INVESTIGATIONS AND TESTING OF LITHIUM-ION CELLS

Ferenc Farkas[1], Andras Sapi[2], David Spalek[3]
István Péter Szabó[4]

[1] Department of Mechanical Engineering, University of Szeged, Faculty of Enginerring, Szeged, Hungary
[2] Department of Applied and Environmental Chemistry, University of Szeged, Faculty of Chemistry, Szeged, Hungary
[3] Department of Optical and Quantum Electronics, University of Szeged, Faculty of of Physics, Szeged, Hungary
[4] Department of Mechanical Engineering, University of Szeged, Faculty of Enginerring, Szeged, Hungary

farkasf@mk.u-szeged.hu

ABSTRACT

In our wider and narrower environment, due to the significant developments in the automotive industry, increasing attention is trending towards electric powered vehicles.
At the same time, sales for electric-powered cars is increasing which causes favorable environmental effects in the city. However, it sets out new challenges to promote its decent operation.
Li-ion batteries dominate the rechargeable battery market, but their safety is a major issue that has aroused public concern and attracted the attention of researchers.
If a Li-ion battery is short-circuited or exposed to high temperature, exothermic reactions can be triggered, resulting in a self-enhanced increasing-temperature loop known as “thermal runaway.”
We used Panasonic18650 energy cells, because they are produced with a maximum capacity to provide long run-times.
We installed a DIGATRON BE 300-600 type battery emulator, so we can measure data from 300 cells at the same time using this charger and tester device.
Our investigation is a part of an innovation programme under a grant agreement (EFOP-3.6.1-16-2016-00014) that has ran for four years, which is to reveal opportunities for Li-ion batteries and their testings.

Keywords: electric charging, Li-ion batteries; testing of cells.