

## **S2-08 “Evaluation Study about Redox Flow Battery Response and its Modeling”**

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### **Abstract**

The rechargeable batteries like Redox Flow which aren't aged by frequent charging/discharging, have a quick response equivalent to SMES and outstanding capability of overload. The response time and the maximum overload rate of Redox Flow battery are verified as 350 micro second and 4.6 times. The battery efficiency increases when the cycle period of charging/discharging becomes shorter. The battery is advantageous for secondary control in the power system and maintenance of power quality as distributed power resource in addition to leveling load. The instantaneous controls using these systems are also effective for dynamic stability, flicker, voltage dip and charging/discharging regenerative power of electric railways. The authors clarify the chemical reactive characteristics of Redox Flow battery physically and make the Redox Flow Battery Model which can be used for impact study for maintaining power quality and calculation of operational cost. The comprehension about these performances can be used to determine the optimum rechargeable battery system for each end use. The authors also demonstrate the effectiveness of Redox Flow Battery in case of its application for load frequency control.