen if no action is taken?


Traditional Color Usage

Filter TK200 Status:

Manual Control


Service Mode

OFF RUN




Control Mode

AUTO MAN




Backwash


INITIATE




REQUIRED




REQUESTED




ACTIVE




Flow (GPM)



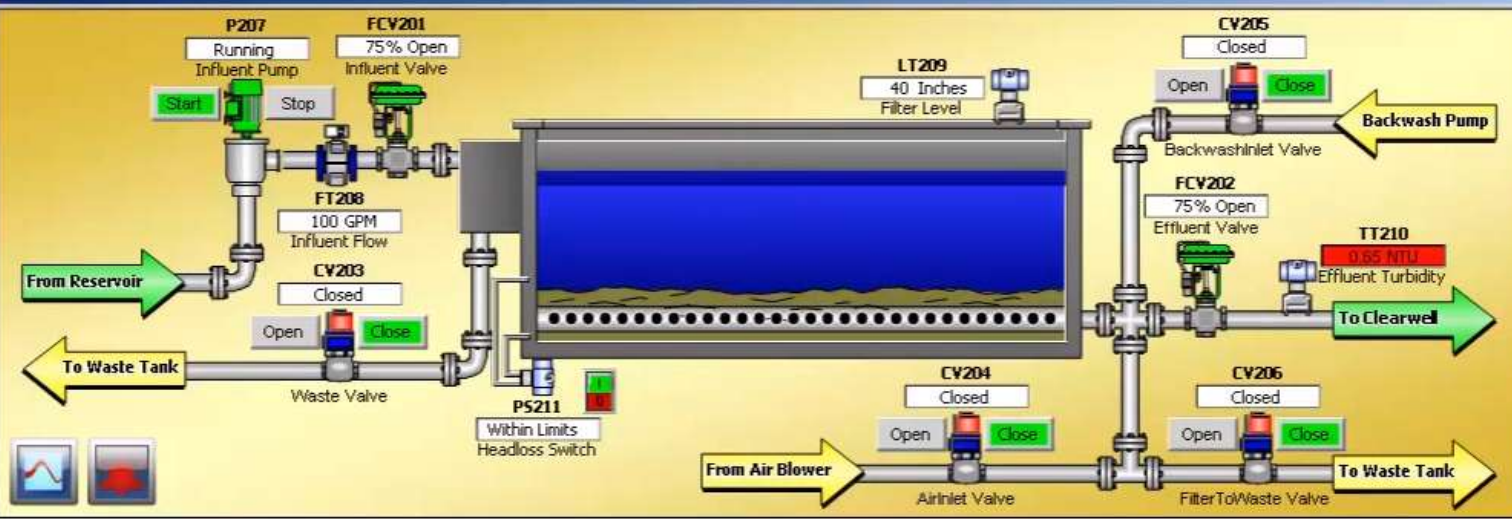
Turbidity (NTU)



Level (Inches)



Gravity Filter TK200





Common Equipment

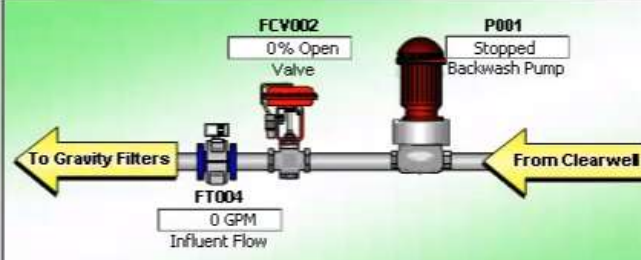
Common Air Blower

Control Mode

AUTO MAN





Common Backwash Pump



Control Mode

AUTO MAN



Color for Context

TK200

Key Performance Indicators:

- Influent Flow: 100.0 GPM
- Influent Valve: 75.0%
- Filter Level: 40.0 in
- Effluent Valve: 75.0%
- Effluent Turbidity: 0.67 NTU
- Last Backwash: 2/24/2014 3:23:28.752 PM

Control Panel

Filter Status: **Manual Control**

In Service | Out of Service

Automatic | Manual

Level Setpoint: -40.00 in

Flow Setpoint: 100.00 GPM

Backwash Status: **Backwash Required**

Request Backwash

Severity	State	Node	Area	TagName	Description	Type	Time	Limit	CV	AlarmDuration	Operator	UnAckDuration
2	ACK	ww2014	Tank200	TT210.HI	Effluent Turbidity too high, Backwash R...	HI	2/24/2014 16:26:23	0.5			DefaultUser	000 00:04:34.665

Common Equipment and Parameters

Air Blower: Run | Stop

Backwash Pump: Backwash Flow Control (0%)

BW Initiation Mode: Automatic | Manual

Setpoint: 0.400 NTU

Filter To Waste: 30 in

Hi Flow: 500 GPM, Hi Time: 60 Sec, Lo Flow: 200 GPM, Lo Time: 60 Sec

Wonderware Trend Periods (minutes): 60, 30, 15, 5, 1

Windows Detail Selections: Labels, Values, MinMax

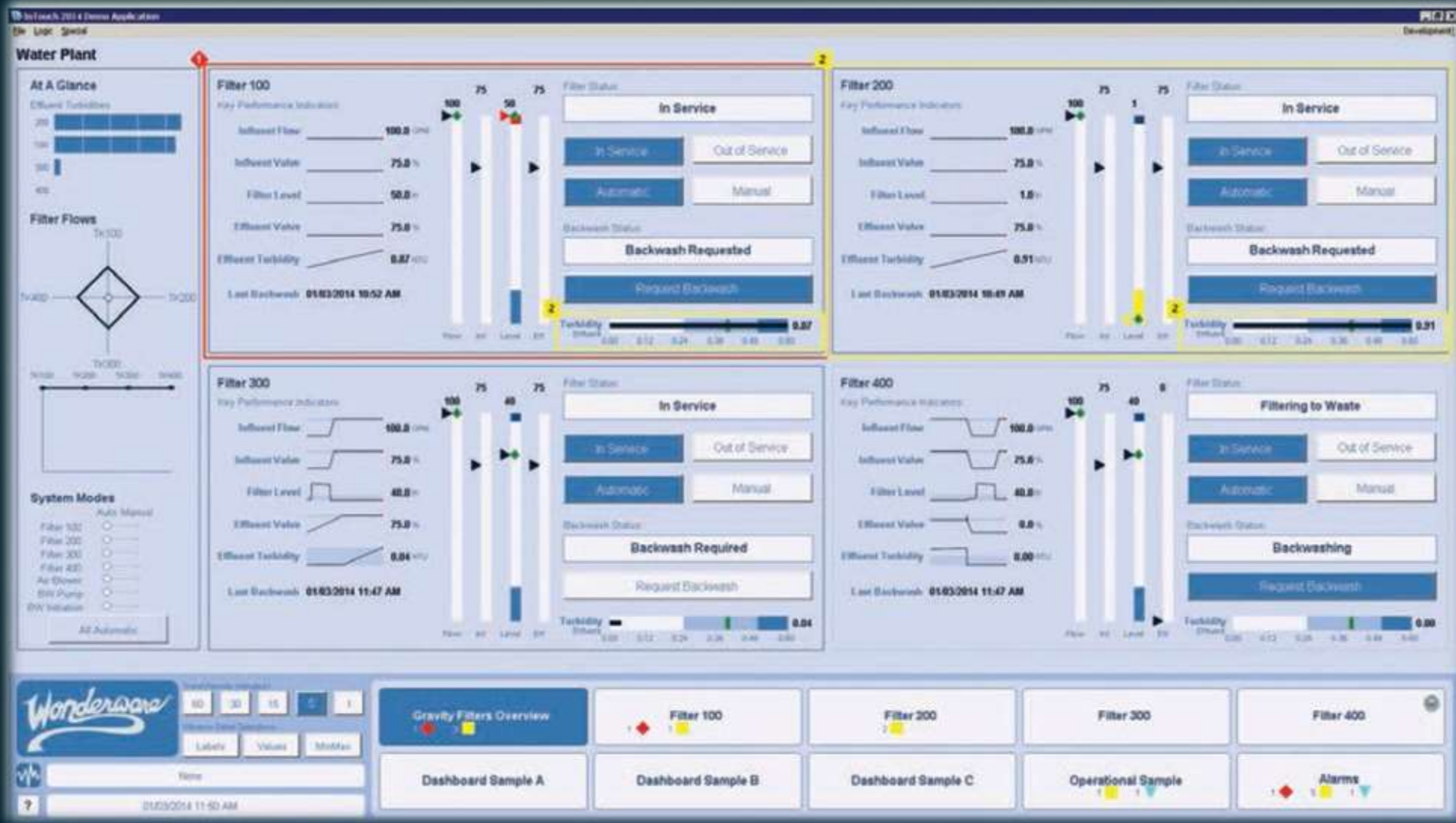
None

02/24/2014 04:50 PM

Gravity Filters Overview: Filter 100, **Filter 200**, Filter 300, Filter 400

Dashboard Sample A, Dashboard Sample B, Dashboard Sample C, Operational Sample, Alarms

But My Operators Want Color!





Historian: Your Rear View Mirror



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Life Is On

Wonderware
by Schneider Electric

SCADA Playback

GOTHAM OVERVIEW

PRODUCTION OVERVIEW

Gotham City
24-hour Production Targets

Category	Status	Final Product	Operational
Mixing	Operational	PSC	55478 t
Screening	Operational	SSCC	67189 t
Separation	Operational	PSC	4739 t
Storage	Operational	SSCC	4713 t

Waste SSCC

HEALTH AND SAFETY

16:13:25
Monday, 19 June 2017

SHIFT **B**
02:37:33
05:22:27

Time without orders: 11689.4 hours
Time without feasibility: 38452.8 hours

DRUM STATUS

SIL1
SIL2
SIL3
SIL4

Real-time: 16.4

From 06-19-17 8:13:10 AM

SCADA Playback

Reporting – Key Considerations

Open Data Retrieval



Compliance



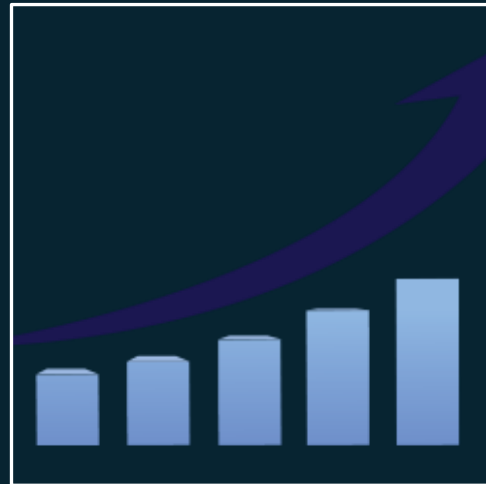
Workstation Hardware



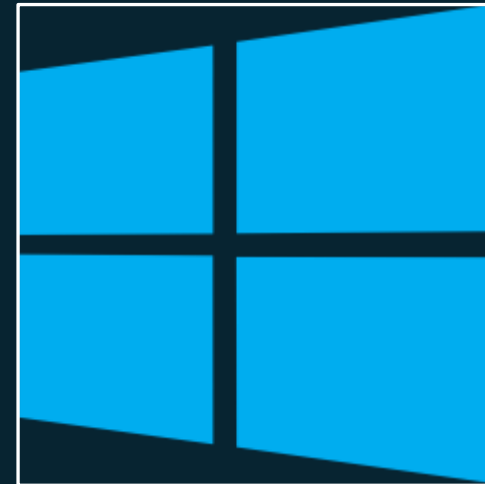
Ownership



Scalability



Standards



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Reporting Solutions: You've got Options

- Database Reporting Software
- Web-Based Software
- Custom (Excel, SSRS, etc)

REPORTING SOLUTIONS – EXCEL

ADVANTAGES

- FREE
- CUSTOMIZABLE
- SMALL LEARNING CURVE



DISADVANTAGES

- SHELF LIFE
- TECHNICAL SUPPORT? YOYO
- BASIC SECURITY
- CUMBERSOME
- DIFFICULTY BRINGING DATA FROM OTHER SOURCES
- GENERIC

REPORTING SOLUTIONS – DATABASE REPORTING SOFTWARE

ADVANTAGES

- VERY CUSTOMIZABLE
- EASILY DISTRIBUTE REPORTS
- PULL FROM ALL YOUR DATA SOURCES
- SCALABLE
- ONE TIME PURCHASE

DISADVANTAGES

- REGULATORY REPORT SUBMITTAL (EMOR)
- NOT DESIGNED SPECIFICALLY FOR WATER/WASTEWATER INDUSTRY
- MANUAL DATA ENTRY MAY BE TRICKY
- CAN IT STORE DATA?

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Operator10[®] water

Data Management for the Drinking Water Industry

- See water quality data quickly and easily
- Create regulatory and management reports and charts
- Precise, computerized calculations help ensure consumer safety

Water Distribution Report

Week: **13**

Water Storage: After being treated, the water is pumped to reservoirs and is stored until needed. The City has three reservoirs with a total capacity of 900,000 gallons, enough for two days of average consumption.

Reservoir	Average Consumption	Consumption Reference	Start	%	Comments
City	3,074 Gal	3,000 Gallons	6/6	65%	OK

Flow Indicators:

Task Name	Units/Sec	Set	Normal (1%)	Min	Max	Average
Flow	1,435	60 M	99.5%	1,200	1,450	1,200
Flow	767	60 M	82.2%	700	770	710
Flow	2,133	60 M	93.1%	1,800	2,150	1,800
Total	3,952	60 M	91.8%	3,400	3,950	3,400

Flow Summary:

Flow	Min	Max	Average
Flow	1,200	1,450	1,200
Flow	700	770	710
Flow	1,800	2,150	1,800
Total	3,400	3,950	3,400

Flow Information: 27.2%

Life Is On

Wonderware
by Schneider Electric

REPORTING SOLUTIONS – WEB BASED SOFTWARE

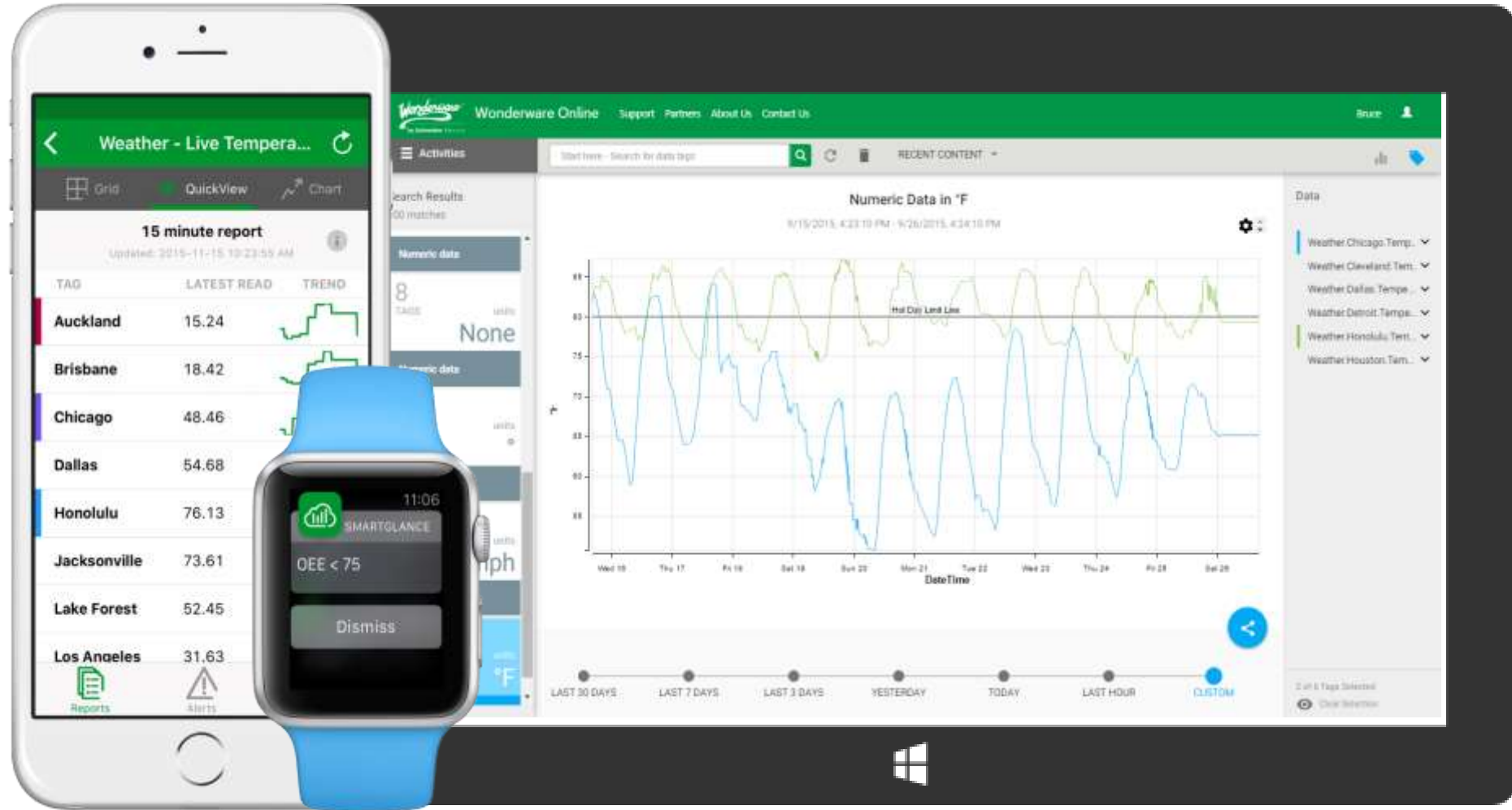
ADVANTAGES

- HARDWARE NEUTRAL
- ACCESS ANYWHERE
- INDUSTRY SPECIFIC
- SUBSCRIPTION BASED
- DEDICATED SUPPORT STAFF

DISADVANTAGES

- SUBSCRIPTION BASED
- WHO OWNS THE DATA?
- SCADA INTEGRATION DIFFICULTY
- WHAT HAPPENS IF THEIR SERVER GOES DOWN?

Your Data – Viewable Anywhere, Anytime





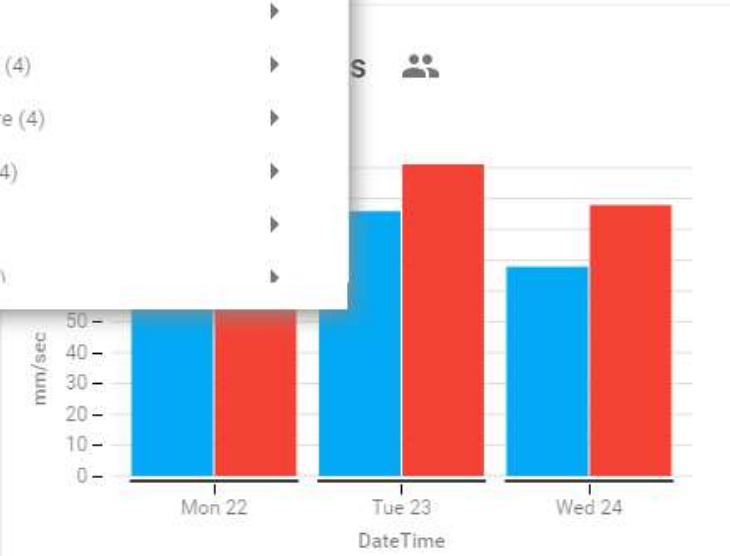
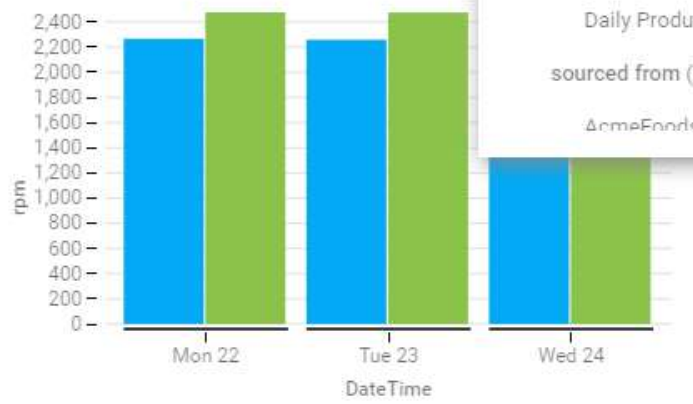
intelligent search

Search for saved content, data tags, or keywords.

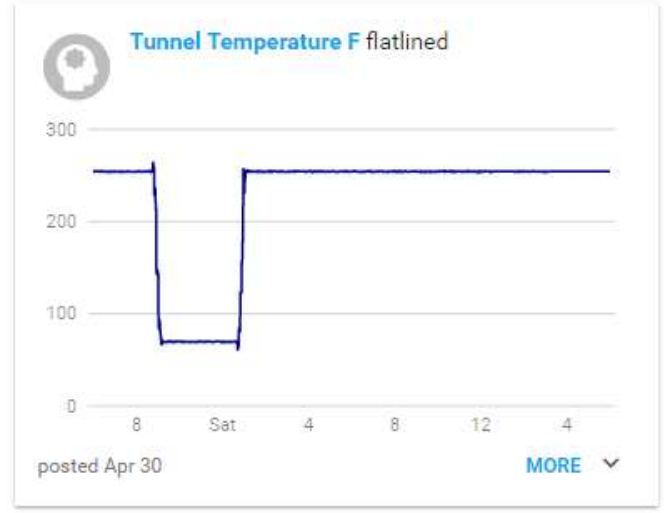
- Saved Content
- name includes
 - about AcmeFoods
 - about SesameSnack
 - about Arpac
- Data ADD ALL +
- name includes (92)
 - Motor Film Power (4)
 - Air Circuit Pressure (4)
 - Daily Production (4)
 - sourced from (92)
 - AcmeFoods-1 (23)

SUGGESTED CONTENT (4)

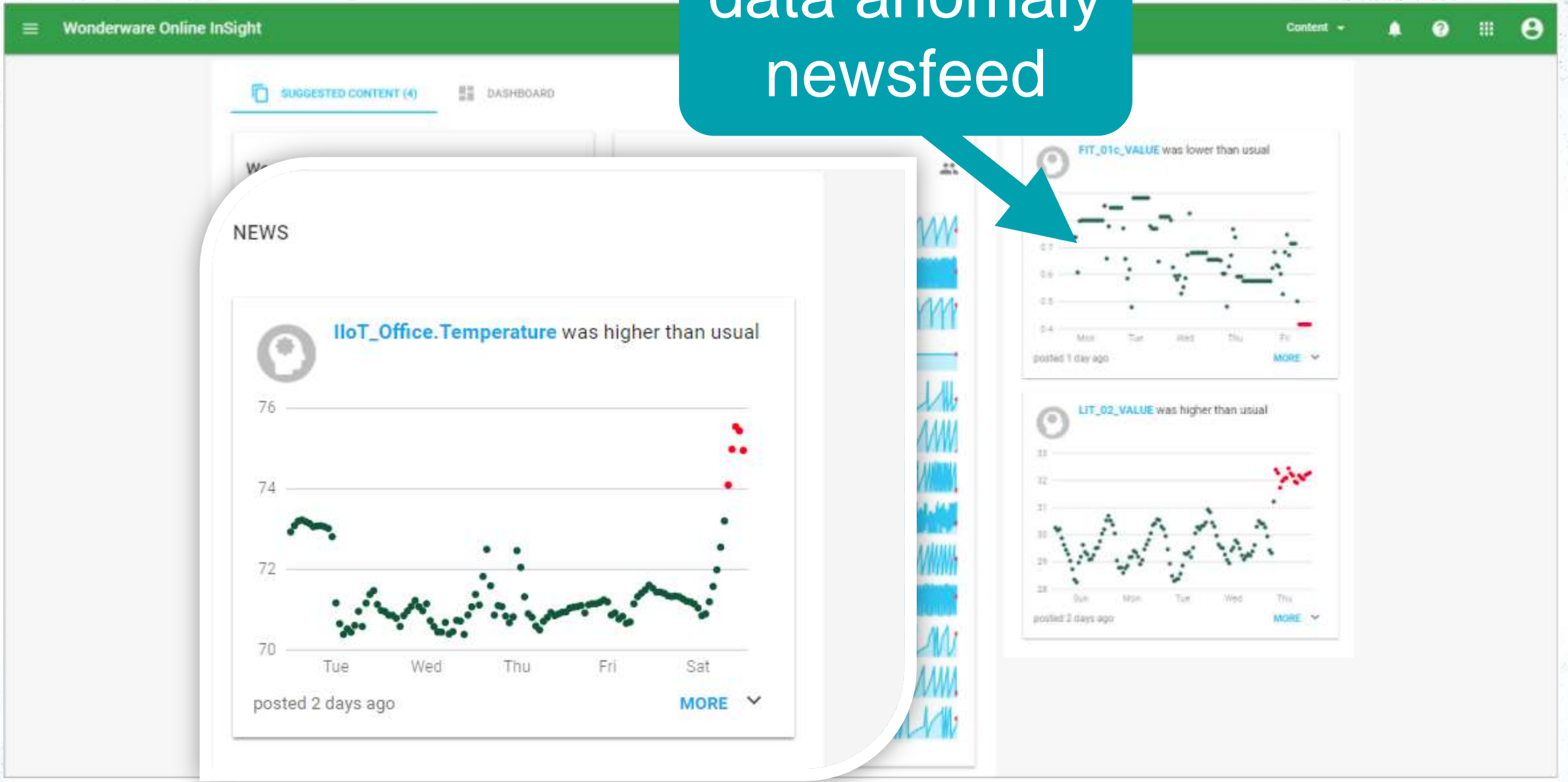
Sesame Snack-Speed 2



NEWS



data anomaly
newsfeed



Quick Customer Overview



Acme Foods Energy States

Tag	Type	Quality
State	Discrete	64
Unwinder Motor Film State	Discrete	64
State	Discrete	64
Unwinder Motor Film State	Discrete	64

Energy Consumption

Tag	Type	Quality
Infeed Motor Current	Analog	64
Machine1 .Main Motor Current	Analog	64
Motor Wrapper Current	Analog	64
Infeed Motor Current	Analog	64
Machine1 .Main Motor Current	Analog	64
Motor Wrapper Current	Analog	64
Infeed Motor Current	Analog	64
Machine1 .Main Motor Current	Analog	64
Motor Wrapper Current	Analog	64
Infeed Motor Current	Analog	64
Machine1 .Main Motor Current	Analog	64

Sesame Snack-State

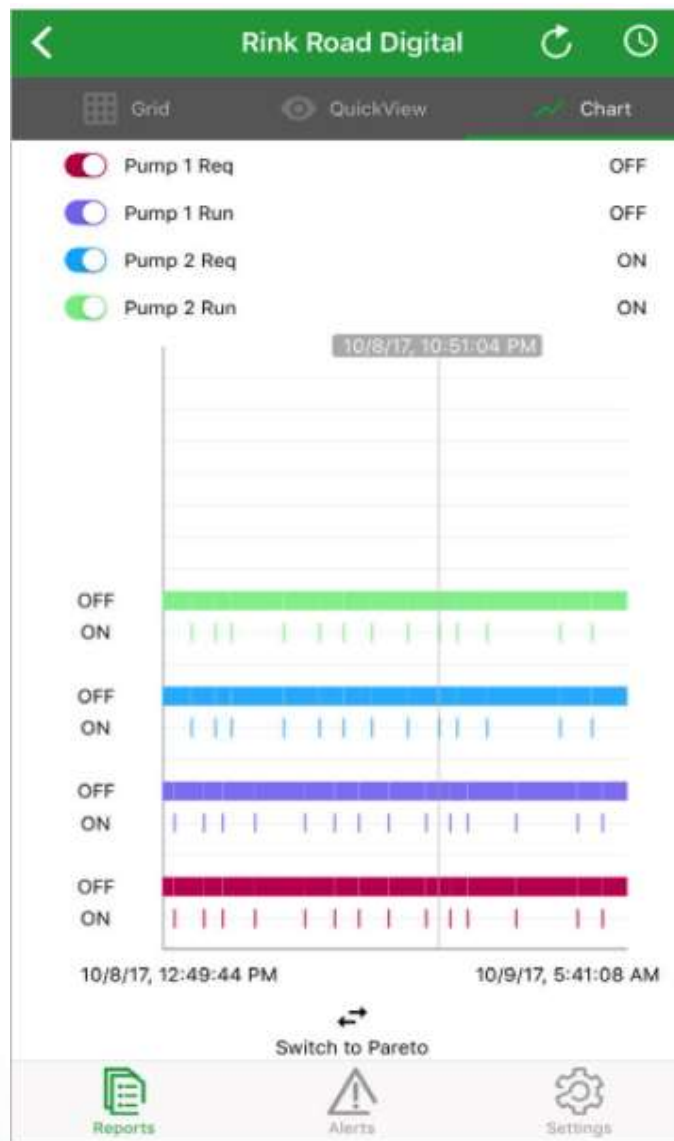
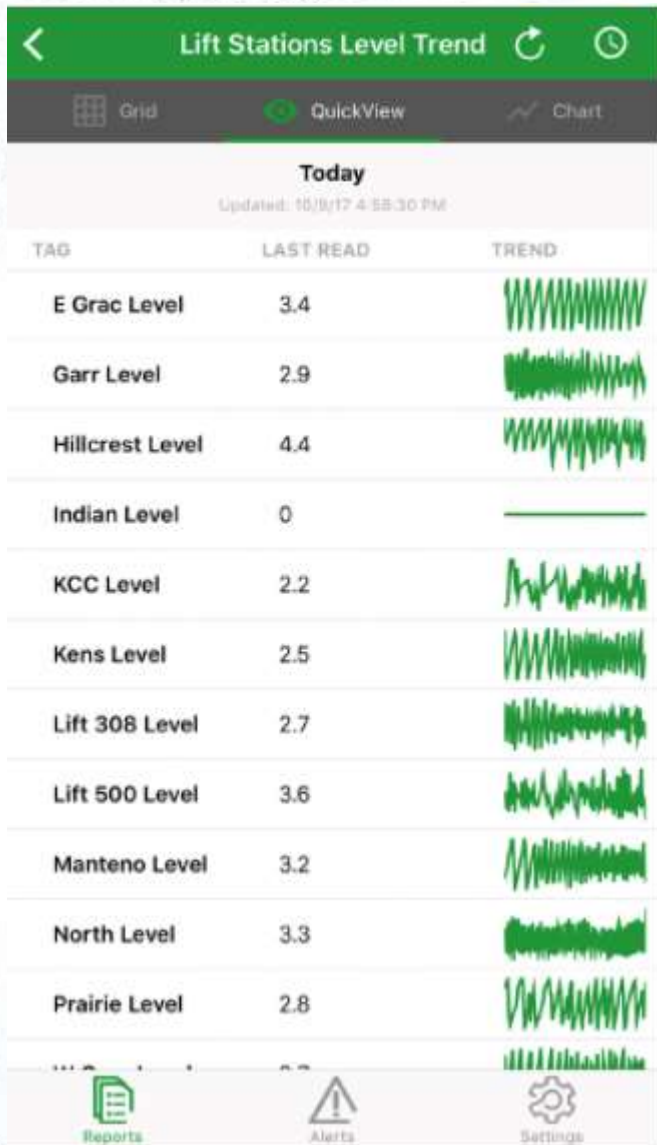
Tag	Type	Quality
State	Discrete	64
Unwinder Motor Film State	Discrete	64

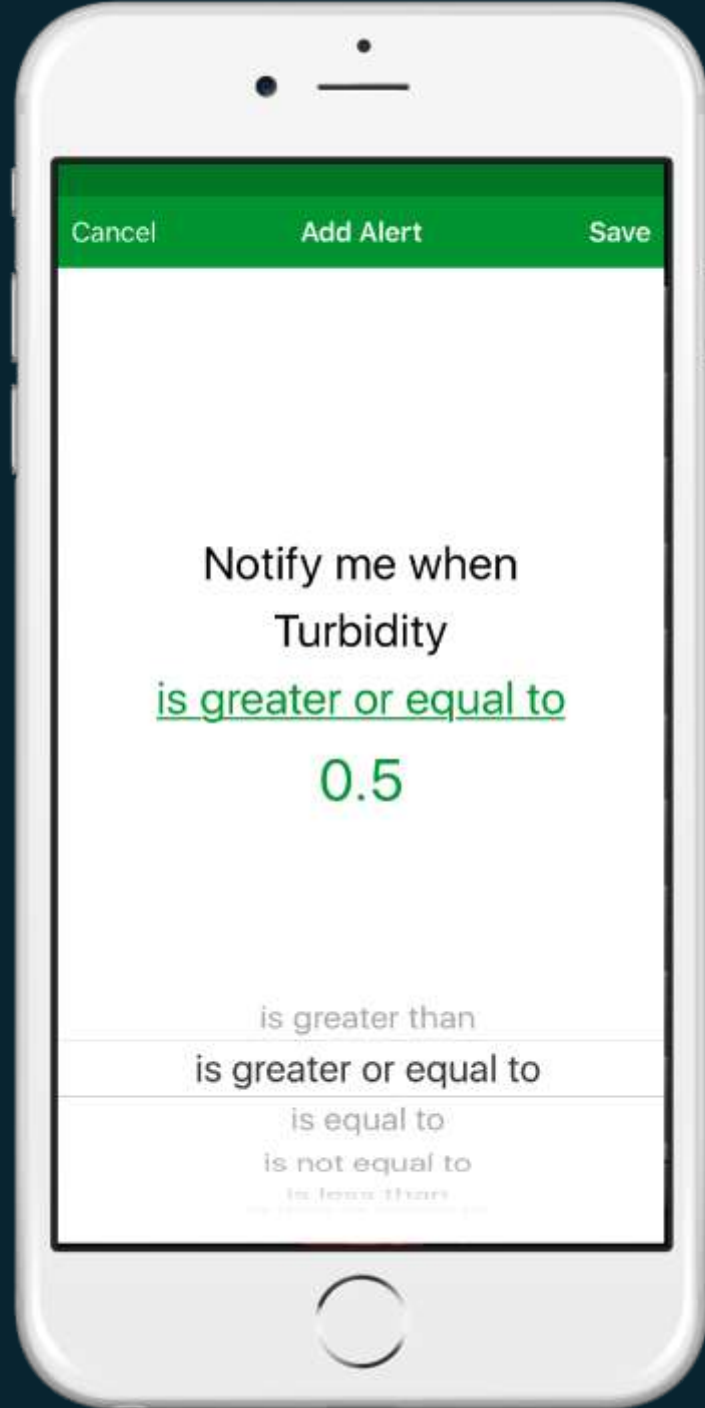
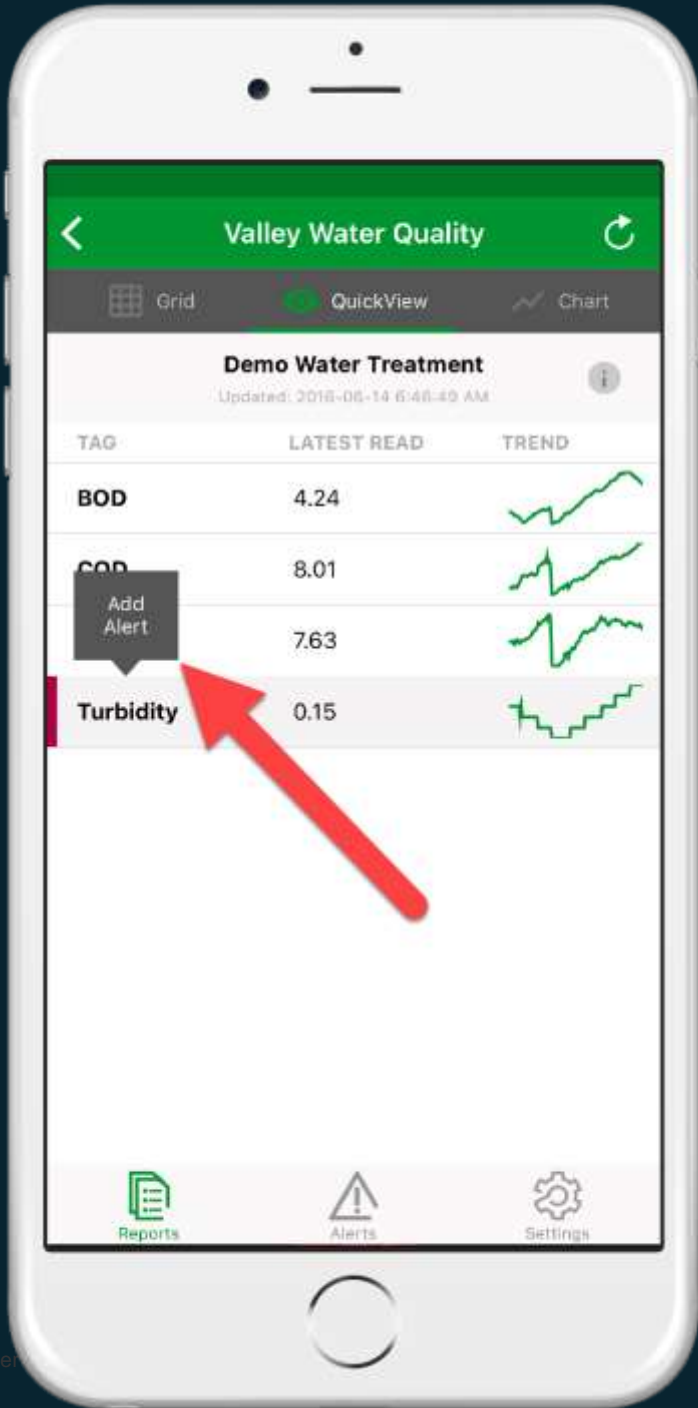
Wonderbar State

TagName	State
State	2 transitions 40.18% Stopped, 59.81% Running, 0.01% NULL
Unwinder Motor Film State	2 transitions 40.18% Stopped, 59.81% Running, 0.01% NULL

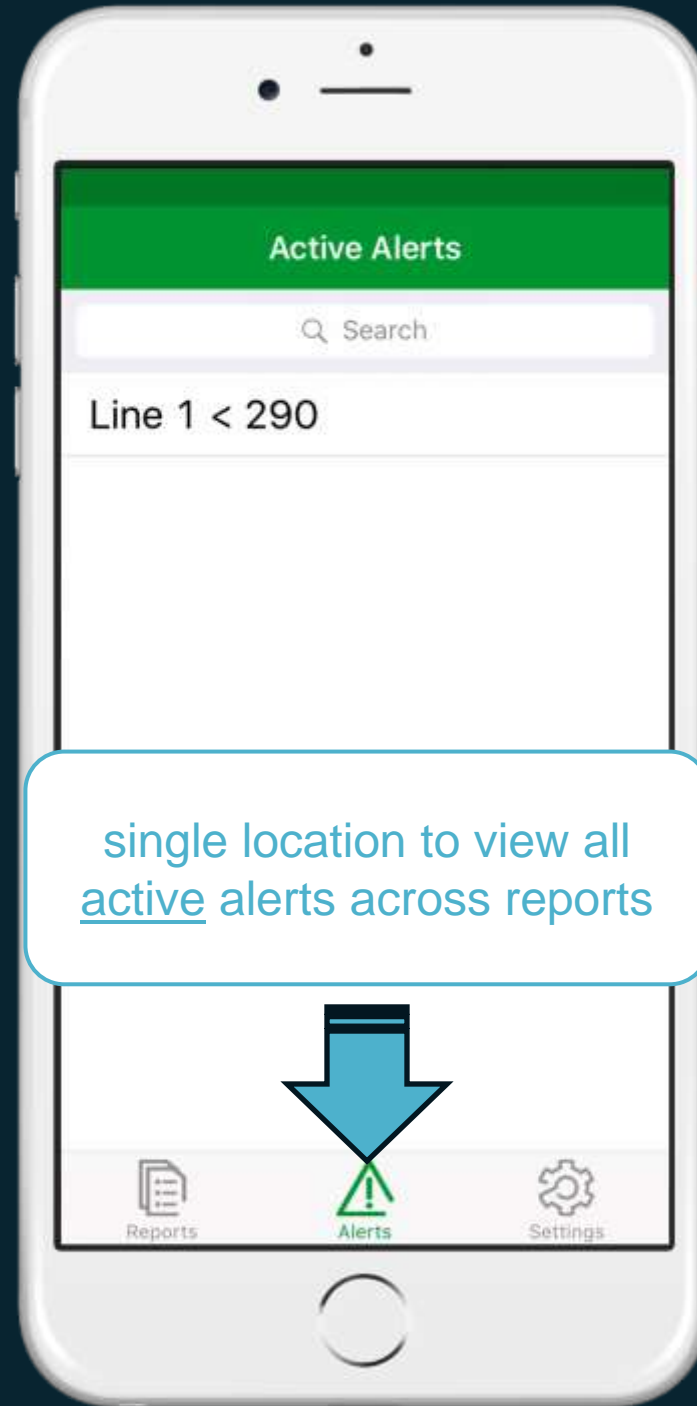
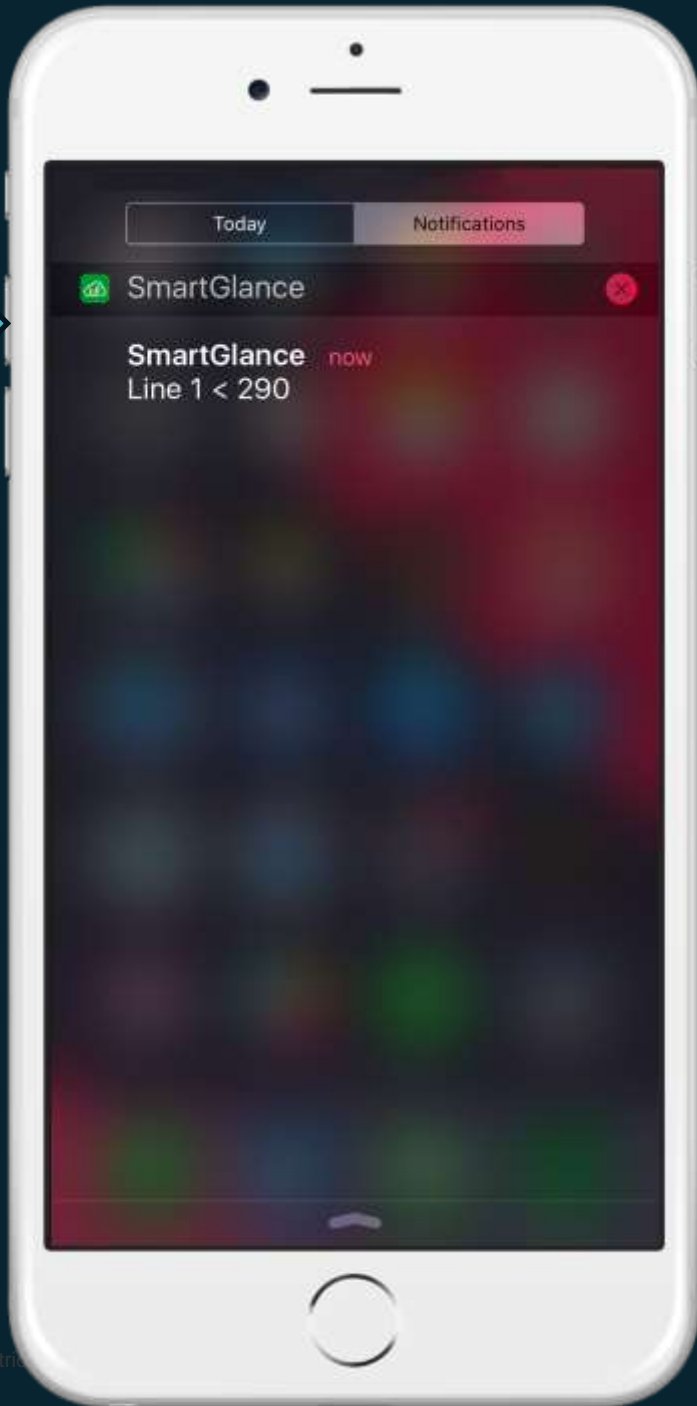
auto-generated dashboard







Configurable
push
notifications



single location to view all
active alerts across reports

Alarm Overview

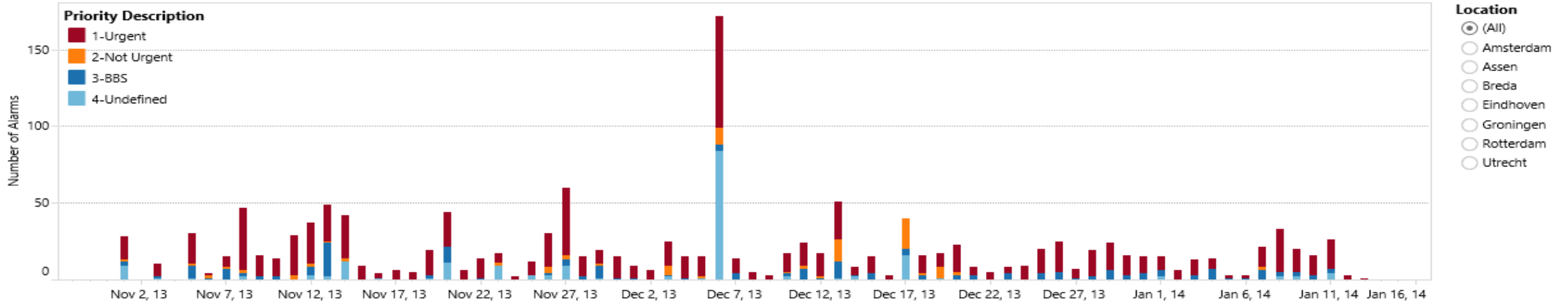
Alarm Priority

(All) ▼

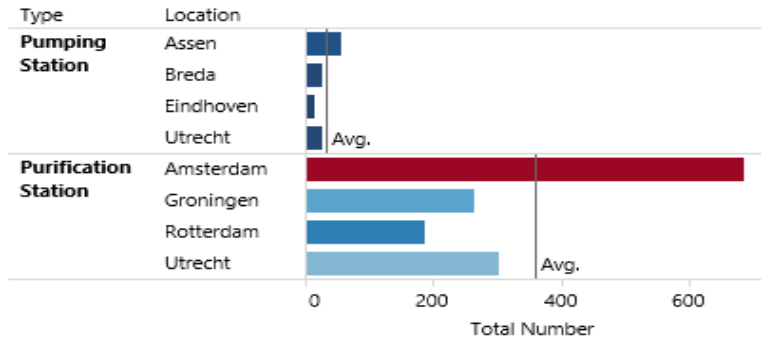
Period

10/31/2013 1/12/2014

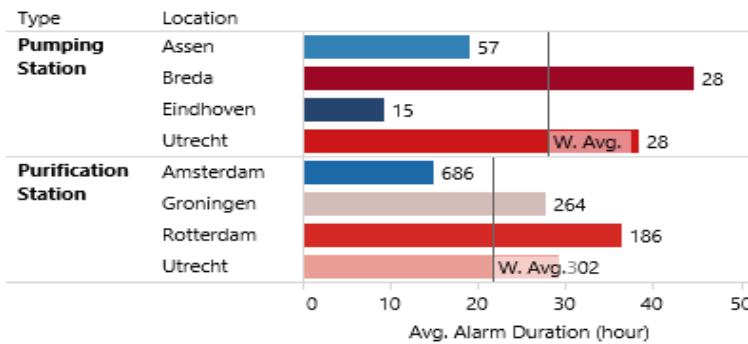
Number of Alarms



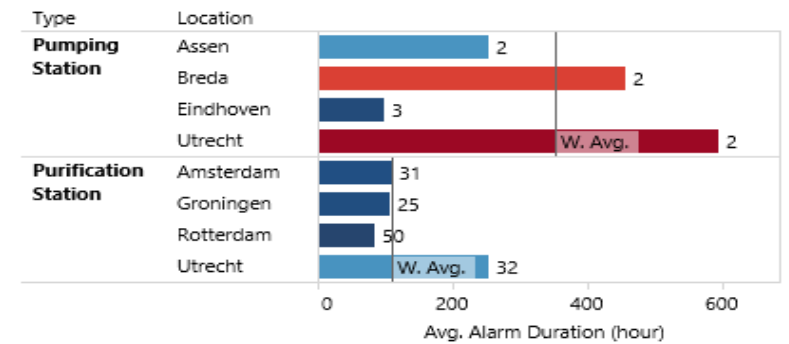
Alarms per Area



Avg. Alarm Duration



Long Alarms (> 48 hour)



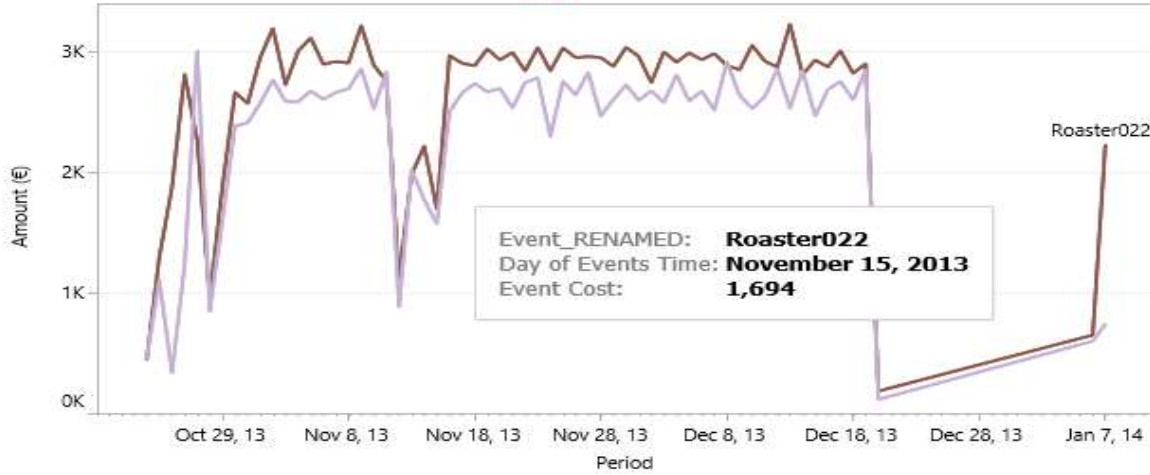
Equipment

Energy Type
(All)

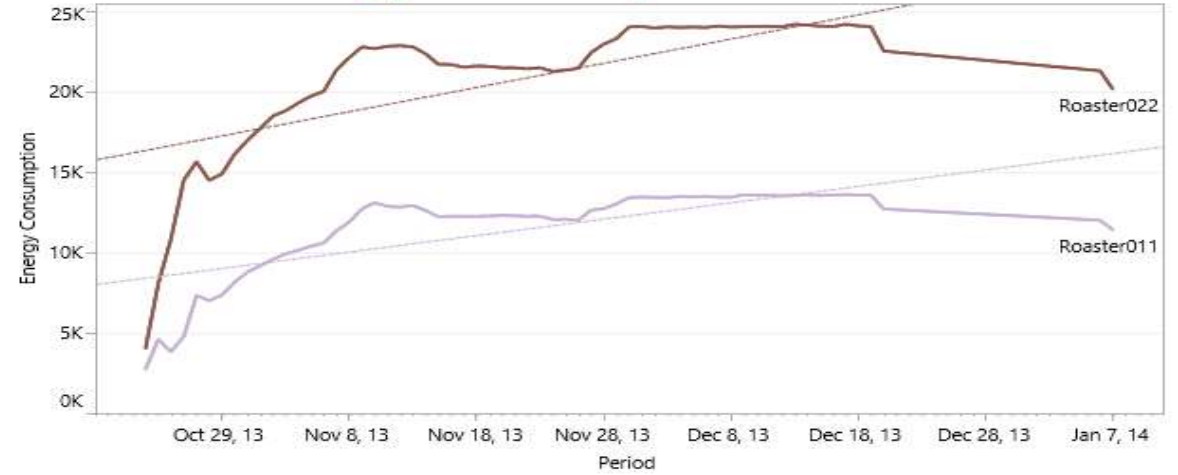
Equipment
(Multiple values)

Period
10/23/2013 9:12:02 PM 1/7/2014 11:59:59 PM

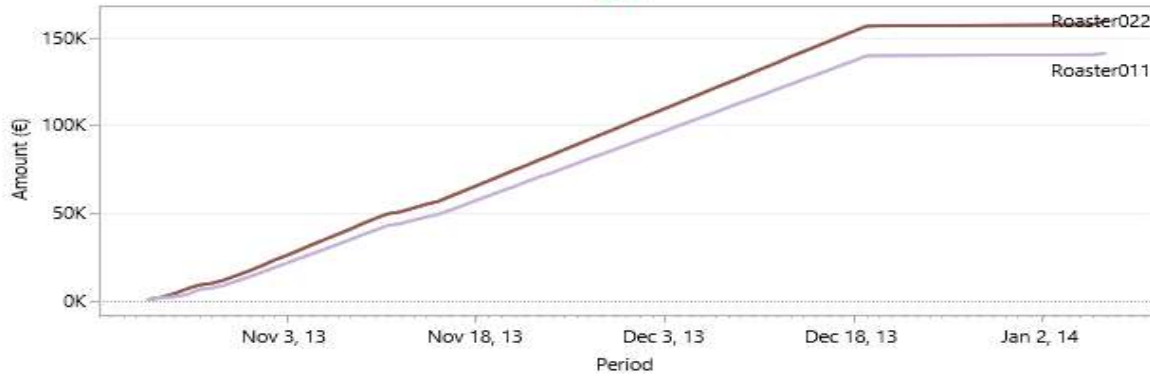
Energy Costs



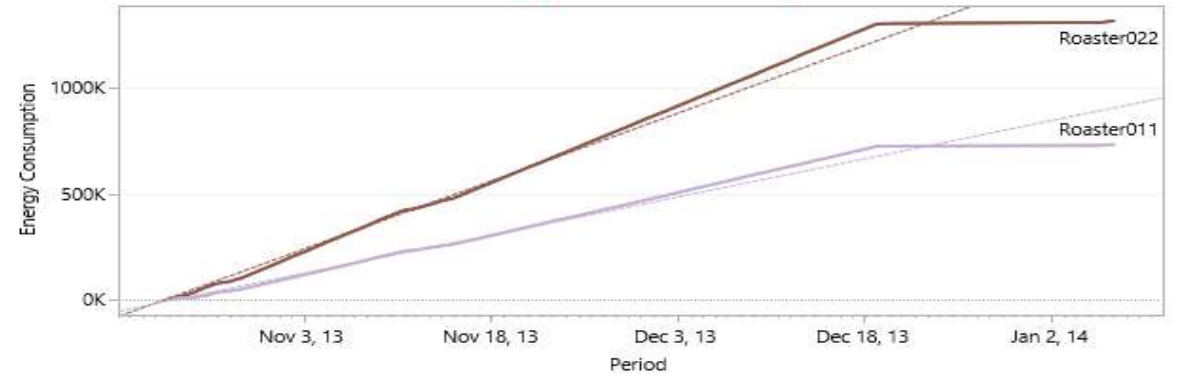
Energy Consumption Trend



Total Energy Costs



Total Energy Consumption





Questions?

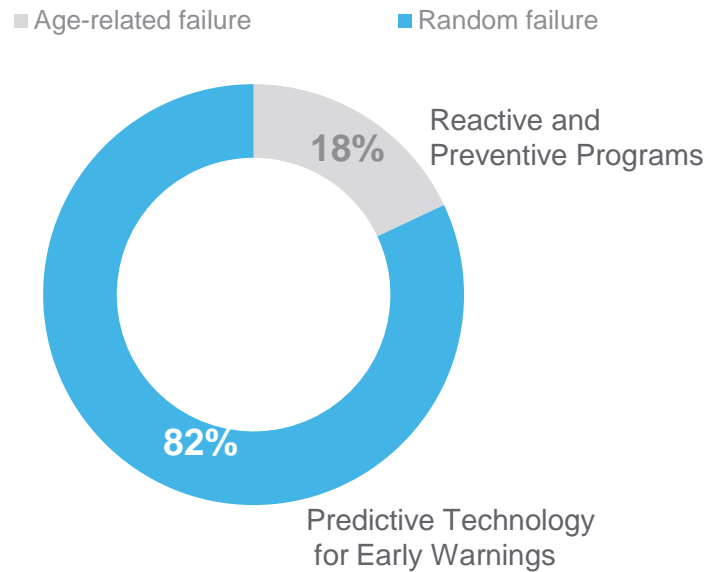
Dan.Finn@wonderwaremidwest.com

414-303-4745

DAN FINN
Account Executive

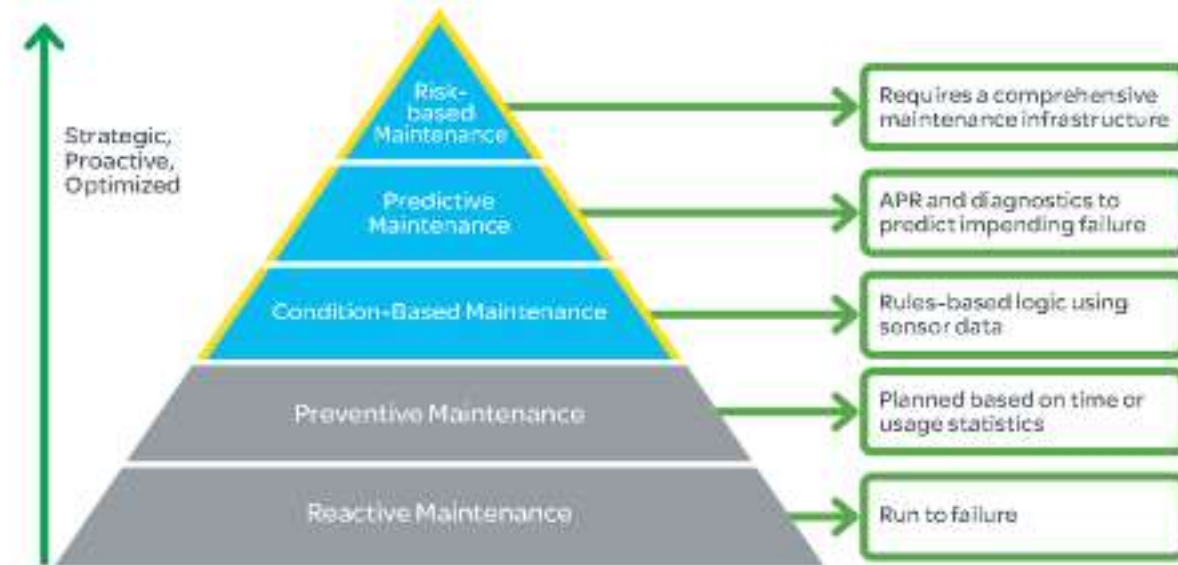
Evolve Maintenance Practices to Become Predictive

Failure Patterns



ARC studies show only 18% of asset failure is age-related. Based on these data, preventive maintenance provides a benefit for just 18 percent of assets, and monitoring for predictive maintenance is a recommended option for the rest. www.arcweb.com/Lists/Posts/Post.aspx?ID=260

It's a Journey



Architecture



Wonderware
Online InSight



**Rockwell
Automation**



SIEMENS



**Schneider
Electric**

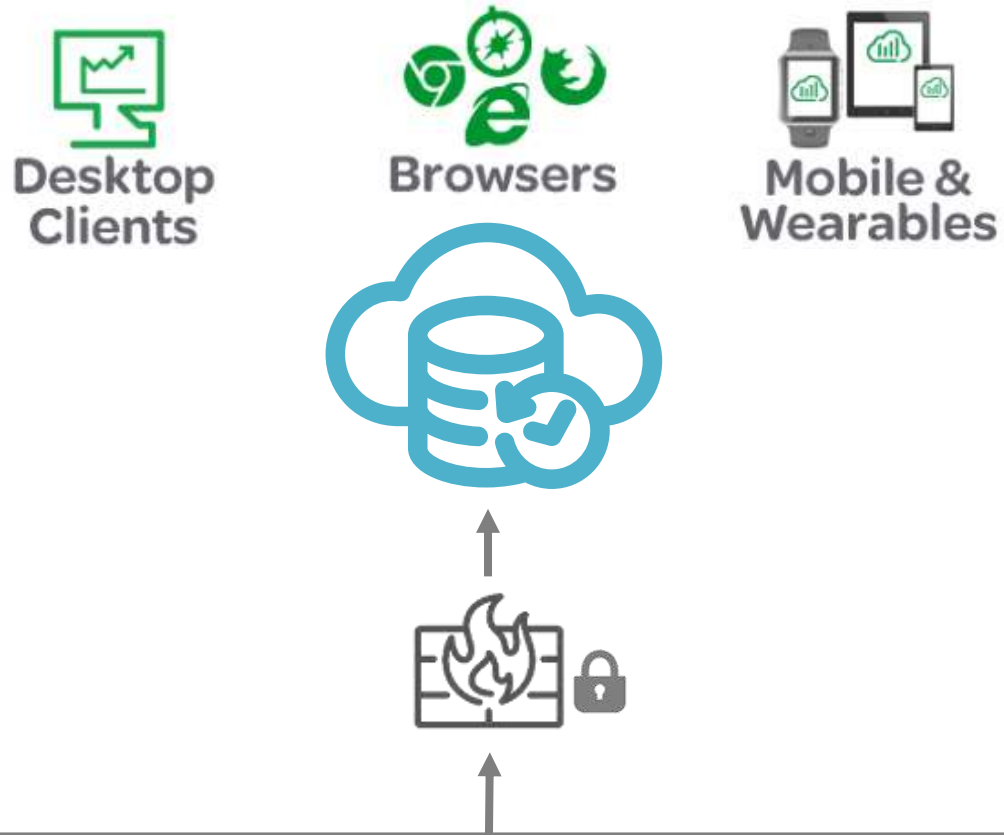


 **Raspberry Pi**



Wonderware
by Schneider Electric

Architecture



All Schneider Electric and Wonderware software*

