

## How can dehumidifiers propel efficient utilization of recently discovered lithium reserve

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The global shift towards sustainable and clean technologies has created a surge in the production and adoption of electric vehicles (EVs). With the transportation sector contributing significantly to the greenhouse gas emissions, EVs powered by lithium-ion batteries have emerged as the best alternative to fossil fuel-powered vehicles. India has also been making strides in this transition to electric vehicles. As per the report by Bain & Co, EVs are expected to account for 35-40% of total vehicle sales in India by 2030.

Amidst this ongoing shift, the recent discovery of a vast lithium reserve in Jammu & Kashmir has sparked further interest in the country's EV industry. Lithium is a crucial component in the production of lithium-ion batteries, which is an essential component of electric vehicles. It definitely has the potential to make India a significant player in the global lithium market.

Lithium-ion batteries are at the heart of the EV ecosystem. They are highly preferred for their ability to generate

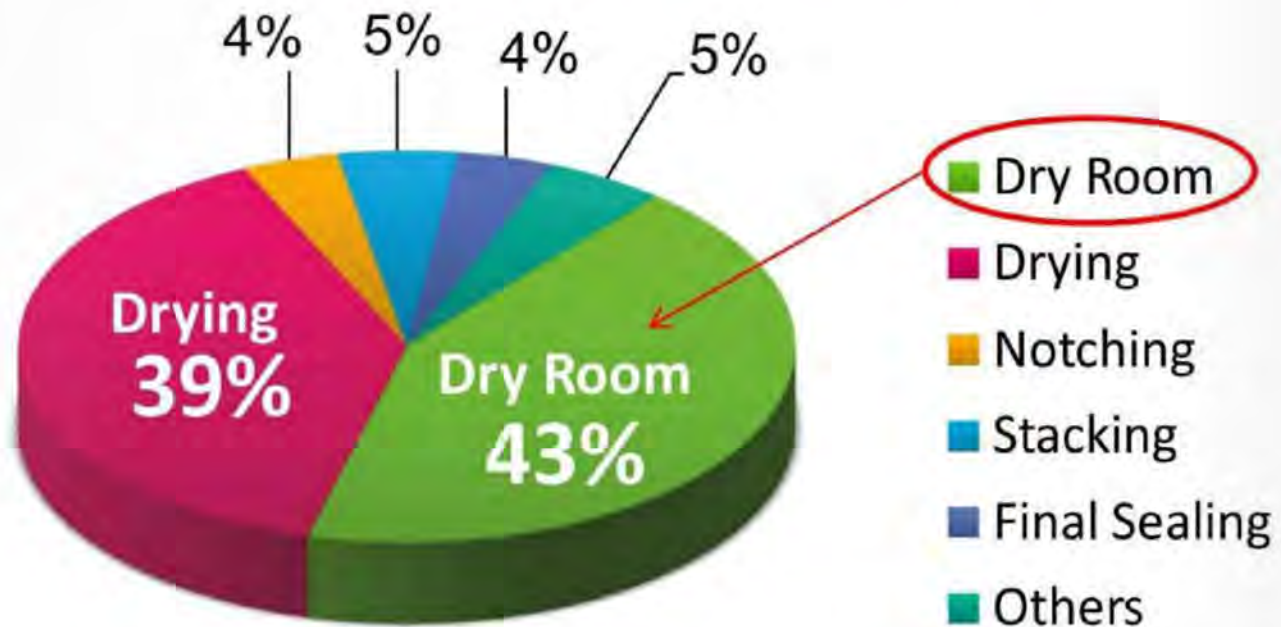
high energy per unit mass as compared to other electrical energy storage alternatives available in the market. The benefits of Li-ion batteries also include advanced technology that allows for high energy efficiency, high power-to-weight ratio, good high-temperature performance, low self-discharge and better energy storage density that can be accommodated in a small size. Owing to the wide range of advantages that they have to offer, the EV industry is becoming more and more reliant on this highly competitive technology to drive the growth of the sector.

However, the manufacturing of lithium-ion batteries requires strict environmental conditions to ensure safe and efficient production. Various components in Li-ion batteries are highly hygroscopic in nature which readily absorb moisture from the surrounding air. The moisture can lead to production of inferior quality batteries with underlying defects. Therefore, it is essential to regulate and monitor the humidity level throughout the battery manufacturing and assembling process.

Maintaining the humidity level at less than 1% in a stable environment is necessary during lithium cell manufacturing and less than 10% during battery assembling. In order to achieve this, installing Dry Rooms can vouch for a resilient Li-ion manufacturing infrastructure that aids in production of batteries meeting the highest quality industry standards.

Dry Rooms are well equipped with desiccant dehumidification technology that maintain the humidity within the desired bracket for ensuring manufacturing of safe and highly efficient lithium-ion batteries. Coming with an extensive knowledge on dehumidification, Bry-Air Dry Rooms offer a patented Environment Control Dehumidification System, Green DryPurge (GDP) series, which provides dehumidification and moisture control solutions that work in perfect confluence with a refrigeration system for achieving RH less than 0.5%. It is further fast-tracking the battery production with the Low Dew Point Dehumidifiers (LDP) that allow for an energy-efficient process.

## Process Energies of Lithium-Ion Battery Cell Production



It is clear here that running dry room equipment and drying are significantly larger contributors to process energy use than the sources

Source: Yuan et al. (2017) | Research gate

It comes with the ability to reduce energy consumption by 30% to 60% which significantly contributes to the overall cost reduction of the vehicle. Looking at the rising demand of EVs in the market, LDP offers solutions for Li-ion battery manufacturing in the most energy-efficient way requiring the shortest manufacturing lead time.

Failing to achieve the desired humidity levels during manufacturing can lead to the production of incompetent batteries that can meddle with the performance of the vehicle. In extreme situations, it can also increase the risk of explosion and raise safety concerns. As a result, Li-ion battery

manufacturing requires installation of advanced desiccant dehumidifiers to ensure production of high-quality, error-free batteries.

In addition to this, lithium-ion batteries make up for 40-50% of the entire vehicle cost and any fault in the battery can lead to revocation of the vehicle line from the market, which can impede the growth of the entire industry. The role of lithium-ion batteries in powering EVs highlights the importance of efficient and safe battery manufacturing process in the successful transition to electric mobility of the country.

In conclusion, the recent discovery of lithium reserves in Jammu & Kashmir has opened up new opportunities for the Indian manufacturing industry. It can scale the production of lithium-ion batteries for electric vehicles. However, the success of this endeavor depends on the adoption of modern technologies that ensure the production of high-quality, safe and efficient lithium-ion batteries. The future of the EV industry in India is bright, and with the adoption of technologies aiding in production of resilient Li-ion batteries, it is poised to transform the mobility landscape in the country and beyond.