

## **Experimental Study of Temperature Field of Chemical Reactor Surface (text in Arabic)**

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### **Abstract -**

Since thermal energy is stored during decomposition (charge) and released during hydration reaction (discharge), the decomposition of calcium hydroxide is considered as a thermochemical reaction acceptable for use in thermal storage. The present paper discusses the temperature distribution on the surface of the chemical reactor during discharge of the thermal energy stored in the calcium oxide. The release of the thermal energy occurs following the hydration reaction. The effects of several factors on the energy discharge process are studied. These factors are the nature of the added water (liquid or vapor), the position of the reactor (horizontal or vertical) and the calcium oxide grain size. In the experiment, the temperature field of the chemical reactor surface has been investigated. The measurements were carried out every 70 minutes on the whole length of the chemical reactor whose dimensions are (50x200)mm<sup>2</sup>. As expected, the discharge process efficiency is small. However, there is high hope in raising this efficiency with technological advances.

**Key-words:** Thermochemical energy storage, chemical reactor, hydration, discharge energy, discharge efficiency, thermal field