Gravity energy storage paraguay

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Patent lawyer Ben Lincoln from Potter Clarkson returns to the Energy-Storage.news Guest Blog, this time looking at gravity energy storage and what sort of IP is looking to be protected.

The move to renewable energy has created a significant need for energy storage capacity and gravitational energy storage is one of the technologies being developed to satisfy that need.

Gravity energy storage systems have inherent advantages in that they typically have a long operating life with a minimal maintenance burden. They are also relatively simple and do not require hazardous or scarce materials. However, looking at the patent filing activity, it is clear that there are still technical problems to solve.

The principle of gravity based energy storage is to use an electric motor to lift a mass and thereby store energy as potential energy. This energy is then released by lowering the mass and generating electricity.

The Institute of Electrical Engineering, Chinese Academy of Sciences has obtained a patent right in an "air-sand energy storage power station" in Chinese patent CN 110905744 B.

It is explained that "The gravitational potential energy of the sand and a fluidisation effect applied to the sand by the gas are utilised, and therefore, the viscous resistance of the sand is reduced, and gas-sand flow can be formed".

China Tianying Inc have received grant of their Chinese patent CN 115013266 B, which describes a "a matrix gravity energy storage system control method". The patent describes a frame structure having a series of layers in which mass blocks are located.

The system can raise mass blocks from a layer in the lower side of the structure to a layer in an upper side to store energy by way of two lift vehicles. During the generation of electrical energy the mass blocks are lowered in an order such that the descent time of the lift vehicles is the same "so that uninterrupted power generation can be achieved". Accordingly, the Chinese Patent Office has recognised inventiveness in the way the mass blocks are moved in the matrix frame structure.

Energy Vault Inc received a granted US patent US 10,683,851 B2 for their energy storage system that stores and releases energy via the stacking of blocks. In particular, the claims of the patent, which define the scope of the protection, are focussed on a grabber for use in lifting and lowering blocks.

The claims, amongst other features, define a cross member coupleable to a cable of a crane and a pair of arms, wherein the grabber includes a conical end attached to each of the pair of arms that allow self-centering of the

arms relative to openings of the blocks.

In Gravitricity Ltd"s UK patent GB 2 585 124 B the energy storage system is said to enable a "gravity-based energy storage to have a significantly larger capacity in a single shaft for given capital cost and thus an improved cost per unit energy for large scale energy."

The claims of the patent relate to first and second transporters that include transporter linages which can be coupled and decoupled from weights. The claims define the areas swept by a first and a second transporter when coupled to a weight and the swept area of the second transporter linkage without the weight. The arrangement is said to allow for multiple transporters in a compact shaft while providing minimal interruption in energy storage.

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