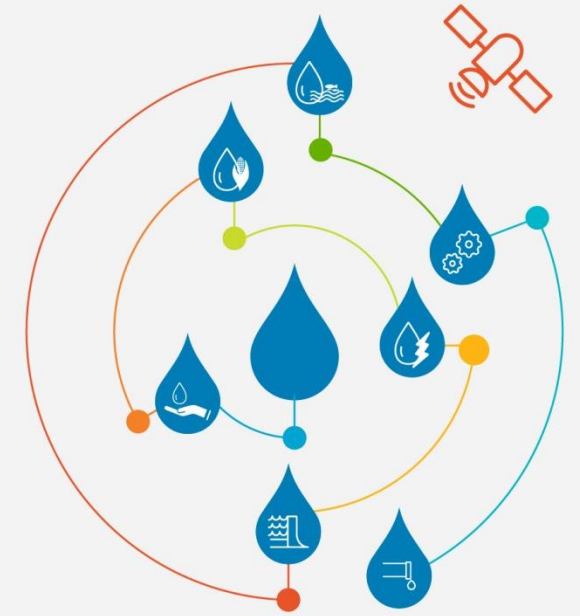


Value of Remote Monitoring Support for Local Desalination Plant Operation

Ebeye Island Project Case Study



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OSMOFLO
2 - 4 October 2018

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Desalination on Pacific Atolls

- Severely Limited Fresh water Sources
- Desalination introduced in 1980s – numerous projects since
- Very Few Successes - Life of Plants severely limited due to:

Donators / Investors / Developers / Authorities
focusing on CAPEX rather than
recognising Full Life Cycle Costs

Ebeye Island Desalination – 4 Plants in ~15y



- ‘Simple’ Plant?

Information

Knowledge

Limited controls

- Parts & Skills?

Small / Simple Initial Issues

Deterioration

Lack of Parts / Defunct Asset



Ebeye Water Supply & Sanitation Project - SWRO Plants

- International Competitive Tender in Sep 2015
- Funding by ADB & Australian Government, administered by ADB
- Kwajalein Attol Joint Utility Resource Inc o/b Marshall Islands Govt.
- Harrison Grierson NZ Owner's Engineer
- 430,000 US gpd (2 x 50%) - Design, Supply, Install & Operate(2y)
- Practical Completion 52w (48 w + 4w)
- LOA Jan 2016, Contract May 2016,
 - Actual PC Sep 2017, O&M to Sep 2019

Ebeye Water Supply & Sanitation Project - SWRO Plants



Osmoflo Remote Monitoring -



What is Osmoflo PlantConnect?



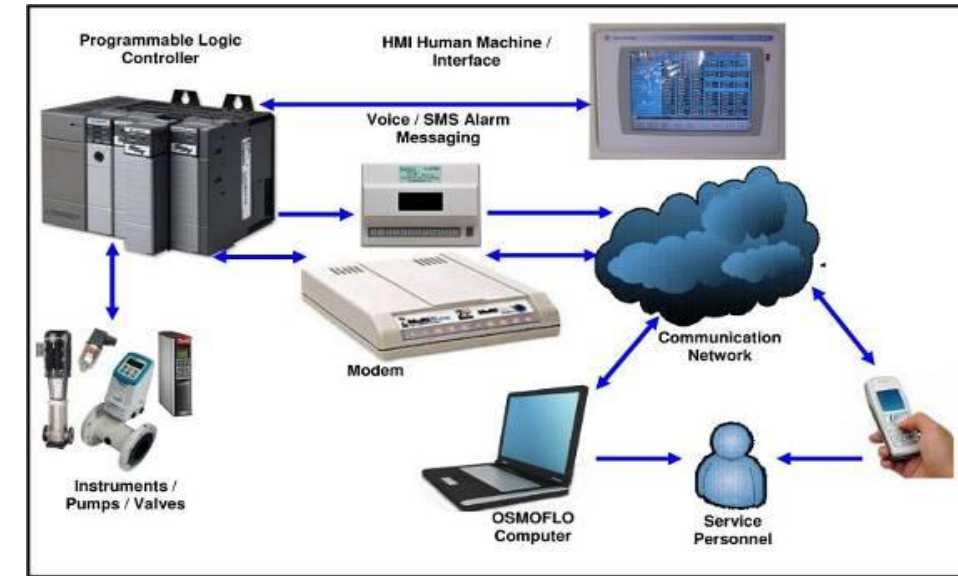
- SCADA, Cloud based, Live access to PLC:
Operating Data / Warnings & Alarms /
System Parameters / Setpoints
ie = Total Plant Supervision & Control

- Operating Datalog & Alarm History

Troubleshooting & Optimisation based on early recognition of trends

Informed decision making on membrane cleans & other maintenance

- Generation of detailed client reports



Calculated

- ☐ Recovery
- ☐ Rejection

Flows

- ☒ FIT1201 - Perme
- ☒ FIT1202 - PX Rej
- ☒ FIT1203 - PX LP I
- ☒ FIT1204 - Booste

Normalised

- ☐ Net Driving Press
- ☐ Permeate Flow
- ☐ Pressure Differen
- ☐ Salt Passage

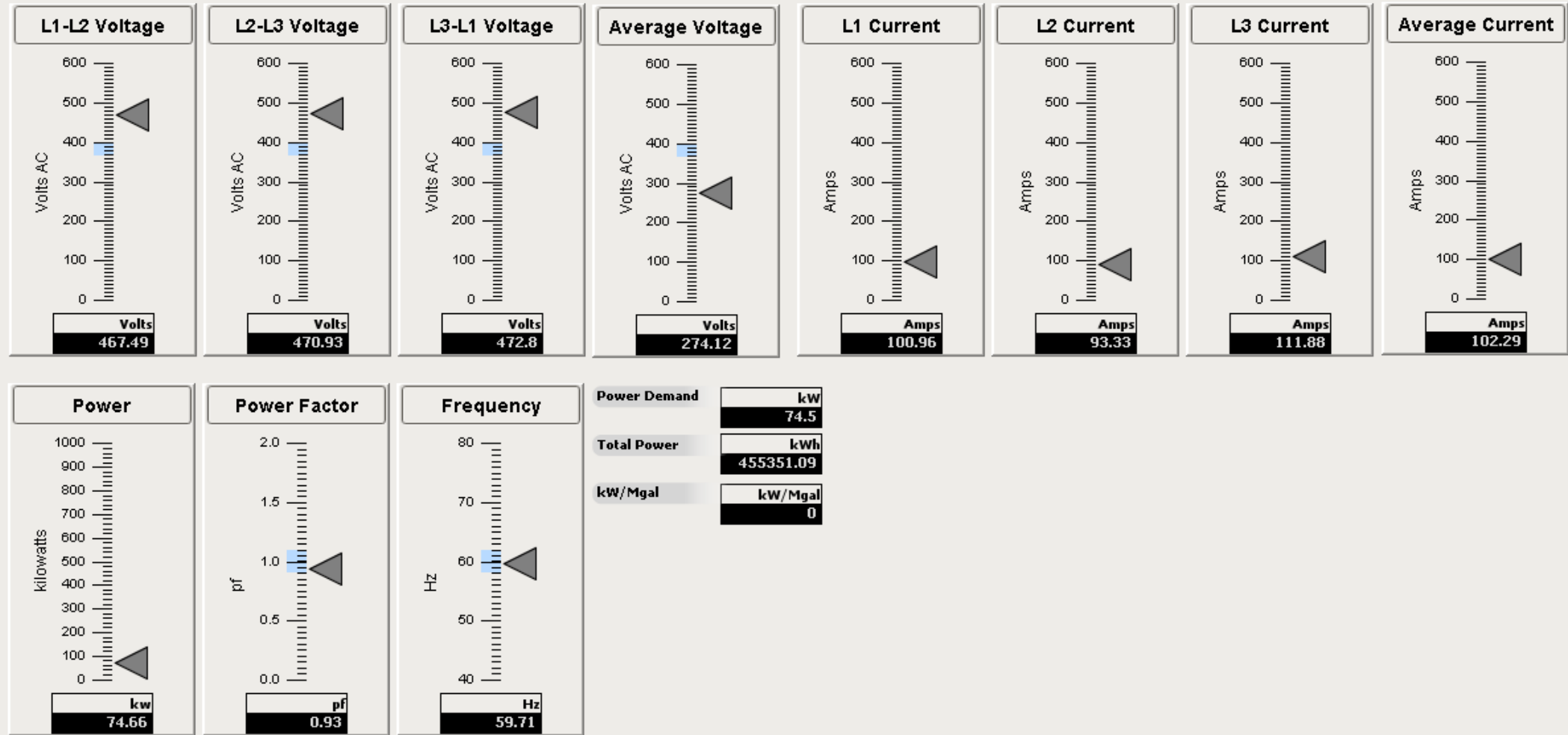
Pressure

- ☐ PDI1201 - CF Dif
- ☐ PDI1202 - RO Di
- ☐ PT1102 - CF Inle
- ☐ PT1201 - CF Out
- ☐ PT1202 - Membr
- ☐ PT1203 - PX Rej
- ☐ PT1204 - Membr

Quality

- ☐ AIT1201 - Feed p
- ☐ AIT1202 - Feed C
- ☒ AIT1205 - Perme
- ☐ TT1203 - Feed Ti

System Power Monitoring

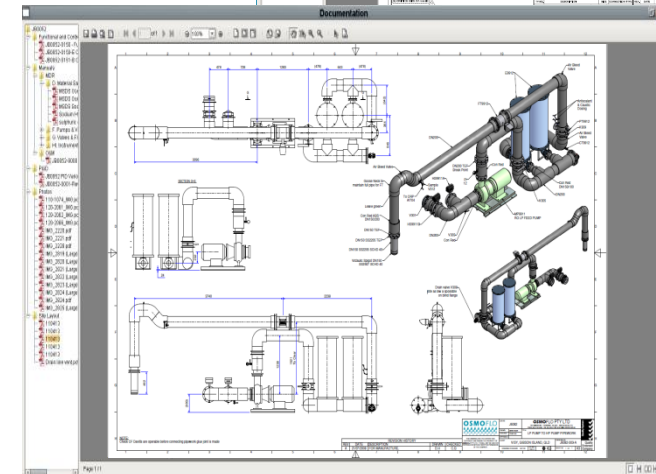
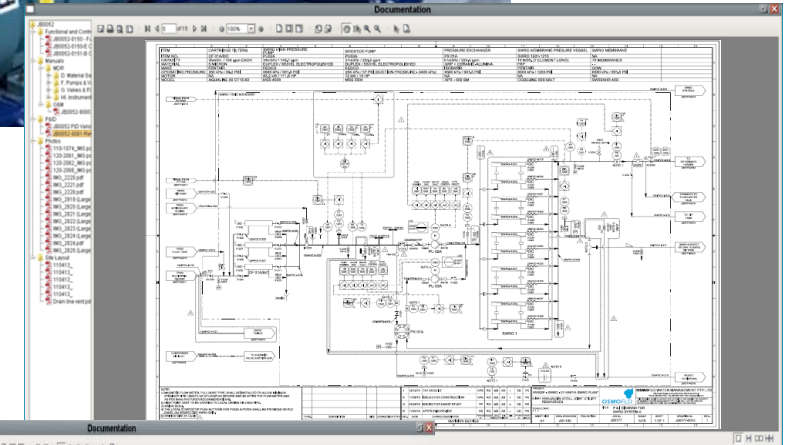


Last: 30 Days

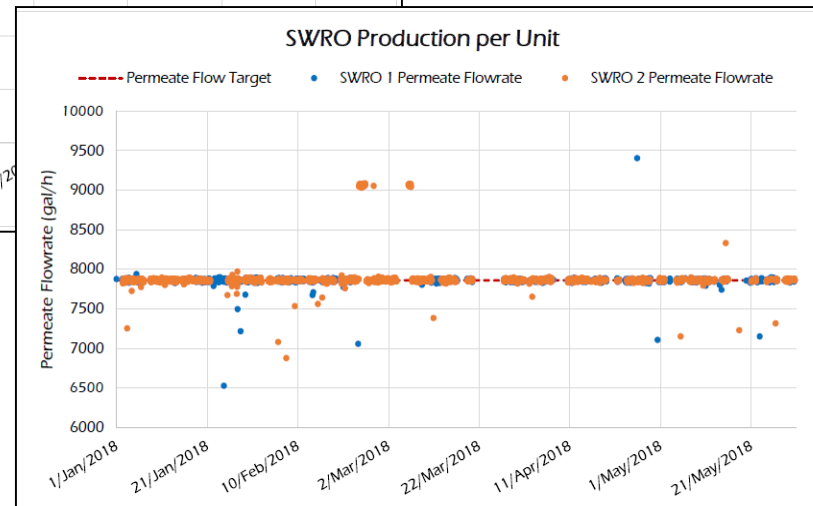
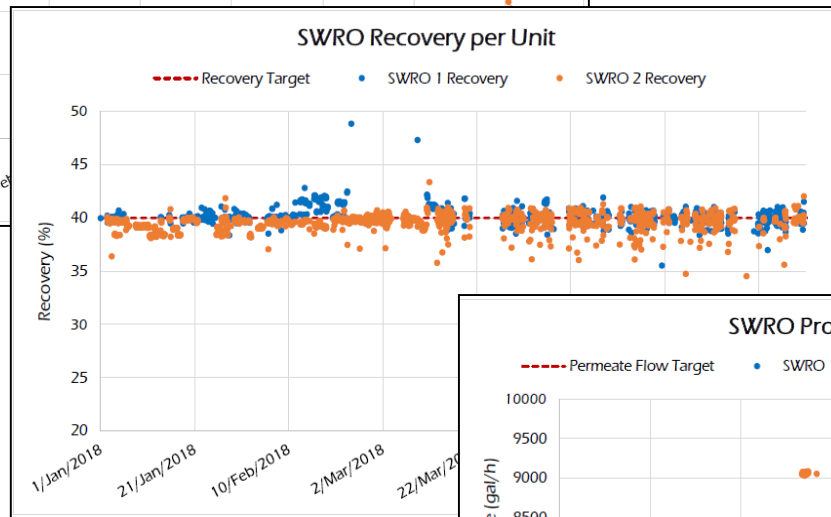
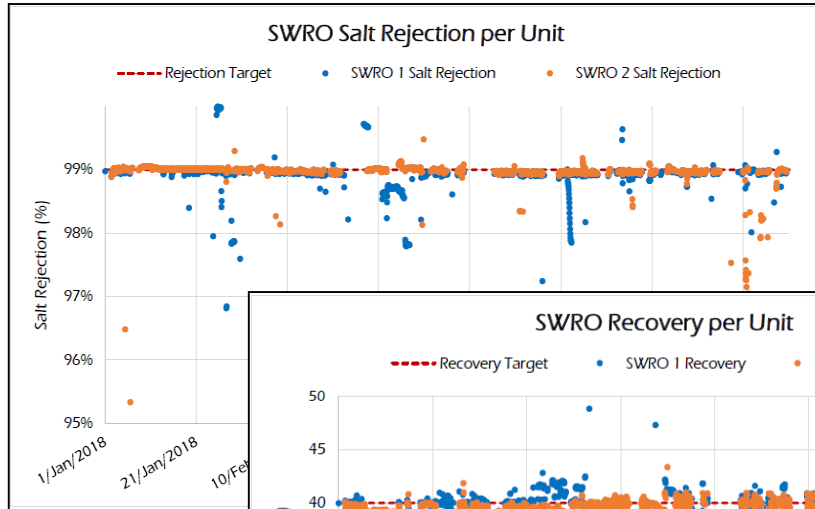
FIT1204: SWRO Train 1 Booster p
Suction Flowrate Low Low Limit

Context

Operation Support – Equipment Issues



Operation Support – System Analysis



KAJUR SWRO WATER TREATMENT PLANT

Ebeye, Marshall Islands

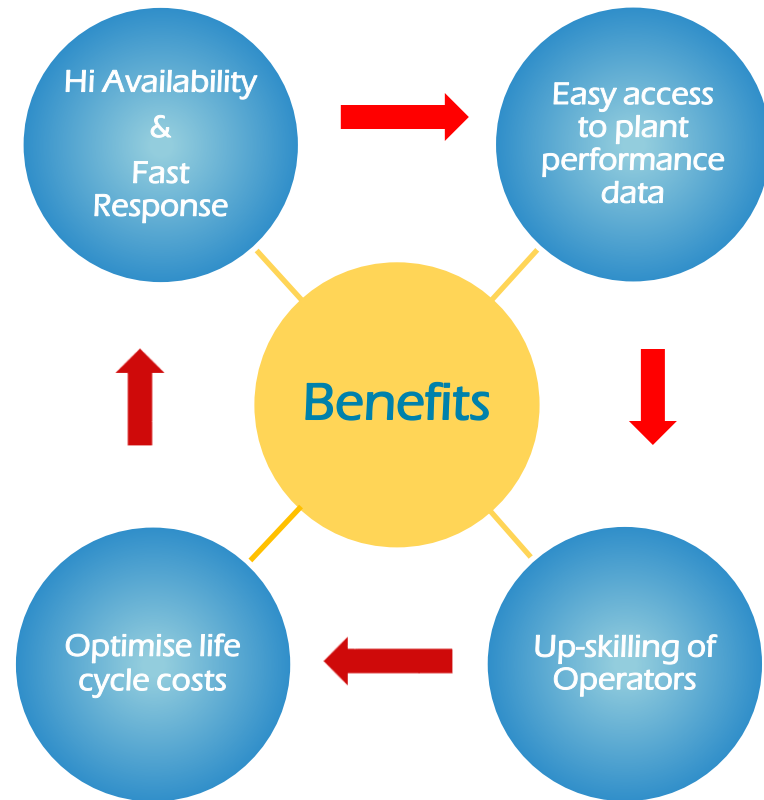
Monthly Report

May-2018



Note: Some data presented in this report is missing due to connectivity issues

Expected Benefits for Ebeye SWRO



- Intangible / Hard to quantify benefits
 - Plant availability & reliability
 - Upskilling of operators
- Expected savings
 - Extension of membrane life to 5y-6y (US\$100k saving)
 - No CAPEX for next 15y-20y (US\$ 3M saving)

Summary



- Desal plant life cycle costs recognition are critical for success of Pacific Islands projects
- Quality operation and information based asset management will deliver not just reliability but also lower whole of life cost
- Remote monitoring based O&M support provides for world class operation of smaller desal plants in remote areas

Thank You

