



# NIKLAS PERSSON

DIRECTOR OF STRATEGY

Emerging Technologies in Energy

ESC Market Transformation Conference – Sept. 2, 2015



# GRIDBANK – GRID SCALE ENERGY STORAGE

GridBanks are scalable energy reservoirs that store and deliver grid-scale electricity on demand.

Stores & Delivers Energy

Balance Transmission & Distribution

Creates Efficiencies

Integrates Renewables

Increases Energy Security



**2 MW / 1 MWh**  
per enclosure





# ALEVO BATTERY TECHNOLOGY (ABT)

Alevo Battery Technology (ABT) is safe, robust, and reliable. Different to all other battery systems, the Alevo electrolyte is non-flammable.

## SAFE

**Non-flammable**  
**non-combustible**  
inorganic electrolyte



## ROBUST

**Overcharge Tolerant**

## RELIABLE

Extreme Long Life

**55,000**

Cycles  
& Counting

# ORGANIC ELECTROLYTE vs. ALEVO INORGANIC ELECTROLYTE



## HIGHLY FLAMMABLE

Organic electrolytes are **carbon based** which makes them inherently **flammable**.

## LIMITED CYCLES

Has limited life with cycles maxing out at around 5,500.



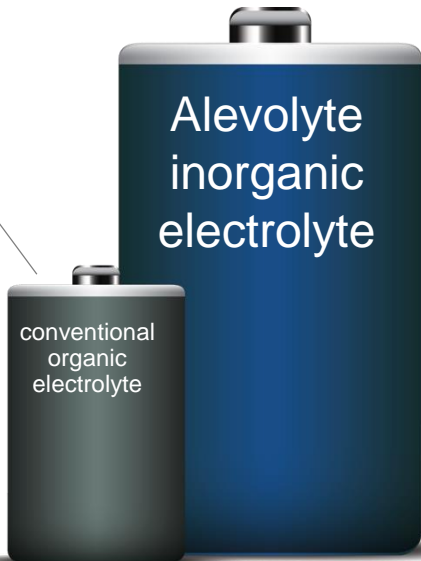
## LOW POWER

**Additives** are used to increase safety but also **lowers the performance**.



## COMMODITY

All the chemistry for lithium ion batteries are very similar and there is no IP protecting basic formulations.



## NON-FLAMMABLE



Independent sources have shown that inorganic electrolyte cannot be ignited.

## HIGH CYCLES

Lab tests show 55,000 cycles and counting

## HIGH POWER



Alevo inorganic electrolyte is based on robust chemistry and shows no increase in internal resistance during life cycle or shelf life.

## PROPRIETARY

Alevolyte patented IP and black box technology together insure Alevo's proprietary "secret sauce" electrolyte.

# ALEVO BATTERY TECHNOLOGY (ABT)



At the core of GridBank is Alevo Battery Technology (ABT). Each GridBank is comprised of 22 racks, each with 80 modules of the Alevo Battery.

**SAFE**  
Non-flammable,  
non-combustible  
inorganic electrolyte

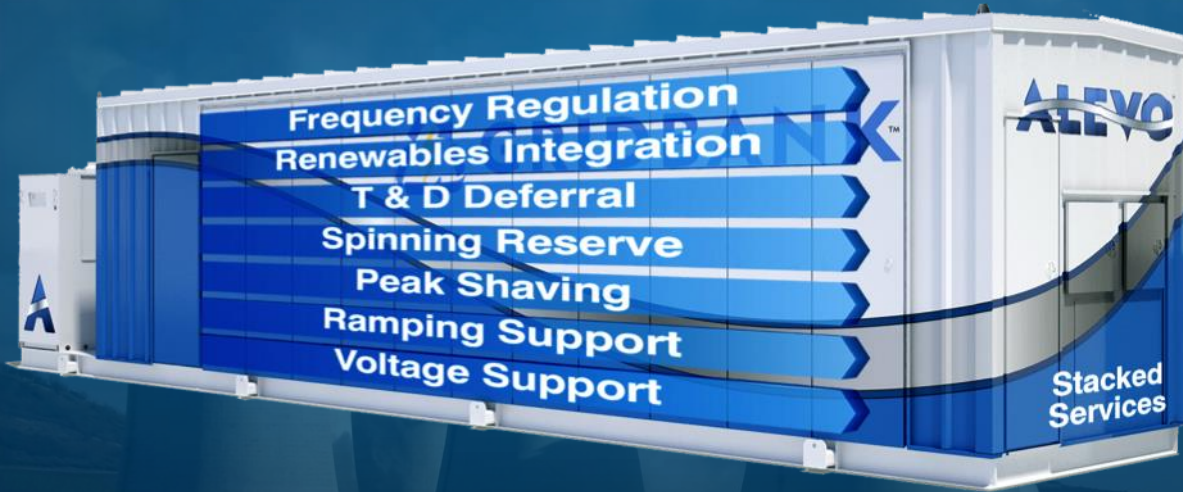
**ROBUST**  
Overcharge tolerant

**RELIABLE**  
Extreme Long Life  
**55,000+ Cycles**



# APPLICATIONS & STACKED SERVICES

The GridBank, deployed and operated in conjunction Alevo Analytics, can provide a range of Stacked Services. GridBanks can provide multiple services at the same time, and will target applications based on market structures and customer need, as identified by Alevo Analytics.



# ALEVO ANALYTICS

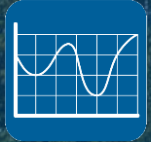
## Intelligent Data Analytics Designed for Energy Storage

- Cost Savings
- Efficiency Gains
- Environmental Impact Reductions
- Network Congestion Relief
- System Reliability Improvements
- Consumer Level Savings
- Optimal GridBank Deployment





# ENERGY STORAGE APPLICATIONS



Serving Load Reliability

Energy Efficiency

Optimization

Demand Response Programs

Demand Charge Mitigation

Renewables Integration

Energy Cost Reduction

Self Balancing

Voltage Control

Power Quality





Alevo is an Energy Service Provider dedicated to solving the world's greatest energy challenges by using a combination of innovative battery technology and smart data analytics to store and release electricity when and where it is needed: reducing energy waste, creating efficiencies, and optimizing the grid.



**THANK YOU.**

NIKLAS PERSSON

[niklas.persson@alevo.com](mailto:niklas.persson@alevo.com)

