

Dear reader,

The RESOLVE Consortium is delighted to present the first issue of the project newsletter. This edition describes the key elements of Project RESOLVE as well as its objectives. There is also an interview with Mr. Mario Santucci, our Project Coordinator, who gives a very interesting insight into the main challenges the project aims to tackle. Finally, the RESOLVE team has participated in different events to present our project and exchange views with other researchers. You can find a summary of these discussions in the last page.

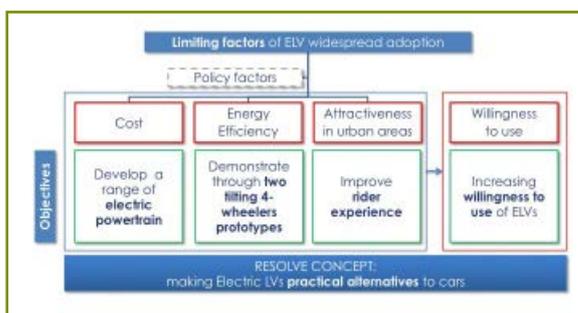
We hope you will find these pages useful and interesting. And of course we welcome any comments that you may have.

Enjoy your reading!
 The RESOLVE team

RESOLVE: a step forward in European research on electric mobility

The **RESOLVE - Range of Electric SOLUTIONS for L-category Vehicles** - project is a three-year research project co-funded by the European Commission within the Horizon 2020 program. The Project, coordinated by Piaggio & C. S.p.A, was launched on 1 May 2015.

The project aims at making Electric Vehicles for L-Category (ELVs) a practical alternative to cars and at encouraging commuters to switch to narrow-track ELVs. The RESOLVE project will focus on aspects such as reduction of powertrain **costs**, increasing vehicle **energy efficiency**, and improving **rider experience** and ELVs **attractiveness**.



RESOLVE will tackle the shortcomings of current ELVs by developing a range of modular and scalable electric powertrains and battery architectures specifically designed for ELVs, significantly reducing their cost. It will also develop a number of technological advances that aim to maximise the energy efficiency of ELVs, such as regenerative braking and lightweight design,

Another important priority of the project is to improve overall ELV driver experience. This will be done through different ways, such as by developing an active vehicle stability system, by improving human machine interface, and by enhancing vehicle comfort and weather protection.

To achieve these ambitious objectives, RESOLVE uses an holistic approach to explore solutions, culminating in two **tilting four-wheelers demonstrators** that will show the advances to the State-of-the-Art and could form a basis for attractive commercial ELV propositions.



A look inside RESOLVE: Interview with the Project Coordinator

We asked to Mr. Santucci, Project Coordinator of RESOLVE project, about some highlights of the project.



Q. Which do you think are the greatest strengths of RESOLVE project?

A. I think that is represented by the Consortium itself that is a well-balanced Consortium, led by two OEMs (Piaggio and KTM) and supported by main Tier1 suppliers as well as the expertise of universities and research centres, each one really focused and committed on project objectives.

Q. Could you tell something about such objectives? Where do they come from?

A. I think it's better start talking about the background of the project. The European Commission's White Paper on Transport, published in 2011, states that "the use of smaller, lighter and more specialised road passenger vehicles must be encouraged". I would say more: the progressive modal shift in personal mobility, going from cars, to lighter, smaller and more environmentally friendly alternatives is already in progress. This is the result of growing demand for transport, particularly in urban areas. Besides walking and cycling, these alternatives include a range of L-category vehicles (LVs). I do believe that the share of electric vehicles will grow in the coming years. Of course, there are still limiting factors to overcome, but this is why projects like RESOLVE are needed.

Q. In your opinion, which are the challenges to face with, in order to boost the diffusion of electric L-vehicles?

A. Well, I take for granted that urban policies should encourage LVs and ELVs adoption for the benefits they are able to bring to urban environment. Nevertheless this is not enough. There are clearly identified factors which are limiting and slowing down the diffusion of ELVs: mainly their cost and their energy efficiency, namely their range. These factors heavily affect the attractiveness of the ELVs and riders' willingness to use and RESOLVE is about at overcoming such obstacles. To do this, we will develop two prototypes. They will be both tilting four-wheelers vehicles, based on the same approach, same philosophy, both aimed at enhancing the safety and the usability of the formula, but deployed in two different and complementary ways.

Q. You mentioned cost. How are you dealing with this challenge?

A. Yes, this is the main barrier right now. Batteries cost did not decrease as expected and vehicle management systems still require substantial investments. Powered-two wheelers are manufactured in low volumes, compared to the car industry. To address this issue RESOLVE's strategy is to develop a range of electric powertrains which are modular and scalable. This will allow the use of such new engines on several ELVs and will lead to higher economies of scale. To address this issue RESOLVE's strategy is to develop a range of electric powertrains which are modular and scalable.

On the other hand, functional integration of electric powertrains will be sought to reduce manufacturing complexity. Moreover the use of state of the art low-cost solutions will reduce variable costs of components and capital expenditure.

Q. What can you tell us about energy efficiency?

A. Increasing the energy efficiency of ELVs means increasing their range with the same amount of energy on board or reducing the need of energy on board to achieve the same performances. Due to the fact that energy storage is very expensive for ELVs, energy efficiency is strictly related with cost as well as range. RESOLVE Project is aimed to an overall weight reduction of the vehicle, but also to an optimisation of regenerative braking and to the smart management of energy on board.

Q. In the end, how to make electric vehicles attractive?

A. This is probably the most challenging part of the project. Our goal can only be reached if we are really able to offer users a better experience. We have to provide a vehicle that is fun, comfortable and of course safe to ride. We have focused on innovative vehicle formula rather than a conventional powered-two-wheelers. We think that tilting vehicles, combined with electronic dynamic control systems as well as a dedicated Human Machine Interface, could provide an excellent user experience. This could also attract new kind of users that are not quite familiar with powered-two-wheelers, and result appealing for female riders who are underrepresented but have same mobility needs.

Q. How important is communication for such a project?

A. Fundamental, I would say. All of our technical efforts would be ineffective if we do not devote enough attention and care to communicating and disseminating the objectives and results of the project. Moreover, a two-way communication is needed. We need not just to spread our results but also to make use of users' survey results. We have to listen to what potential users have to say, gather that valuable information and make sure that we can meet their expectations.

Project Meetings

Kick-off meeting

The kick-off meeting of RESOLVE was held in Firenze on 12-13th of May 2015, hosted by University of Florence. Each partner presented its profile and competencies as well as its main role in the project. All Workpackage leaders introduced the workplan for the first six months of the project



General Assembly in Mattinghofen

The second General Assembly of RESOLVE was hosted by KTM in Mattinghofen (Austria) on 13-14th of October 2015. It was a great opportunity to share knowledge and discuss the first technical achievements, in particular outcomes of Workpackage WP1 - "User needs and concept definition".

Communication activities

September, 24th 2015 11th annual ACEM conference Brussels, Belgium

The European Association of Motorcycle Manufacturers, ACEM, hosted on 24 September its 11th annual conference in Brussels. It aimed at highlighting the contribution of mopeds, motorcycles, tricycles and quadricycles to urban mobility.



As part of the conference, a session on electromobility was organized. Panellists of this session was made of the coordinators of some projects funded under the Horizon 2020 Call Green Vehicles GV5-2014, related to electric L-Vehicles, including RESOLVE, presented by the Project Coordinator Mario Santucci (Piaggio)

November, 16th 2015 Ricardo Motorcycle Conference Milan, Italy

Marco Pieve (Piaggio) and Martin Perterer (KTM) gave a presentation on “An Effort to Make Electric L-Vehicles Attractive: Challenges of RESOLVE Project” in the session “Future Vehicle Technologies”, moderated by Prof. Dr. Angelo Onorati.

October, 6th, 2015 EMENDER2015 Ljubljana, Slovenia

The results of a RESOLVE survey with domain experts concerning the HMI features of electric vehicles was presented at EMENDER2015, the 1st International Workshop on Energy Management and Data Elaboration promoted by the NRG4Cast – Energy Forecasting FP7 co-funded Project, by a paper discussing the most wide-known problems in the market penetration of the Electric Vehicles, with a focus on the so-called “range-anxiety” problem.



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