



REVIEW OF THERMAL ENERGY STORAGE TECHNOLOGIES INTEGRATION IN SMART GRID

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ABSTRACT

With global warming, governments want to use more and more renewable energy, which are an unstable source of energy. With the strong development of new technologies, energy but especially electrical consumption is growing rapidly. As a consequence, energy policies tend to reduce consumption. In order to achieve an optimum result, the electrical network as well as every distribution network systems will have to undergo major transformations. So as to adapt to new requirements that the present systems do not have. Although the lack of investment and confidence in these technologies, thermal energy storage (TES) is a good way to integrate renewable energies into the distribution network, it will act directly on the heat networks and will have an impact on the production systems and therefore on energy consumption. Indeed, TES systems are necessary tools to participate in demand management. They widely guarantee an improvement of the energy efficiency and a control of the energy. Since TESs are used to manage the relationship between the demand of each consumer and energy availability. The Demand side management (DSM) is a principle of Smart Grid which aims to improve the capacity of the distribution system to adapt to consumer needs optimize demand and consumption.

A study was carried out to show the different TES systems, in order to compare their advantages and disadvantages and the parameters of each of them, in order to finally determine the production technologies, storage system and consumption strategies to be considered and integrated in the Smart Grid for the most optimal result.

Keywords: Thermal energy storage, DSM, Smart Grid