

*Critical Review*  
*of*  
*“RENAULT TWINGO - 2015*  
*Life Cycle Assessment Results*  
*report”*

according to  
ISO 14040 & ISO 14044  
and ISO/TS 14071

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SOL 15-017.1

December 2015

for

**Renault**

## 1 General introduction – context of the Critical Review

Renault has requested Solinnen to perform the critical review (CR) of its Life Cycle Assessment (LCA) methodology as well as the following studies that will be performed according to this methodology.

The methodology consists in a generic LCA model developed internally based on the Gabi 6.0 LCA software and a methodology report describing in detail the methodology, the model and the databases. It is used to support Renault to perform any comparative LCA of two Renault vehicles, with same or improved functionalities, dedicated to the same market and same commercial target.

This LCA study is the first study performed according to the methodology (in its first version) and was submitted to the critical review at the same time as the methodology.

The methodology report is communicated with each specific LCA study and its critical review led to a specific report that shall be communicated with the methodology report.

The reviewers of the methodology as well as the TWINGO study are Dipl. Eng. Philippe Osset (Solinnen), assisted by Dipl. Eng. Delphine Bauchot (Solinnen).

## 2 Introduction to the present CR report

The present report, prepared by Solinnen, is the “Final CR report” of the LCA report. This CR report, excluding appendices, is dedicated to be integrated as a whole within the final LCA report.

### 3 Nature of the CR work, CR process and limitations

Solinnen has worked according to the requirements of ISO 14040:2006 and 14044:2006 concerning CR, and according to ISO/TS 14071.

The process for the CR of the LCA report was the following:

- The methodology (model and methodology report) as well as its application to the TWINGO LCA was presented to the reviewers.
- The reviewers made comments on the methodology as well as on the study. Those led to written and oral exchanges with the practitioner.
- A complementary review was made on a second version of the methodology and the study and some additional comments were emitted and discussed with the practitioner.
- A final CR report was made on the methodology on a final version of the methodology.
- A final CR report was also made on the final version of the report based on the final version of the methodology and the responses of the practitioner to the comments of the CR.

The present CR report is the CR on the study by Solinnen. The detailed comments, together with the answers of the practitioner, are provided as appendices.

The present CR report is delivered to Renault. Solinnen cannot be held responsible of the use of its work by any third party. The conclusions of Solinnen cover the final LCA study report and no other report, extract or publication which may eventually been done. Solinnen conclusions have been set given the current state of the art and the information which has been received. These conclusions could have been different in a different context.

### 4 Conclusions of the review of the LCA study report

According to ISO 14044, the critical review process has worked in order to check if:

- the methods used to carry out the LCA are consistent with ISO 14044 requirements,
- the methods used to carry out the LCA are scientifically and technically valid,
- the data used are appropriate and reasonable in relation to the goal of the study,
- the interpretations reflect the limitations identified and the goal of the study, and
- the study report is transparent and consistent.

The methodology CR has been done at the same time of the present CR, by the same experts, who therefore endorse the conclusions of the methodology CR report. Therefore, the relevant conclusions of the methodology CR have not been integrated in the present CR report. The reader shall refer to the specific methodology CR report in addition to the present CR report.

The practitioner has improved its LCA report during the CR process, integrating most of the comments.

Nevertheless, some issues remain uncovered by the modifications that Renault has done for each of these points. The key ones are listed in the following chapter and are mainly bound to the following elements

- the relevance of the scenario used for the assessment and the comparison of the TWINGO vehicles,
- the link between the interpretation of the results and the technological improvement made on the TWINGO 3,
- other aspects that are mainly linked to the methodology and that are covered by the methodology CR report.

As a whole, Solinnen considers the TWINGO LCA report as being of high quality level as other existing LCA reports covering the same scope. The LCA requirements of ISO 14040 and ISO 14044 have been answered in the best possible manner.

## 5 Detailed comments

The following lines bring some highlights that a reader of the final TWINGO LCA report may use to assist his reading and understanding of the report. They recap some critical comments which were not addressed.

### *5.1 Consistency of methods used with ISO 14044 requirements*

The functional unit is defined in detail, but the choice to cover 150 000 km over 10 years is an average scenario and is not adapted to the specific use of TWINGO and this can lead to bias in the final results or some misunderstanding or inaccurate comparison with other Renault models by the public.

For other comments regarding the consistency of methods, the reader shall refer to the methodology CR report.

As a whole, the structure of the report reflects the expectations of ISO 14044 for LCA reports that are intended to be communicated to the public.

### *5.2 Scientific and technical validity*

As a whole, the scientific and technical choices that have been made are adapted to the LCA study.

For other comments regarding the scientific and technical validity, the reader shall refer to the methodology CR report.

### *5.3 Appropriateness of data used in relation to the goal of the study*

For comments regarding the appropriateness of databases used in relation to the goal of the study, the reader shall refer to the methodology CR report.

No significant comment was made on the specific set of data used for the TWINGO vehicles studied.

As a whole, the data used are appropriated to the goal of the study.

### *5.4 Validity of interpretations in the scope of the limitations of the study*

In addition to the methodology report, the study described in details the limitations of the study.

Additionally the TWINGO study is lacking in its results interpretation of some links with the technological improvements made on the new model in order to explain the origin of the impact reductions.

As a whole, the limitation are clearly stated and assessed.

### *5.5 Transparency and consistency*

For comments regarding the transparency and consistency of the methodology report, the reader shall refer to the methodology CR report.

No other specific comment was made on the TWINGO report.

## 6 Appendices

The tables exchanged during the work are the appendices of the present CR report. They recap the detailed exchanges between the CR reviewers and Renault. Renault will keep track of them in order to improve in the future the first versions of its LCA reports.