BMS control algorithms and infrastructure interfaces

D2.3

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Project	INCOBAT	Project Number	608988
Contact Person	Marco Novaro	Organization	I&M
Phone	+39 0172 062674	E-mail	marco.novaro@ideasandmotion.com

1   Publishable Executive Summary

The aim of INCOBAT is to provide innovative and cost efficient battery management systems for next generation HV-batteries. To that end, INCOBAT will propose a platform concept in order to achieve cost reduction, reduced complexity, increased reliability as well as flexibility and higher energy efficiency

The project will look at more accurate algorithms and their performance requirements. This should increase battery life but also, more importantly, allow for a predictable battery life. This is essential for creating a viable market for battery leasing and pricing. Currently, because the lifetime of a battery pack cannot be reliably predicted for different driving patterns and charging operations the cost of leasing is much higher than it needs to be. Predictable battery life will allow the price of leasing to be calculated more accurately, leading to more business opportunities.

Target of this deliverable are:

- The description of the SoF , SoH, SoC
- The proposal of a possible implementation of the EIS in a balancing and monitoring Chip
- The support for infrastructural interfaces expected on the BMS

The BMS control algorithms has been enhanced and refined with respect to the previous project year (as described in the deliverable D2.1), introducing improved simulation results and finer details on the expected system outcome. Thanks to the Aurix® multicore platform, supporting an higher computing power, the analyzed approach allows the estimation of the SoC and the resistance on cell-level, resulting in a more accurate SoF prediction.

The innovative EIS algorithm has been tested in simulation, taking into account real – world conditions that could affect the measurement; since the work has been performed in strict collaboration with the WP3, the effect of the external HW devices (e.g. the current amplifier) has been taken into account in the simulations.

Finally, this deliverable will show the requirements for existing and future charging and billing methods for PEVs w.r.t the CCU system and the in-vehicle communication: in this scenario, the AURIX microcontroller for the INCOBAT CCU has been specifically designed to host security critical applications like battery management systems.