



Editorial

WEVJ Best Paper Awards 2019

WEVJ Editorial Office

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WEVJ has launched annual awards to recognize outstanding papers published in the journal.

We are pleased to announce the first “WEVJ Best Paper Awards” for 2019. The nominations were chosen from all papers published between 1 January 2015 and 31 December 2018, and the Editorial Board together with the Editorial Office made decisions. The following three top-voted research articles, in no particular order, have won “WEVJ Best Paper Awards” for 2019:

Joining Technologies for Automotive Battery Systems Manufacturing

Abhishek Das, Dezhi Li, David Williams and David Greenwood

World Electr. Veh. J. **2018**, *9*, 22; <https://doi.org/10.3390/wevj9020022>

Available online: <https://www.mdpi.com/2032-6653/9/2/22>

Warwick Manufacturing Group (WMG) is an academic department at the University of Warwick and it is the leading international role model for successful collaboration between academia and the public and private sectors, driving innovation in science, technology, and engineering.

The electrification of transport is shaping the low carbon future. Our research focuses on establishing advanced hybrid and electric vehicles, including commercial, rail and marine, battery technology, supply chain, manufacturing, and automation. Our key capabilities within the cell engineering group include (i) electrical interconnect (e.g., cell to tab joint)—mechanical and electrical characterization and optimization through control of process parameters, (ii) FE modelling, and (iii) mechanical characterization of cells (tension, torsion, compression, vibration, and high-speed testing).

Our paper [1] identifies the potential direction of automotive battery pack joining to address the requirements for producing electrical interconnects within a battery pack. The paper summarizes the key joining challenges, including electrical, thermal, material, metallurgical, and mechanical. Furthermore, it identifies the applicability of major and emerging joining techniques to support the wide range of joining requirements that exist during battery pack manufacturing, including cylindrical, pouch, and prismatic cell-based battery packs.



Figure 1. Our Cell engineering joining team group photo: From left – Anil Kumar Mistry (Principal Engineer); Dave Williams (Head of Programme Delivery), Iain Masters (Senior Research Fellow), Abhishek Das (Senior Research Fellow), and Dezhi Li (Senior Research Fellow).

Sustainability Assessment of Second Use Applications of Automotive Batteries: Ageing of Li-Ion Battery Cells in Automotive and Grid-Scale Applications

Andreas Podias, Andreas Pfrang, Franco Di Persio, Akos Kriston, Silvia Bobba, Fabrice Mathieux, Maarten Messagie and Lois Boon-Brett

World Electr. Veh. J. **2018**, *9*, 24; <https://doi.org/10.3390/wevj9020024>

Available online: <https://www.mdpi.com/2032-6653/9/2/24>

The fast growth of the electrified vehicles market will translate not only into an increase of raw materials consumption, but also to an increase of waste batteries after their use in electric vehicles. Once collected, the batteries are usually recycled, producing secondary raw materials; however, their residual capacity could be used in other applications before recycling. The interest in this topic of repurposing electric vehicle batteries is high, as can be seen by numerous industrial initiatives by various types of stakeholders along the value chain of electric vehicle batteries and by policy activities that are related to waste batteries.

Sustainability Assessment of Second Life Application of Automotive Batteries (SASLAB), an exploratory project that was led by the European Commission's Joint Research Centre (JRC), aimed at assessing the sustainability of repurposing electric vehicle batteries to be used in energy storage applications from technical, environmental, and social perspectives. In this paper [2], a mapping of industrial demonstration and publicly-funded research projects in the area is presented, followed by an experimental assessment of the capacity and impedance change of lithium-ion cells during calendar and cycle ageing. Fresh cells and cells aged in the laboratory, as well as under real-world driving conditions, have been characterized to understand their application-specific remaining lifetime, beyond the 70% to 80% end-of-first-use criterion. For this purpose, the pre-aged cells were examined under duty-cycles that resemble those of second use grid-scale applications. The experimental investigations aimed at both, to better understand the performance of cells in second use after being dismissed from first use and provide input parameters for the environmental assessment model.

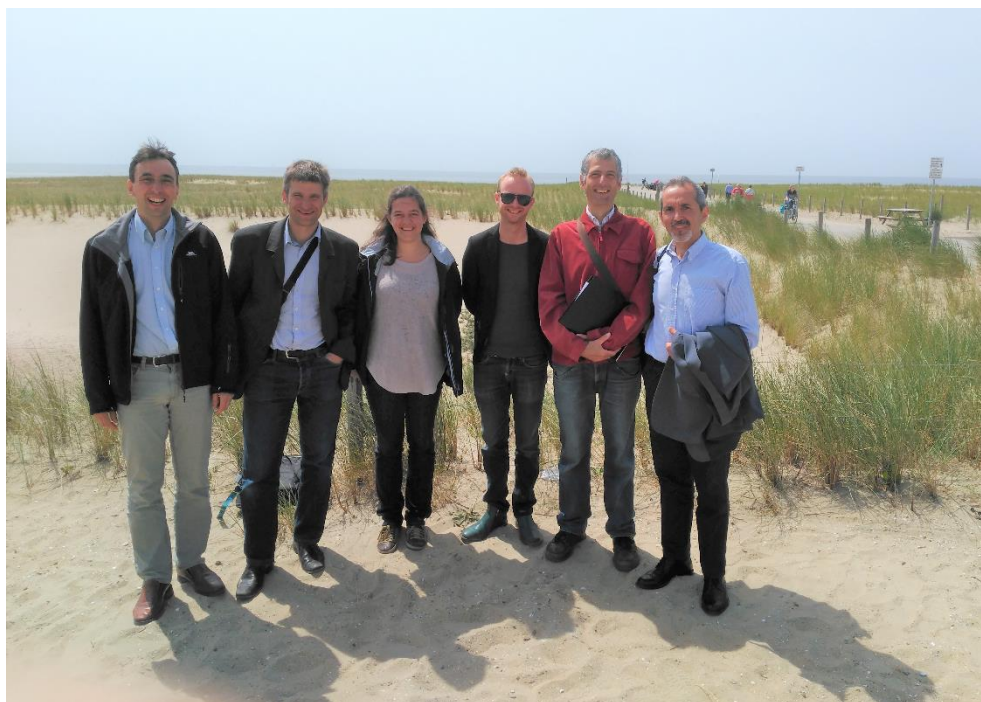


Figure 2. Dr. Pfrang's research group.

Dimensioning and Optimization of Hybrid Li-Ion Battery Systems for EVs

Jan Becker, Thomas Nemeth, Raphael Wegmann and Dirk Uwe Sauer

World Electr. Veh. J. **2018**, *9*, 19; <https://doi.org/10.3390/wevj9020019>

Available online: <https://www.mdpi.com/2032-6653/9/2/19>

This paper [3] describes a tool-based approach for dimensioning single or multiple (hybrid) battery pack systems for electric vehicles. The tool comprises a sophisticated vehicle and battery model as well as an optimization frame-work. Applying the hybrid battery approach to different vehicle types showed advantages in weight, volume, and costs, which are explained and discussed in this paper.

Even more insights are given in the dissertational work by the main author, which is available online: <https://publications.rwth-aachen.de/record/707501>



Figure 3. Dr. Becker's research group (From left: Raphael Wegmann, Dirk Uwe Sauer, Thomas Nemeth, Jan Becker).

We believe that these three exceptional papers are valuable contributions to *WEVJ* and the scientific research field. On behalf of the *WEVJ* Editorial Board, we would like to congratulate these teams for their excellent work. A certificate will be given to each of them.

We would like to take this opportunity to thank all of the nominated research groups of the above exceptional papers for their contributions to *WEVJ*, and thank the *WEVJ* Editorial Board for voting and helping with these Best Paper Awards.

The Editorial Board and Editorial Staff at *WEVJ* is committed to meeting the needs of the scientific community by providing useful and timely reviews of all the manuscripts submitted, and providing an open access forum for your results. Please consider submitting your work to *WEVJ*, and we look forward to announcing your paper as a *WEVJ* Best Paper in the future.

Prize Awarding Committee

WEVJ Editorial Board

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