Renewable Energy Technology Integration in Cyprus – An Overview

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13 Deaths & 62 Injuries
2,5 Billion Euro damage after a self detonation of 90 ammunition containers corresponds to 850MW-PV
Electrical cross-border interconnection
Switch from Oil to gas
...still a nightmare or not?

13% RES CY Target 2020

Kampi-Farmakas, 2,4MW Wind Park - Nicosia Area 2015
Rapid increase in the share of RES (MW)

- Feed-in Tarif
- Net-Meetering/Net-Billing
- Tendering Schemes
- Avoidance Cost Revenue Stream
- Wholesale Electricity Market
Rapid increase in the share of RES (MW)

8MW PV Vassilikos Cement Factory 2019

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<th>Year</th>
<th>2019</th>
<th>2020</th>
<th>Missing 2020</th>
<th>2021</th>
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<td>136</td>
<td>237</td>
<td>291</td>
<td>497</td>
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For 2020, the EAC has budgeted €85.6m in projected expenses for the purchase of CO2 emissions allowances.

The EU recommended a penalty payment of €11,400 for each day that Cyprus has not fulfilled the 20% RES Target.
Specific Requirements
Investment (€85M)
R&D (€56M)

Demand Response & RES Integration

T & D Storage

PV & Storage

Projects:
- DELTA
- GoFLEX
- iTEGRIDy
- Interreg Mediterranean
- StoRES
- Erigeneia
- ERIGrid
StoRES – Pilot sites

- **SPAIN**: 5 pilot sites
- **PORTUGAL**: 5 pilot sites
- **ITALY**: 13 pilot sites
- **CYPRUS**: 5 pilot sites
- **FRANCE**: 2 existing sites
- **SLOVENIA**: 1 pilot site
- **GRECE**: 5 pilot sites

*DC coupling, AC coupling*
Community Battery

StoRES Community Battery Energy Storage System

- 200kVA Distribution Substation
- 30kW
- 2,5kW Batteries (4x2,5kW)
- 7kW = 21kW PV's

Solar Panel

Battery
Increase of self-consumption (~ 88%)
In the beginning we imported into DlgSilent all the network components, line types and lengths and then all the geographic information from the ArcGIS database.
We generated different simulations based on generation and load profiles for proving the model, while satisfying voltage constraints and power capacity.

Scaling factors were defined as the ratio between the local load consumption and the total load of the feeder.
Proof of model completed with various load profiles and Measurements
Power Quality
1,5MW PV

... Bad Inverter and Protection Settings
on site measurements shows flicker values reaching 4.5
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Power Quality - Flickering

... Installing of a digital VR from the 2.4MW Wind Owner & EAC AVR Replacement
Improvement

... Serious improvement of Flickering
Modeling of power feeders with PV’s on a HiL environment.
CHIL – Feeder Simulation

CYPrus grid optimal integration and control of RES ParkS
CHIL – Feeder Simulation

CYPrus grid optimal integration and control of RES ParkS

ERIGrid TA Project CYPRESS
Danke!