Challenges

Utilities are faced with intense pressure to improve operations and lower costs. As a further complication, demographic trends point to the fact that utilities will have fewer experienced staff with which to meet these emerging issues.

Government policies to increase renewable usage and meet environmental protection standards intensifies these challenges and presents others: How do utilities plan to operate and coordinate a generating fleet that includes a widely distributed base of renewable assets? How can the inherent variability of renewable assets be accommodated? What are the ramifications of renewables on the balance of the generating fleet?

Power producers are seeking to implement renewable assets in a manner that ensures regulatory compliance while mitigating cost, risk, and staff impacts.

Consider it Solved.

For over a century, power producers have turned to Emerson to control critical power generation processes, increase plant efficiencies and megawatt production, and realize long-term O&M savings. An Emerson total solution for your photovoltaic solar power plant can help you achieve business objectives — from a single unit to your entire generating fleet. Our ability to architect, implement, and manage a photovoltaic solar automation project will generate increased returns while mitigating risk and staff impacts.

As a trusted leader in power generation automation, Emerson has developed a broad array of capabilities, from consulting expertise to industry-transforming products and comprehensive service platforms.

We recognize that customers require broad scope solutions that encompass both technology and services. For photovoltaic solar power applications, Emerson can provide integrated solutions that encompass the entire plant including inverters, the solar collector field, and the interfaces to external systems.
Emerson Offerings for Photovoltaic Solar Power Plants

**Fleet/Enterprise Management & Optimization**
- Enterprise-wide systems integration
- Fleet financial performance optimizer
- Fleet performance monitoring and visualization
- Fleet-wide asset management reliability programs

**Plant Optimization Software and Plant Performance Monitoring**
- Plant financial performance optimization
- Real-time on-line monitoring
  - Plant and unit efficiencies performance calculations
  - Controllable losses
  - Equipment performance deviations from design
- Web-based remote equipment performance monitoring

**Unit Controls & Monitoring System**
- Distributed control systems (HMI’s, controllers, I/O, networks, etc.) for:
  - Inverters
  - Meteorological stations
  - Motors
  - Solar tracking
  - String combiner boxes
  - Switchyard
  - Variable frequency drives (VFDs)
- SCADA systems
- Unit historian and report generator
- Electronic documentation
- Integration with other systems and intranet/internet
- Fieldbus solutions (HART, Foundation Fieldbus, Profibus, DeviceNet, ASiBus, etc.)

**Simulation**
- First-principle high-fidelity
- Algorithmic
- Tie-back
- Virtual technology

**Equipment Condition Monitoring**
- Motor diagnostics
- Infrared thermography
- Laser alignment/balancing

**Intelligent Device Management**
- Management software for HART & Foundation Fieldbus devices for:
  - Health monitoring
  - Calibration
  - Configuration
  - Audit trails

**Electrical Auxiliaries**
- UPS, power conditioning, and distribution
- Precision cooling
- Backup power generators

**Services**
- Installation, commissioning, and start-up services
- Support, reliability, and maintenance services
  - Mechanical equipment
  - Electrical equipment
  - Process equipment
  - Control systems
  - Instrumentation and valves
- Optimization programs
  - Operations
  - Automation and information systems
  - Reliability-centered maintenance
- Educational services
  - Asset optimization, reliability, and safety
  - Process control and automation
  - Engineering, operations, maintenance and management of field devices, control systems, electrical equipment, etc.

Legend:
- Control Room
- Corporate Offices
- Fleet Performance Monitoring Center
- Plant Engineering Offices & Maintenance Lab
- Solar Collector Field
- e-house (Inverters)
- Switchyard
## Emerson Solutions for Your Photovoltaic Solar Power Plant

<table>
<thead>
<tr>
<th>Emerson Brand</th>
<th>Function</th>
<th>Plant Location</th>
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</thead>
<tbody>
<tr>
<td><strong>PlantWeb™</strong></td>
<td>Digital plant architecture</td>
<td>Control Room</td>
</tr>
<tr>
<td><strong>Ovation™</strong></td>
<td>Distributed monitoring and control system, SCADA</td>
<td>Control Room, Solar Collector Field</td>
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<td>Maintenance &amp; Engineering Building</td>
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<td></td>
<td>Fleet Optimization Building</td>
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<td><strong>AMS™ Suite</strong></td>
<td>Predictive maintenance software</td>
<td>Control Room</td>
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<td>Maintenance &amp; Engineering Building</td>
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<tr>
<td><strong>Smart Wireless</strong></td>
<td>Wireless field and plant networks</td>
<td>Solar Collector Field</td>
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<td>Control Room</td>
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<tr>
<td><strong>Scenario™</strong></td>
<td>Plant simulation</td>
<td>Control Room</td>
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<td></td>
<td>Fleet Optimization Building</td>
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<td><strong>SmartProcess™</strong></td>
<td>Plant optimization and performance monitoring</td>
<td>Control Room</td>
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<td>Maintenance &amp; Engineering Building</td>
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<td></td>
<td>Fleet Optimization Building</td>
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<td><strong>Control Techniques</strong></td>
<td>Inverters and drives</td>
<td>Solar Collector Field</td>
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<td>Solar Tracking</td>
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<td><strong>Leroy®-Somer</strong></td>
<td>Industrial motors</td>
<td>Solar Collector Field</td>
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<tr>
<td><strong>Browning</strong></td>
<td>Gears</td>
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<td><strong>Liebert</strong></td>
<td>UPS and precision cooling</td>
<td>Control Room</td>
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<td>E-house Structure</td>
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<td><strong>Bay-Tec Engineering</strong></td>
<td>String combiner boxes</td>
<td>Solar Collector Field</td>
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<tr>
<td><strong>Rosemount®</strong></td>
<td>Temperature transmitters</td>
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