Fluence
The Next Big Thing in Energy Storage

FLUENCE
A Siemens and AES Company
Microgrids & Islands

ENEL
Isle of Ventotene, Italy
0.5 MW / 0.6 MWh

IMPACT:
- Complex control developments for stable operation with existing gensets.
- 15% fuel savings demonstration on islanded grids.
- ~55% reduction in genset operating hours.
- Enable further integration of renewables.
Energy storage continues to gain momentum worldwide

Battery-based energy storage assets serving constrained power systems with fast, flexible power

- **California** – target for 1,325MW by 2020
- **Hawaii** – storage procurement
- **Puerto Rico** – storage requirement for renewables
- **New York** – REV process T&D
- **Ontario, Canada**
- **United Kingdom** – storage for capacity
- **Germany** – solar storage incentives
- **Italy** – island microgrid
- **Japan** – wind storage, changing market structure
- **Korea** – 200+MW installed
- **Philippines** – storage for system security
- **India** – solar+ storage & diesel
- **Mexico** – storage in market reform
- **Chile** – storage for Ancillary Services
- **Australia** – transmission crisis
Fluence brings unmatched experience at scale from the partner you can trust

**EXPERIENCE**
10+ years of experience in energy storage from two proven industry pioneers
- World’s leading storage provider
- Deployed or been awarded 60+ projects, in 16 countries, 500+ MW

**SCALE**
Complete technology and service offerings delivered worldwide
- Proven technology platforms that address full spectrum of applications
- Delivery & integration in 160 countries
- Comprehensive services including financing

**THE RIGHT PARTNER**
Deep understanding of modern power markets, customer needs, and local market challenges
- Collaborate with customers to solve their energy challenges
- Avoid pitfalls of inexperienced packagers and integrators
- Strong financial backing and industry staying power

Created and backed by two industry powerhouses

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SIEMENS
Ingenuity for life

+ AES
we are the energy
Fluence is the global leader in energy storage

- 10+ Years
- 16 Countries
- 60+ Projects
- 500+ MW
Fluence: Proven technology platforms and comprehensive services

Built on a rock-solid foundation of 10+ years of lessons learned in designing, deploying, and operating complete energy storage solutions for commercial & industrial customers, utilities and developers

**Technology Platforms**

- **Siestorage®**
  - Lightning fast energy.
  - Trusted for critical loads.

- **Advancion®**
  - Unmatched dependability.
  - Designed to evolve.

- **SunFlex Energy Storage™**
  - Maximum solar yield.
  - Delivered when you want it.

**Services**

- Advisory & Analytics
- Financing
- Deployment
- Asset Lifecycle
- Education & Training
What is energy storage? Large-scale batteries for industrial applications. Modular, scalable arrays of proven technologies integrated at utility and industrial scale.

Intelligence:
Array Controls & Application Software

Connection:
Electrical & Other Balance of Plant

Low voltage and medium voltage components

Fire detection and extinguishing system

Battery cabinets and battery management system

Power Control Electronics

HVAC
Siestorage Platform

Lightning fast energy. Trusted for critical loads.

Ultra Fast
- Essential fast response for power quality, black start, frequency response, and backup applications.

Grid Support Capability
- Can provide grid support services and be grid forming, enabling customers to operate in island mode when the network becomes unavailable.

Embedded Experience
- Our deep experience from years of serving customers in the power sector is embedded in the Siestorage architecture to deliver best in class performance.
Unmatched dependability. Designed to evolve.

Unmatched Dependability

• Industry-leading reliability, up-time, and years of safe operation
• Built from a massively parallel redundant architecture with safety designed into every layer of the architecture.

Embedded Experience

• 10 years of experience in operating storage-based power and energy services in markets worldwide is embedded in the Advancion architecture.

Future Proof

• Designed with the long-term owner operator in mind.
• Open architecture incorporates the best available technology now and in the future.
SunFlex Energy Storage Platform

Maximum solar yield. Delivered when you want it.

Increased Solar Capacity

• Sell up to 50% more solar energy per site.
• Eliminates solar variability across the day and expands the delivery of solar energy into the night

Expanded Capability

• Provides the ability to stack additional grid services, such as frequency regulation, capacity firming, and ramp rate control.

Simplifies Site Design

• Add more solar panels without the cost of changing the interconnection.
• In many areas, the platform simplifies the interconnection process for combined solar+storage facilities.
Energy Storage In the Field
Generation Enhancement

Southern California Edison
Long Beach, California, United States
100 MW / 400 MWh

SERVICES
• Local capacity
• Peak/Off-peak management
• Ramping/ Ancillary Services

IMPACT
• Competitive selection over thermal gas peaker
• Maximizes transmission
• Meets emission targets
30 MW of energy storage for San Diego Gas & Electric, California, United States

Largest energy storage project in North America

- 30 MW / 120 MWh
- Contract to online in 6 months
- Sited on 1 acre, where a power plant could not be permitted
Transmission & Distribution Enhancement

Arizona Public Service (APS)
Punkin Center
Arizona, United States
2 MW / 8MWh

SERVICES
• Transmission upgrade deferral
• Peak management

IMPACT
• Power reliability at half the cost of a transmission
Critical Power

VEO, Steel Plant
Eisenhüttenstadt, Germany
2.8 MW / 1.1 MWh

Impact:
• High availability and reliability to guarantee Gas Turbine start-up process.
• Avoided lost production
Transmission & Distribution Enhancement

EDP Distribuição
Évora, Portugal
0.5 MW / 0.4 MWh

SERVICES:
• Energy backup, voltage regulation, peak shaving
Frequency Regulation

AES Andres
Santo Domingo, Dominican Republic
10 MW / 10 MWh

SERVICES
• Frequency Regulation/Control

IMPACT
• Alternative to generators
• Supports grid resiliency during storm conditions
Frequency Regulation

AES Los Mina DPP
Santo Domingo, Dominican Republic
10 MW / 10 MWh

SERVICES
• Frequency Regulation/Control

IMPACT
• Alternative to generators
• Supports grid resiliency during storm conditions
Frequency Regulation

Germany, 7 Projects
1 MW typical system size
50 MW being installed

SERVICES
• Frequency Regulation
• Primary Reserve Power
• Turnkey Solution

IMPACT
• Improved grid reliability
• Lower costs
Energy Cost Control

Industrial electricity consumer
Bocholt, Germany
1.4 MW / 1.8 MWh

SERVICES
• Peak Shaving
• Turnkey solution

IMPACT
• Lowered the power bills of a large-scale industrial electricity consumer
Frequency Regulation

Eindhoven, Netherlands
1.6 MW / 1.3 MWh

SERVICES
• Frequency Regulation/Control

IMPACT
• Revenue generator for company with an existing grid connection
Transmission & Distribution Enhancement

Enel Distribuzione S.p.A.
Isernia, Italy
1 MW / 0.5 MWh

SERVICES
• Distribution system reliability
• Renewable integration

IMPACT
• Network stabilization for decentralized power / integration of renewables
Thank You