Energy storage industry united arab emirates

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The transition from fossil fuels to renewable energy sources is already underway, with a recent report revealing that renewable energy accounted for more than 30 per cent of the world"s electricity for the first time last year, a 19 per cent increase from 2000.

However, it"s important to consider the various challenges around this transition. A recent report by Breakthrough Energy revealed that meeting the anticipated increase in future energy demands will not be an easy task, as storage and transmission considerations account significantly in the renewable energy transition.

Battery energy storage systems (BESS) are one viable solution. An advanced technological solution, they function by storing renewable energy which can then be used when power is required. They help address the challenge of intermittent renewable energy, and provide clean power 24 hours a day, no matter the weather conditions.

According to a recent study by MIT researchers, BESS can be paired with renewable energy projects, increasing the renewable project"s value by reducing the need for extra generation and transmission capacity, especially as wind and solar power continue to contribute to electricity supplies. These storage systems can effectively delay or avoid expensive transmission upgrades, reducing the cost of renewable projects.

Having sufficient battery storage systems is crucial, but it’s equally important that these systems can meet the future global demand. According to the IEA, a capacity of 1,200GW will be needed by 2030, an enormous increase from the 85GW recorded in 2023. This means greater investments and innovation are needed to adopt BESS. Despite these challenges, many countries worldwide have widely embraced these systems.

The United States is a leader in leveraging BESS to supply clean power. In California alone, since 2020, the state has instaled the second-highest number of giant battery systems behind China, storing energy generated by solar power. California"s batteries have supplied one-fifth of the local community"s electricity, with 7,046 megawatts being consumed in just three hours. To put this into context, this is similar to the power output of seven large nuclear reactors.

Today, California"s grid has 10,000 megawatts of battery power capacity, enough to power 10 million homes for a few hours. Other states in the US are also investing in battery energy storage systems with Texas and Arizona set to record the biggest growth, increasing the nation"s battery output 10-fold to 16,000 megawatts.

China is also spearheading the charge for BESS. In a report by China"s National Energy Administration, the country"s energy storage capacity almost quadrupled in 2023 to reach 31.39 gigawatts (GW). This is a

year-on-year increase of over 260 per cent and almost 10 times its capacity in 2020, while lithium-ion batteries, which are commonly used for laptops and mobile phones, now account for 97 percent of China"s clean energy capacity.

The UK continues to prioritize renewable energy. Research shows its installed battery capacity was around 3.5GW in 2023, a figure expected to increase to 20GW by the end of the decade. While it is encouraging to see the US, China and the UK investing in BESS, a collective effort is essential to help ensure the world has access to renewable energy.

For the UAE, renewable energy is a core pillar of its sustainability plans. Masdar, the UAE"s clean energy powerhouse, is among the organizations supporting the country"s efforts, both home and abroad.

For instance, Masdar has committed to invest ?1 billion (AED4.68 billion) in UK battery storage. Construction is already underway to build new battery energy storage plants at two facilities in Rochdale and Stockport, which will have a capacity of 55MW - enough output to power 25,700 homes. Additionally, Masdar has also signed an MoU with Citaglobal Berhad to develop projects across the renewable energy mix in the Malaysian state of Pahang. This includes adopting BESS and comes at a time where Malaysia is targeting net-zero emissions by 2050.

Besides international collaborations, Masdar is also establishing this relationship with countries in the MENA region. One example is Jordan, which is set to benefit after an agreement was outlined to develop a 1GW wind project using BESS.