

Desalination in Malta

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History of Desalination in Malta

1966 - 4,500m³ per day MSF distiller commissioned

1982 - 20,000m³ per day Seawater RO commissioned at Ghar Lapsi

1985 - 15,000m³ per day Seawater RO commissioned at Tigne

1991 - 17,600m³ per day Seawater RO commissioned at Pembroke.



1881 - Commissioning of a Distiller for production of potable water following a drought.

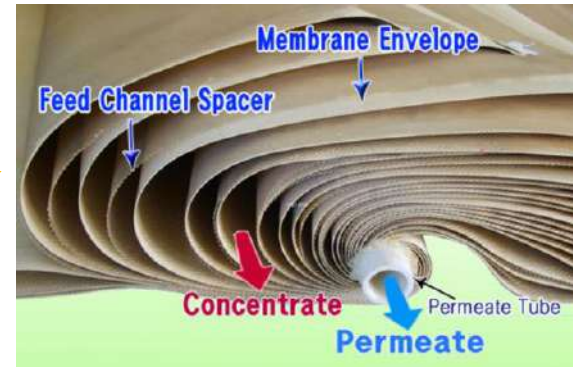
1973 - 2,250m³ per day MSF plant commissioned in Gozo

1983 - 4500m³ per day Brackish RO commissioned at Marsa

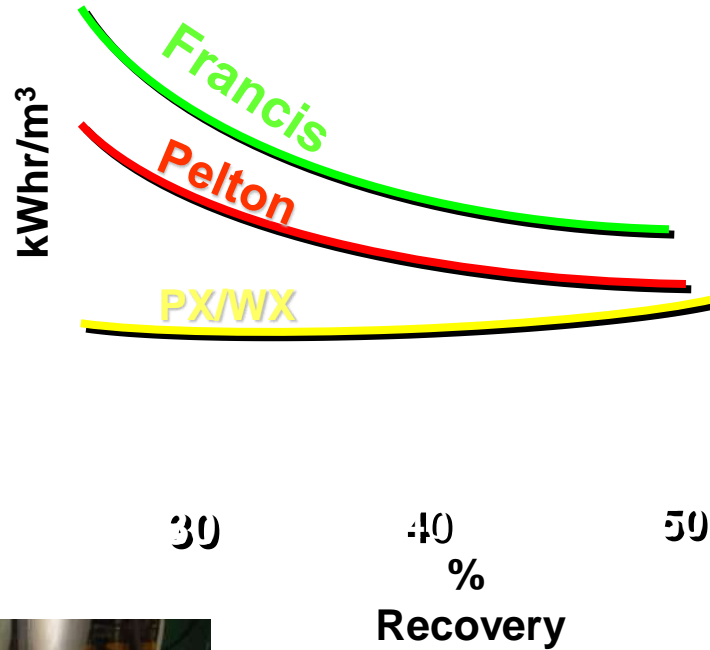
1988 - 18,600m³ per day Seawater RO commissioned at Cirkewwa

1994 - Pembroke RO upgraded to 54,000m³ per day

Membrane development



Energy Recovery Devices



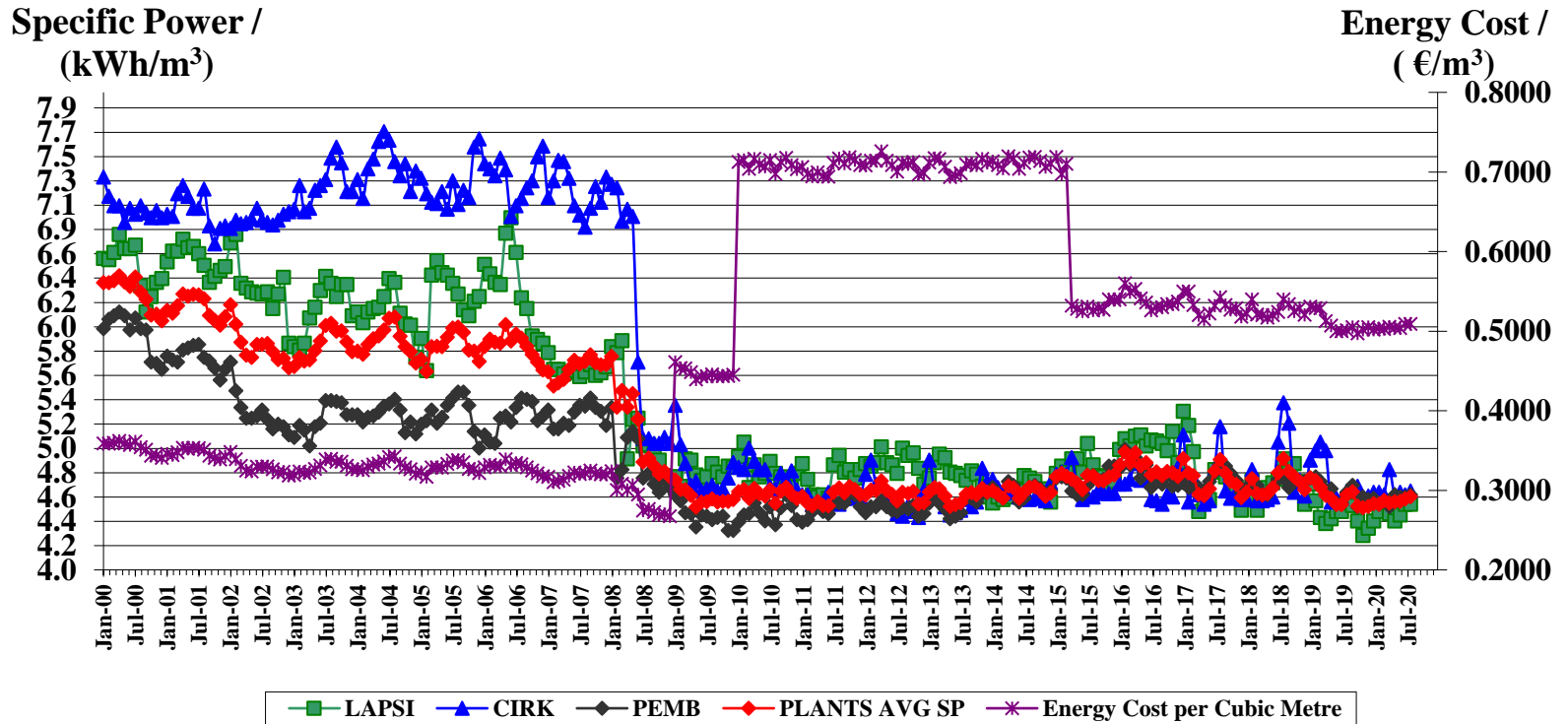
Plants' Upgrade



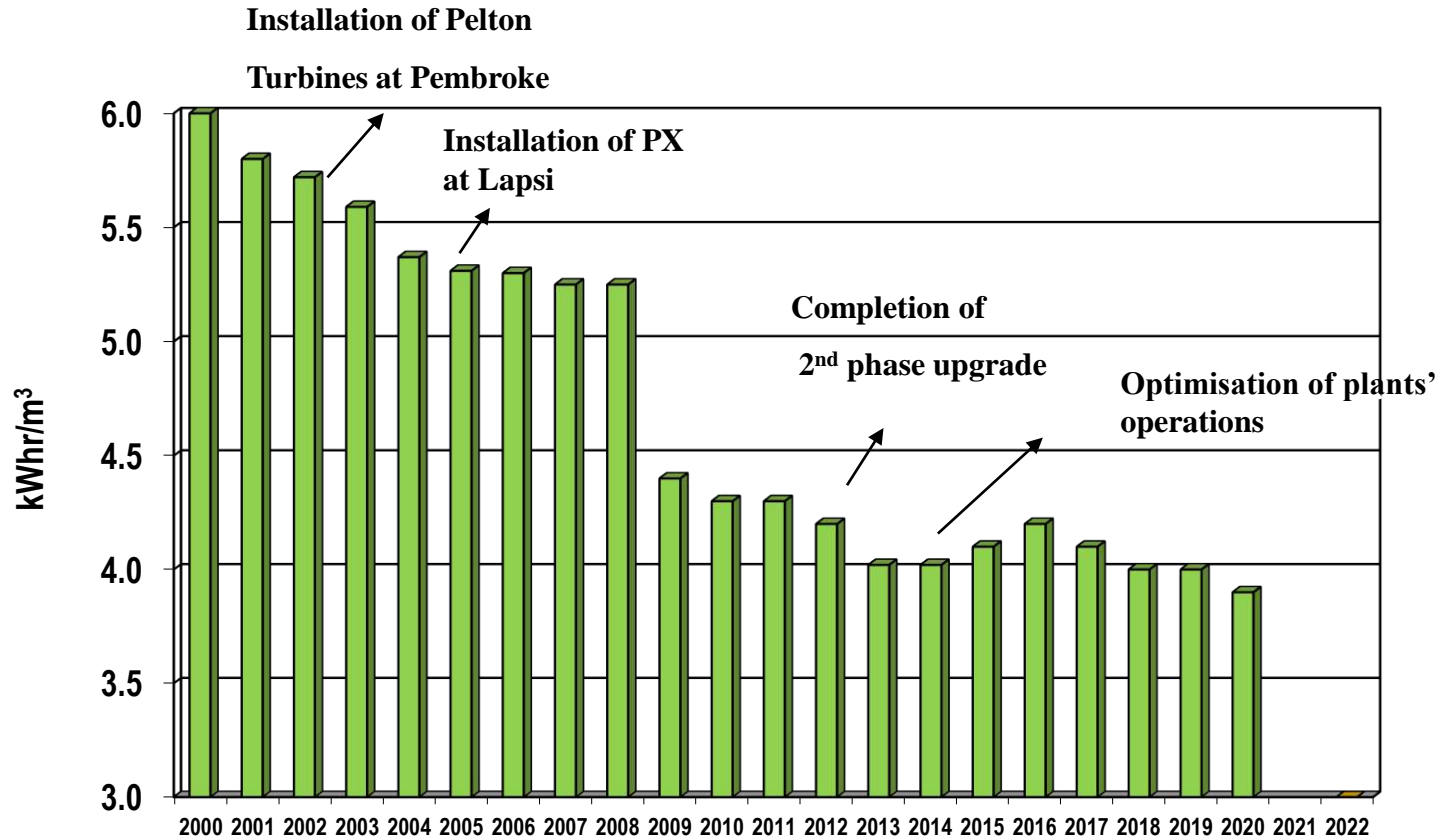
Single Stage
Single Pass
High Rejection
Chloride < 100ppm
42% Recovery



Specific Power Trends



Specific Power – Trends



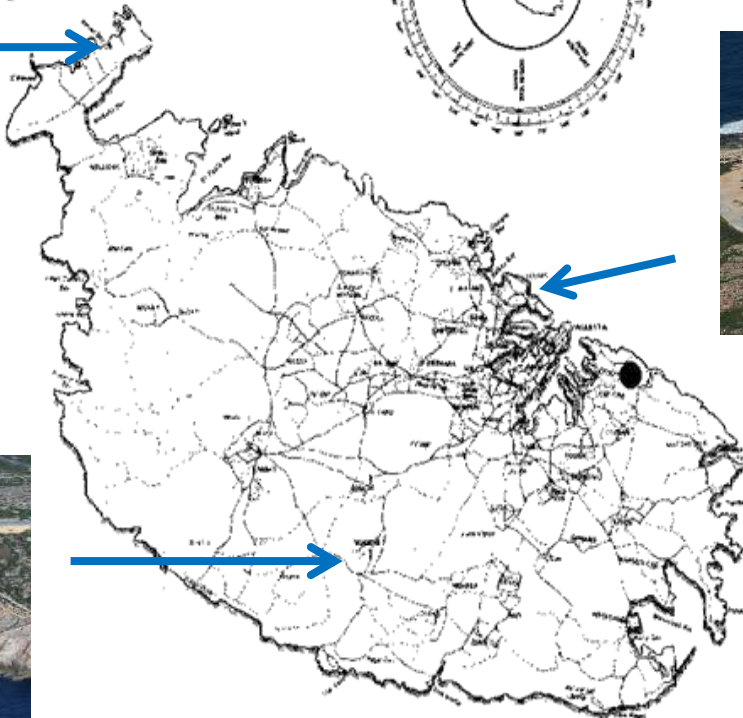
NB Specific power includes Energy utilised for well and booster pumps but excludes transfer pumps

Increase in RO capacity

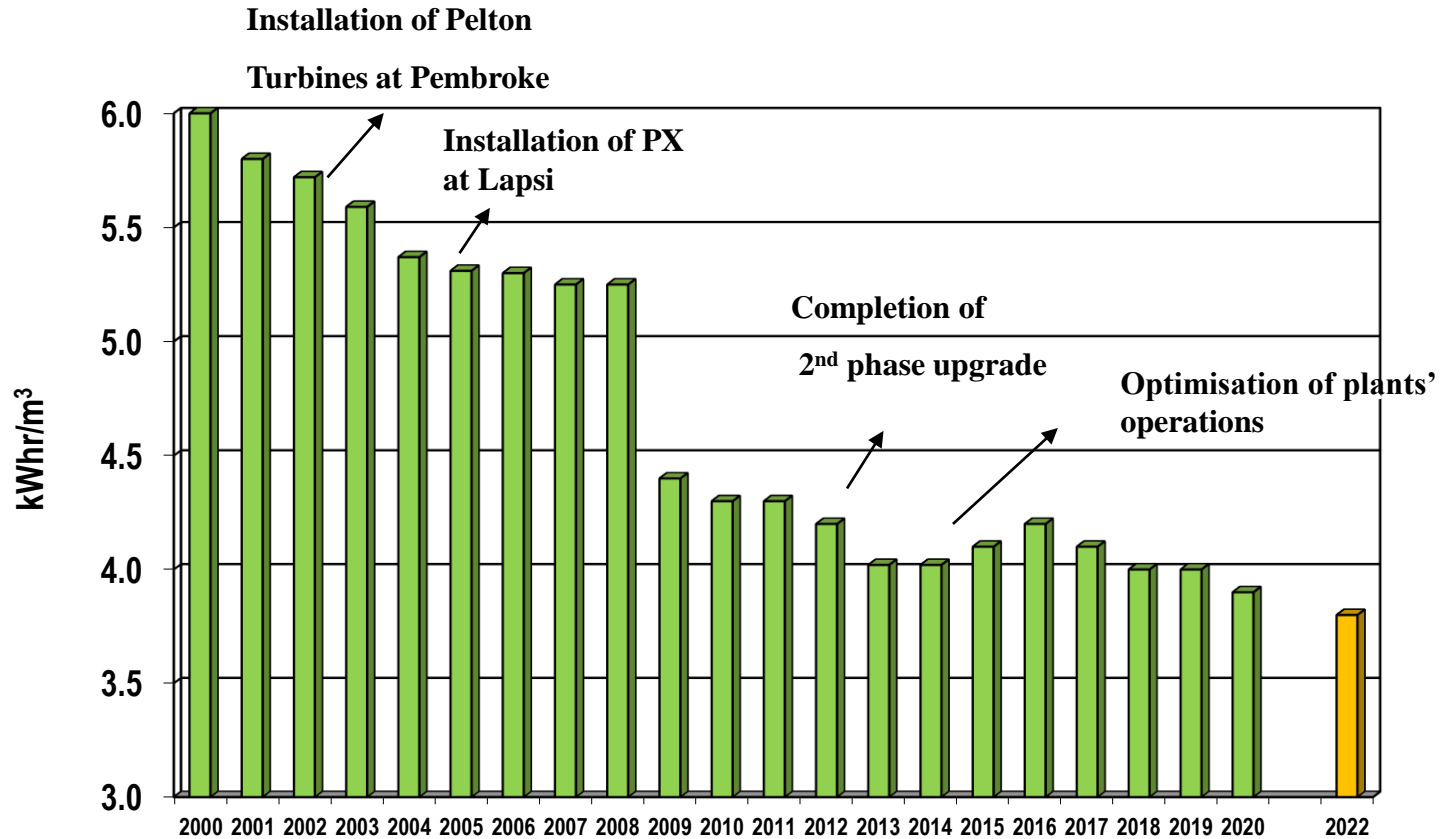
74,000 m³/day

103,500 m³/day

112,500 m³/day



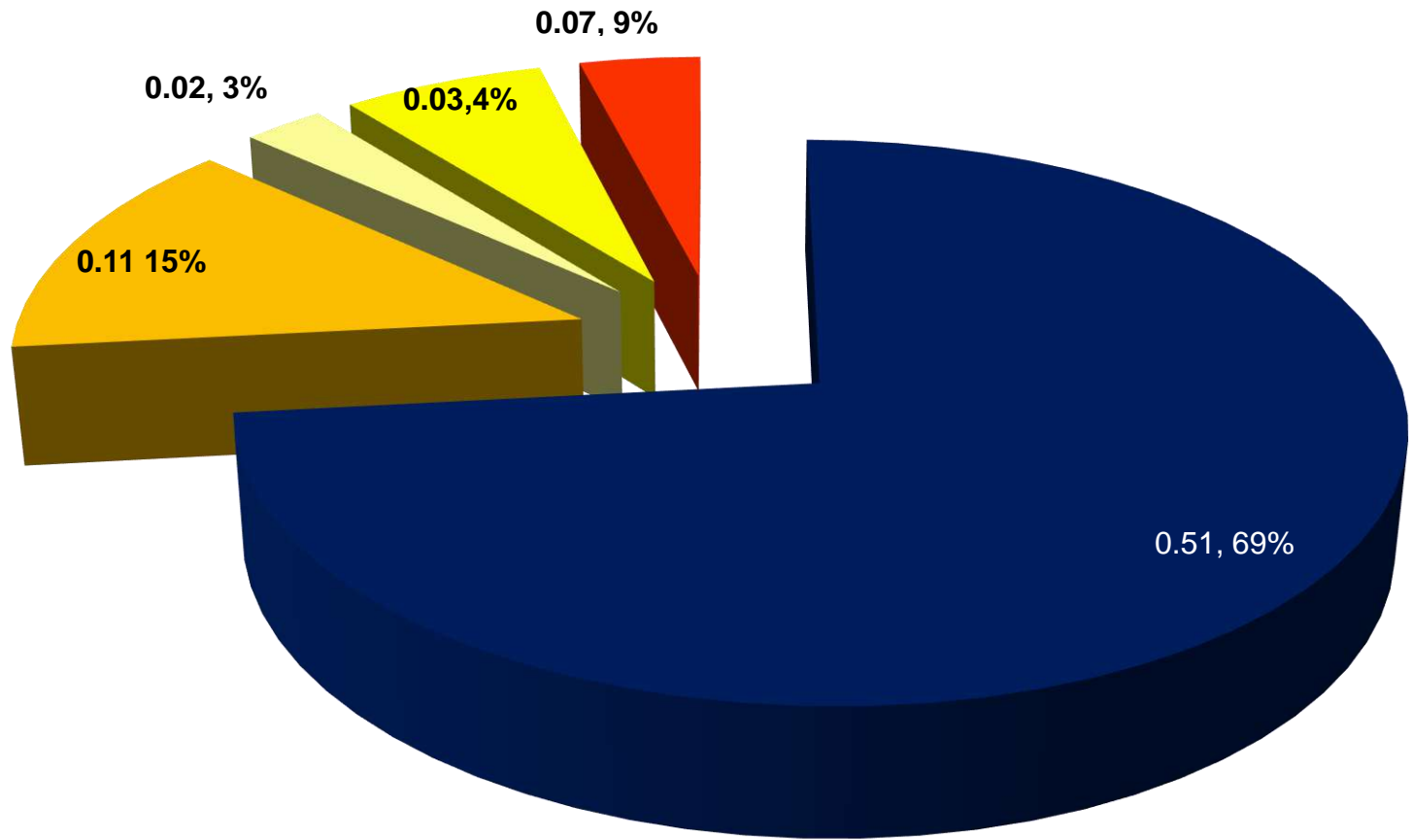
Specific Power – Trends



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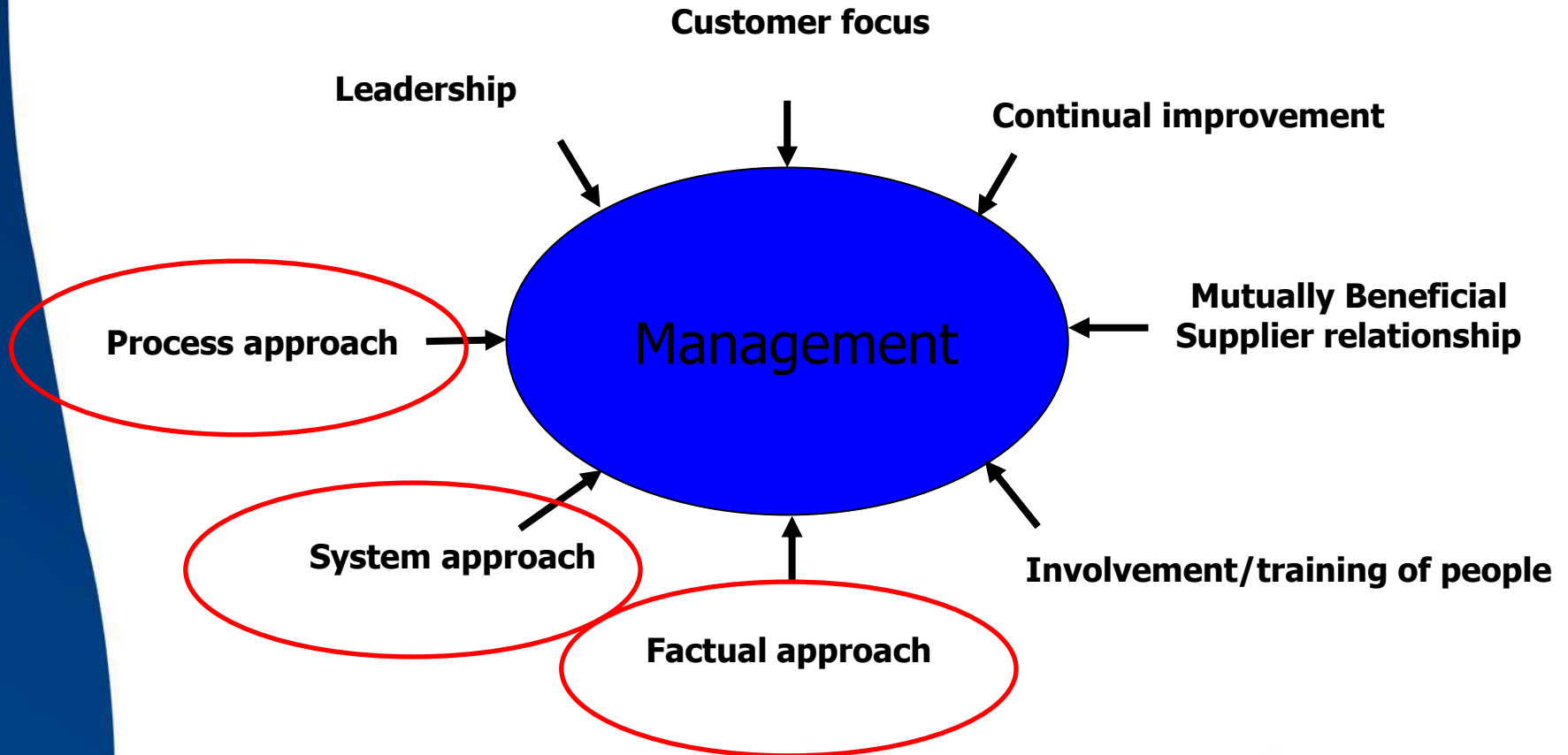
3.0 – 3.1 kwh/m³

Specific cost - €0.74/m³



■ Electricity ■ Labour ■ Chemicals ■ Parts ■ Depreciation

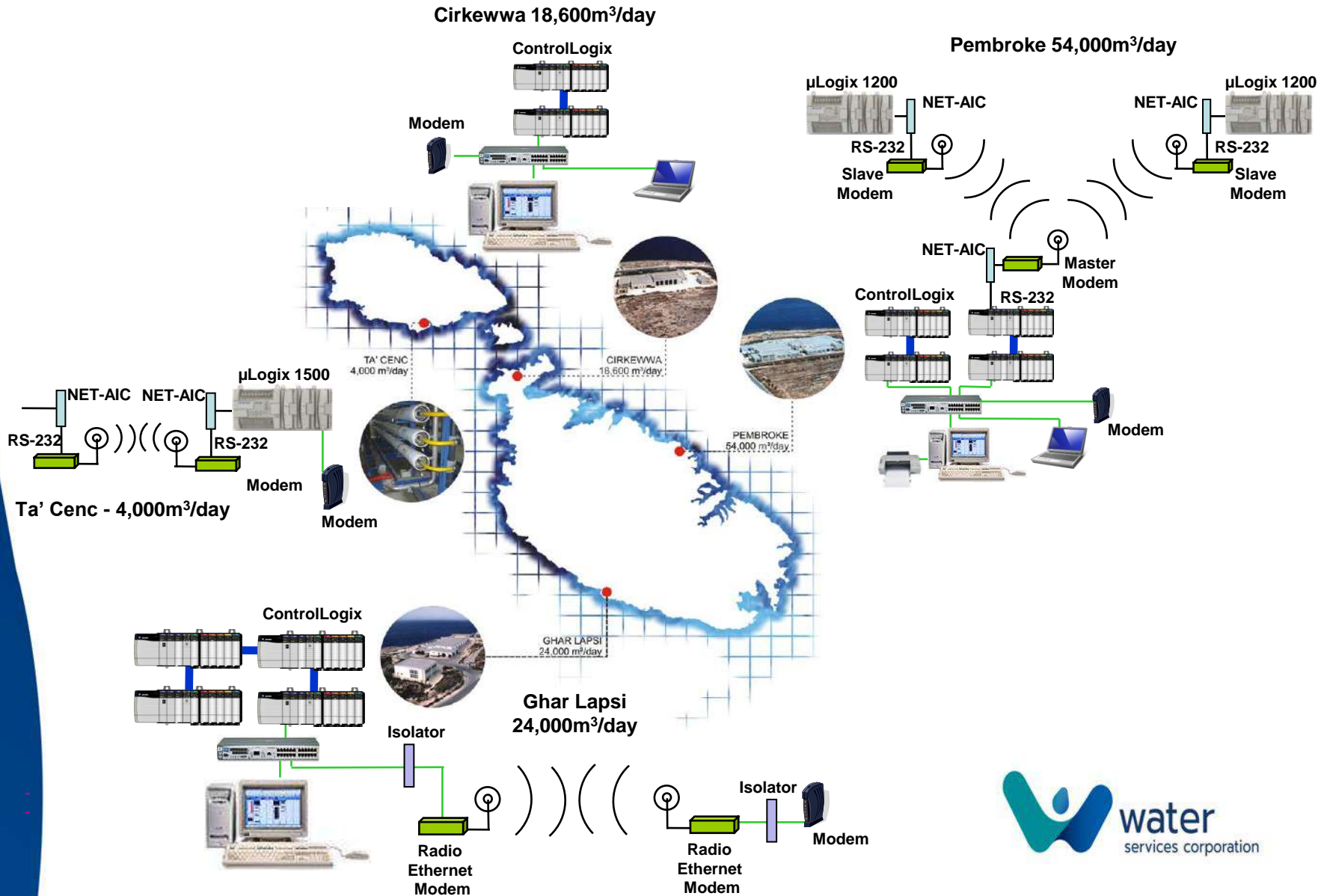
RO operations- Key Success Factors



Objectives of SCADA

- **To operate more efficiently by managing related resources and activities as a process**
- **To manage interrelated processes as a system**
- **To base decisions on the analysis of factual data and information**
- **To Interface the various software packages to the SCADA system in order to automate plant operation and generate on line reporting for efficient and effective :**
 - **Maintenance management**
 - **Membrane management**
 - **Energy Audits**

SCADA Hardware Setup



Plant Automation

Autonomous operation of all plants through dedicated software developed by WSC engineers. Algorithms based on 30 years operational experience ensure :

- **More effective operation**
- **Improved equipment reliability**
- **Reduced equipment downtime hence improved customer service**
- **Reduced energy consumption through online energy audits**
- **Reduced operational cost**
- **Better utilization of human resources**
- **Enhanced safety of employees**

Successful Pre-treatment



Maintenance Management

- The new SCADA system continuously monitors the operational parameters , compares data with design values and initiate alarms on out of specs values



CONDITION BASED MAINTENANCE

- Requests for maintenance based on running hours is also generated by the SCADA



PERIODIC MAINTENANCE

Maintenance Strategies

Design out maintenance



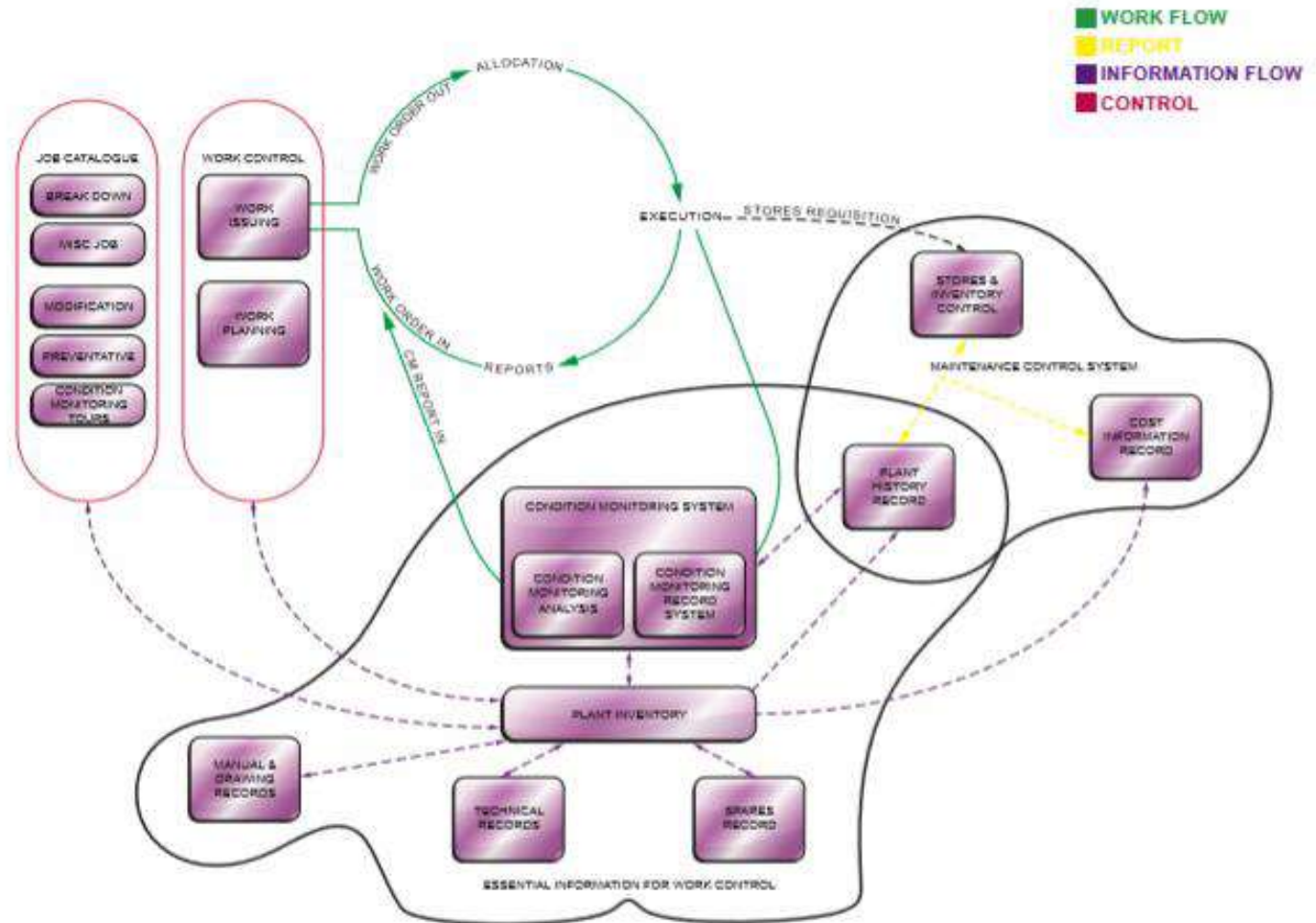
- Detailed specifications based on past experience
- NDT on castings/FAT
- Thorough inspection before installation
- Cathodic protection



Submersible Pumps Corrosion Prevention



Maintenance Model



Research with Major Suppliers



← Testing 16 inch membrane elements for Toray



Testing a new energy recovery system for KSB →

Thank you for your attention

