inAccess Networks

IT for Renewable energy sources management

May 2010
PV market overview - History

*Source: EPIA*
PV market overview - Future

*Source: EPIA*
PV market in Greece

*Source: EPIA*
The need for IT in RES sector

• Remote monitoring
  - Solar parks are usually in open fields and unmanned

• Centralized management
  - Geographically distributed solar parks

• Performance Evaluation

• Immediate detection of failures and performance degradation
Integrated Facility Management for Solar Parks

• Integrated solution for monitoring, control and management of Solar Parks

• Features
  - Production & Grid interconnection monitoring
  - On line Performance measurements according to standards
  - Alarm detection
  - SMS/email notification
  - Security and access control
  - CCTV integration with Live Video
  - Integrated reports
System Architecture

• **Solar Park Subsystem**: all peripheral monitoring and supervising systems (controller, sensors, cameras etc.) installed at each PV Site

• **Control Centre (CC)**: operator platform for managing all PV Sites
## System Benefits

<table>
<thead>
<tr>
<th>Production monitoring</th>
<th>Grid inter-connection monitoring</th>
<th>Security &amp; Safety</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Readily detects failures and performance degradation to minimize equipment/park downtime or underperformance and to maximize profit</td>
<td>- Identifies problems originating from the utility provider</td>
<td>- Secures the solar park perimeter and shelters</td>
</tr>
<tr>
<td>- Records the energy finally sold to the utility &amp; the actual revenues</td>
<td>- Monitors the output power quality characteristics</td>
<td>- Allows the entrance to certain solar park facilities only to accredited personnel and monitors their presence</td>
</tr>
<tr>
<td>- Provides on-line performance measurements</td>
<td></td>
<td>- Readily detects fire and flood conditions in the solar park shelters or pilars</td>
</tr>
</tbody>
</table>
Vendor Independent

Support of solar park equipment from multiple vendors:

- Inverters
- Power Meters
- Protection Devices
- Meteorological devices
- Various Sensors
- Other E/M Equipment
Centralized Management
Solar Park Overview
Performance Measurements (IEC 61724)
Alarm detection - SMS /email notification

**Alarm:**
Problem in part of a string

*Description of problem*

*All available data*

*Low Performance Ratio (62%)*
Security & surveillance
Reference Projects

- in operation since 1/2008, Several parks of 100KW - 4.3 MW, 15 MWp in total
- >60% GR market share in large solar parks (from 500KW to several MWp)
- Grid-connected 4.3 MWp PV Park in Florina, Greece
- Grid-connected 2 MWp PV Park in Arcadia, Greece
- Grid-connected 2 MWp PV Park in Argolida, Greece
- Grid-connected 1.25 MWp PV Park in Viotia, Greece
- Grid-connected 2 MWp PV Park in Viotia, Greece
Installation example - Typical Park (2MW)
Installation example - Small Park (100 kW)
Thank you!