



# Passive safety in electric vehicles from a structural perspective

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## Introduction

This project provides an in-depth analysis of the passive safety in an electric vehicle (EV). By studying the structural behavior and state of the art technologies we came up with a new design proposal for the battery compartment.

## Battery safety

The batteries should be located in a place where they are well protected, while still being easy to remove if there's a necessity to replace them. Factors like weight distribution and physical protection should be taken into consideration.

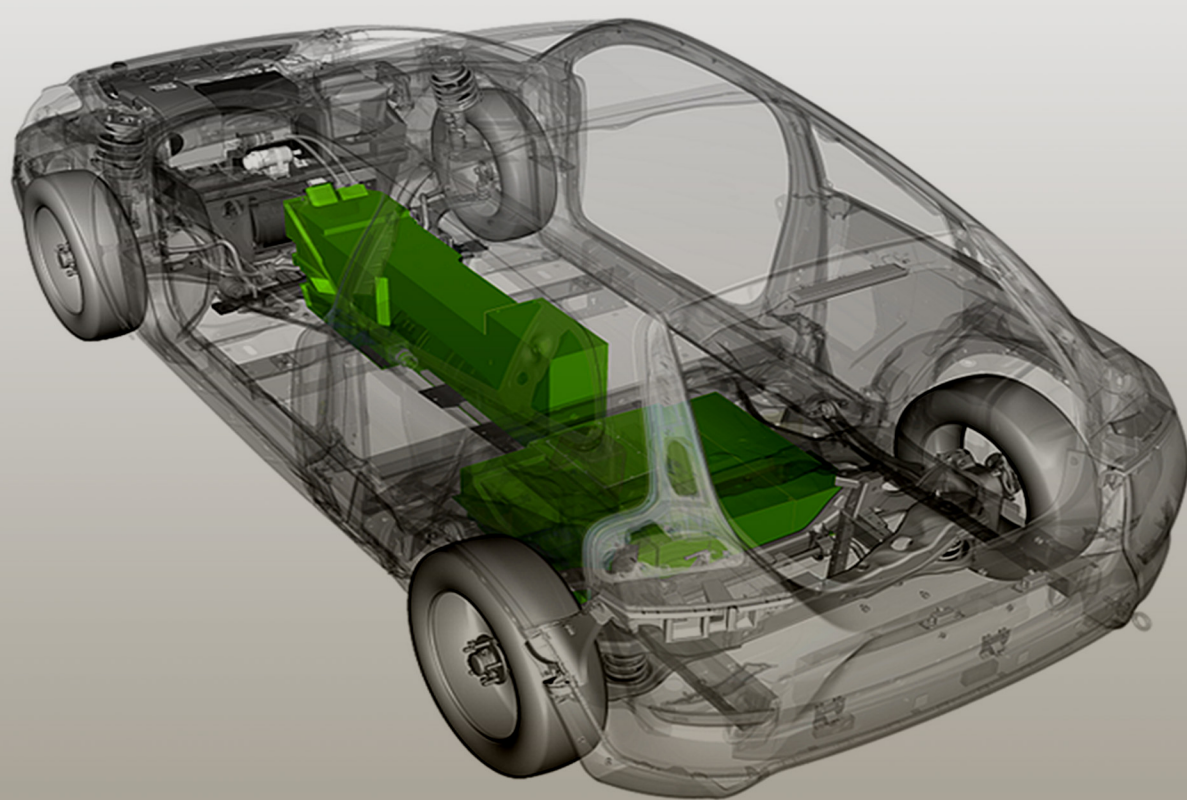


Fig 1. Battery placement in Volvo C30, using the "T-shape" configuration. Source: www.volvo.com

## Design

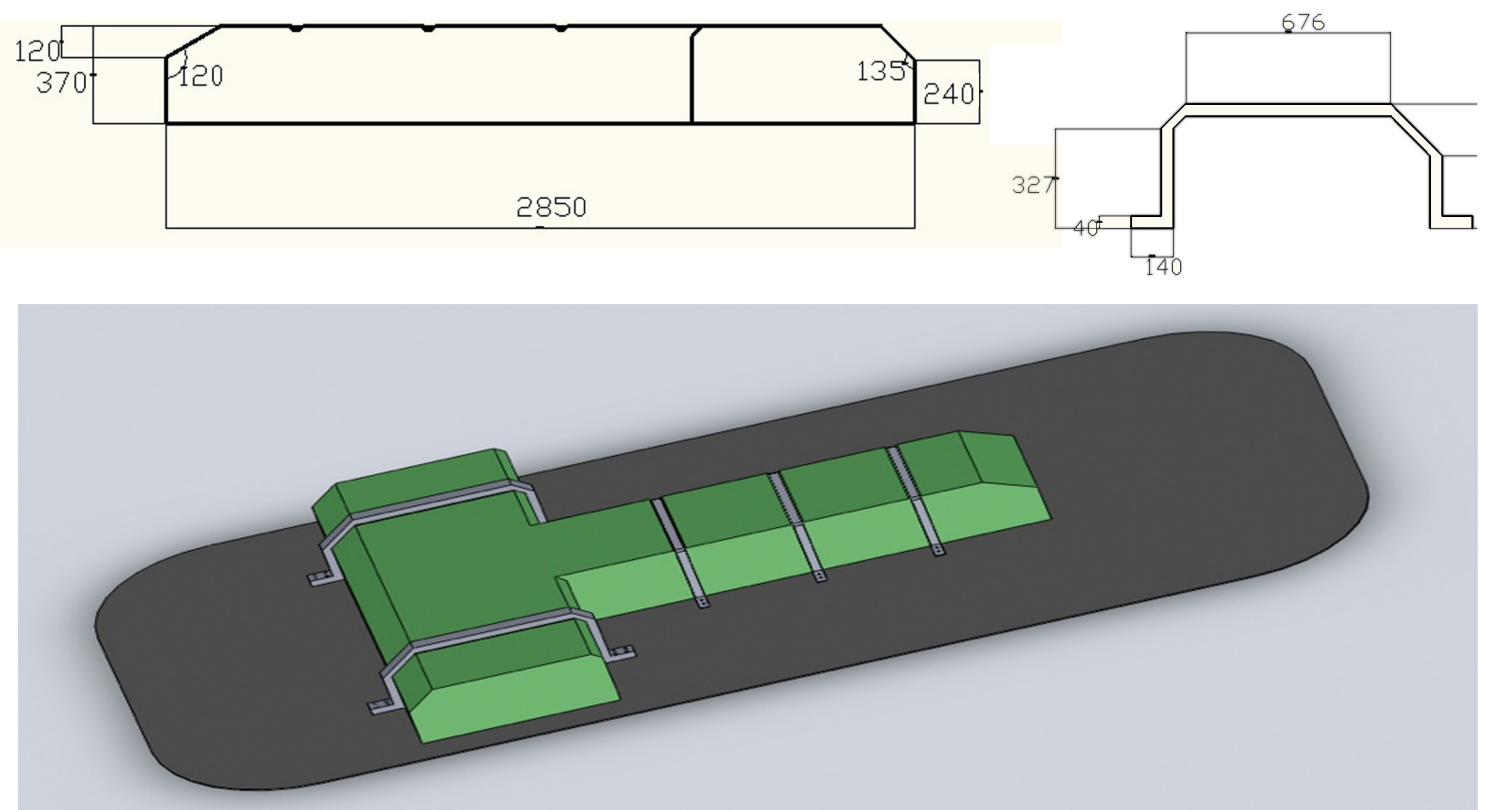


Fig 2. Design proposal for the battery compartment

## Conclusion

The battery compartment is designed to absorb energy in a rear crash accident. In a low speed collision the fixing allows the battery to start swinging, and hence, absorb energy. In a high speed collision the battery compartment is designed to slip under the car to both protect the occupants and absorb energy from the crash.

## Acknowledgments

The students would like to thank Jorge Barceló, Sven Winter and Toni Martí at SEAT. We would also like to thank our supervisor Pau Martí and our English teacher Arno Macia Elisabet, for helping us with the project.



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