

## **Global Energy Storage Alliance Proposes 22<sup>rd</sup> September as World Energy Storage Day**

With a rising focus on the effective integration of renewable energy, importance of electric vehicle and a reliable, resilient energy supply, energy storage is becoming an increasingly important tool in the electricity ecosystem. *With Energy Storage rising to the forefront of industry developments, Global Energy Storage Alliance proposes World Energy Storage Day to be held on 22<sup>rd</sup> September to acknowledge its importance across the globe.*

### **Why Energy Storage?**

Ever since the existence of an electrical grid, grid operators have been looking for ways to safely and efficiently store energy so that it can be supplied and consumed on demand. Over 170 grid scale energy storage technologies (excluding PHES) are either commercially available and / or are under development across different regions worldwide. The energy storage technologies landscape is distributed across a variety of systems to ensure we meet our everyday energy needs. This includes mechanical storage like pumped hydro storage, flywheels, compressed air and electrochemical storage such as lead acid, advanced lead acid, lithium ion chemistries, sodium-based batteries, nickel-based batteries and flow batteries. Advancements in fuel cells and traditional thermal storage are also relevant to various emerging applications.

It is also worth noting that energy storage is resource neutral i.e. it allows us to use electricity more efficiently, regardless of the power source. Whether the energy production is from a thermal power plant or wind power from a field of turbines, energy storage technologies can capture the energy and make it available when it is needed most. It also provides quality and reliable power to the end consumers.

### **The Answer to Our Energy Woes**

The traditional applications for energy storage are manifold. Energy storage is often used to improve power access and intermittent power. Energy Storage can be used to help the grid return to its normal operation after a disturbance. In addition to stabilizing the grid after disturbances, energy storage can also be used to support normal operations of the grid such as injecting and absorbing power to maintain grid frequency in the face of fluctuations. At transmission level, storage asset can provide power for up to two hours in response to a sudden loss of generation or an outage. Load shifting is achieved by storing energy during periods of low demand and releasing the stored energy during periods of high demand.

There is sizable potential for advanced storage technologies in new applications apart from the opportunity for existing technologies to improve upon their performance for traditional applications. Emerging Energy Storage systems may provide several technical benefits. Advanced energy storage technologies been making their entry into the market with Li-ion being widely implemented in telecom towers and portable electronics. Flow batteries are being favored for diesel replacement, micro-grid and solar integration while Nickel based batteries are gaining momentum in applications like standby support for Commercial and Industrial applications.

A major application of Energy Storage lies in the integration of intermittent renewable energy sources for applications including wind power and solar energy. In grids with a significant share of wind generation, irregularity and variability in generation output due to unpredictable changes in wind patterns can lead to imbalances between generation and load that in turn result in irregularities in grid frequency. Energy

storage can provide a quick response to such imbalances and irregularities without the harmful emissions and negative environmental effects of most conventional solutions. Also, since wind power systems are often located in remote areas that are poorly connected by transmission and distribution systems, sometimes operators may be asked to curtail production, resulting in loss of energy production opportunity. Alternatively, system operators may be required to invest in expanding the transmission and distribution infrastructure. An Energy Storage system located in proximity to wind generation can allow excess energy to be stored and delivered timely upon ease of transmission. Energy Storage can also be used to store the energy generated during periods of low demand (and favorable wind conditions) and deliver it during periods of high demand.

### **Growing Markets**

The current global installed capacity is of the order of 5.8 GW (excluding PHES) with an estimate of 2GW in emerging markets. USA, United Kingdom, Europe, China, Australia and India are huge markets for energy storage. Africa is also being recognized as a high potential area for energy storage to be applied for energy access through microgrids. The Asian need for storage is mostly for backup power while USA, Europe and UK utilize it mostly for grid balancing. The U.S. energy storage market grew 284% in MWh in 2016 alone and India has long been seen as one of the largest market for lead acid batteries with annual sales of ~\$6 Billion. Thermal energy storage technologies specifically have about 3 GW of installed capacity across the globe. Countries such as Spain (over 1 GW of capacity), the US (600 MW), Chile (over 480 MW) and India (over 200 MW) are leaders in this specific domain.

### **World Energy Storage Day**

Energy storage technologies have time and again proved to be safe, reliable and economical and their advantages are clear to see. GESA is working to expand the Global Energy Storage market – an honorable yet tedious initiative, but we ensure that the light at the end of the tunnel is growing nearer with each passing year.

GESA proposes World Energy Storage Day to be celebrated on 22<sup>nd</sup> September globally to highlight the importance of energy storage in the power sector, its potential and impact on sustainability of global energy resources.

The World Energy Storage Day is being introduced to build awareness about:

- ❖ Existing and growing energy storage market
- ❖ Uses of Energy Storage in 19 application areas including EV, renewables, carbon reduction.
- ❖ Advancements in Energy Storage technologies

### **Why 22<sup>nd</sup> September?**

The sun – the largest source of natural energy – has held much importance through the ages and people have gathered throughout time to worship the sun during the days of solstice and equinox with special rituals. The Autumnal equinox occurs on 22<sup>nd</sup> September and the day and night are of approximately equal duration i.e. the day is balanced. Energy storage has played a huge role in grid balancing, power supply-demand management and frequency regulation and to acknowledge the balancing effects of Energy Storage, 22<sup>nd</sup> September was chosen as an apt date for the World Energy Storage Day.

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