



INTEGRATION OF DISTRIBUTED GENERATION

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ELECTRICITY SUPPLY MODEL IS CHANGING



- Customers installing Distributed Generation
- Microgrids are seen as antidotes to reliability issues



NEW SCENARIO

The grid of the future includes:

- 1) Renewables in the form of Distributed generation
- 2) Energy Storage to act as the balancing platform and the grid stiffening
- 3) Intelligent Switching and protection to dynamically reconfigure the grid to the renewables that are quickly entering and exiting the grid.



ENERGY STORAGE – MICROGRIDS

- Microgrids based on DG require:
 - Fast, intelligent switching
 - Energy storage providing:
 - Voltage source for DG synchronization
 - Smoothing intermittent renewables
 - Time shifting renewable energy



S&C ELECTRIC COMPANY

Solution Supplier

- For Network Distributed Intelligence
- For Storage and Distributed Storage
- For MicroGrids
- For EPC





THE VALUE OF S&C'S SOLUTIONS

- **Specialists** in renewable energy interconnection
- **Expertise** coordinating projects with utilities
- **Power System** Studies and Analysis
- **Innovative products** that can be delivered on an engineering, procurement and construction (EPC) basis





Situation where Customer needs to accelerate times



SOLAR EPC



Sell more Energy – Make more Money

OUR SOLUTION
S&C designed and built the
project using their System VI™
Switchgear. This shortened lead
times and assured project
completion ahead of schedule.



Minster, OH 7MW/3MWh Energy Storage Plant

Defers investment

Reduce Peak demand charges





SELLING MORE ENERGY AND REDUCING OPEX

EXECUTIVE SUMMARY OF RESULTS

Vista® CAPEX's Increment: 603,710R\$

Savings considering entire OPEX:

OPEX Savings: 163,207R\$

OPEX (Total Savings): 2,925,000R\$ / PPA Duration

PV of OPEX Savings: 2,330,099R\$ / PPA Duration

Savings considering O&M only:

O&M Savings: 30,300R\$ /Year

O&M (Total Savings): 545,406R\$ /PPA Duration

PV of O&M Savings: 233,009R\$ /PPA Duration

S&C'S VISTA® SCENARIO

Unit Price: 75,000 R\$
Install & Assembly: 3.00 hours

Equipment: 2,325,000 R\$
Install & Assembly: 9,774 R\$ +
CAPEX: 2,334,774 R\$

Planned O&M: 3.0 h/year/unit
Corrective O&M: 0.1 h/year/unit
Unavailability Factor:

WTG Total Downtime: -384.4 h/year
Loss of Revenue (PPA): -51,125 R\$ /Year
Coverage Cost (PLD): -126,083 R\$ /Year
Cost with O&M: -40,400 R\$ /Year
OPEX: -54,402 R\$ /Year

OTHER SF6 SWITCHGEAR SCENARIO

Unit Price: 75,000 R\$
Install & Assembly: 3.00 hours

Equipment: 2,325,000 R\$
Install & Assembly: 9,774 R\$ +
CAPEX: 2,334,774 R\$

Planned O&M: 12.0 h/year/unit
Corrective O&M: 0.4 h/year/unit
Unavailability Factor: -12.4 h/year/unit

WTG Total Downtime: -384.4 h/year
Loss of Revenue (PPA): -51,125 R\$ /Year
Coverage Cost (PLD): -126,083 R\$ /Year
Cost with O&M: -40,400 R\$ /Year
OPEX: -217,609 R\$ /Year

Payback < 4 year





THANKS

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