SES6-CT-2003-502705

RENEW

Renewable fuels for advanced powertrains

Integrated Project

Sustainable energy systems

Del.: D 5.2.09
Inventory dataset: EcoSpold/Gabi/Excel

Due date of deliverables:	31-03-07
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Start date of project:	01-01-04
Duration:	48 months

Dr. Niels Jungbluth, Simon Schmutz

ESU-services Ltd., fair consulting in sustainability

Kanzleistr. 4, CH-8610 Uster, www.esu-services.ch

Phone +41 44 940 61 32, Fax +41 44 544 57 94

Revision	**Final**
Del-5.2.09-electronic-LCI-final.doc	

Dissemination Level		
PU	Public	

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Contents

1 Introduction

The results of the inventory analysis (Jungbluth et al. 2007b) are calculated with SimaPro software (PRé Consultants 2007). They are made electronically available with datasets in GaBi-/EcoSpold/EXCEL format for all unit processes investigated as foreground processes and documented in the report. In order to link these dataset with background data it is necessary to use the ecoinvent background database (ecoinvent Centre 2006).

The EcoSpold format is an electronic data exchange format for LCI, which has been developed for the Swiss ecoinvent project (Hedemann & König 2003). In includes quantitative and qualitative information about the dataset. Major European LCA software suppliers (e.g. GaBi, Simapro, Umberto and Team) have implemented this format with an interface for data im- and export in their products.

The EcoSpold datasets are directly transferred to the EXCEL format by means of the EcoSpold access software, which is available on www.ecoinvent.org.

The life cycle inventory analysis of the RENEW project has been transferred to GaBi plans and is published with this deliverable. Therefore, the integrated version of the ecoinvent database is used (IKP & PE Europe 2004).

The recommendations for an ISO/TS 14048 format are a technical guideline that is not mandatory for an LCA according to 14040. It is very similar to the practical approach in EcoSpold, but not so clearly defined in some points. During the project it has been decided not to use this format as it is not supported by the LCA software products used by the project partners.

With this deliverable, the inventory data are made available for all partners in the consortium and the public in an electronic format. Restrictions due to confidentiality agreements with data suppliers have been considered.

The goal and scope of this LCA must be taken into account while using these datasets (Jungbluth et al. 2007a). The life cycle impact assessment and interpretation can be found in (Jungbluth et al. 2007c).

The investigated conversion concepts represent different development status. This could result in a different quality and reliability of the calculated LCI results. The data given here represents the status of BtL technology in the year 2006. Further technology progress may strongly influence the LCI data. Therefore, it is recommended to use updated data for future studies or to approve this data by the respective technology partner.

2 EcoSpold XML-files

EcoSpold datasets can be directly extracted from a Zip-File and imported to each LCA software, which has in import interface for this format and which uses ecoinvent data as background data (e.g. SimaPro or Gabi).

Data is retrievable from http://www.esu-services.ch/renew/ (login: renew; pw: dublin) in the "LCI data" subsection.

2.1 Starting point

Del-5.2.09-EcoSpold-SP.zip

2.2 Scenario 1

Del-5.2.09-EcoSpold-SC1.zip

(containing only data differing from starting point)

3   Gabi datasets

The datasets have been elaborated with in the Gabi LCA software with the following specifications:

Gabi Version	4.2.99.1
background database activated	ecoinvent integrated US v1.3
mapping scheme	ENG v1.2.gmp
export:	Projektverwaltung/Objektliste all items of the project are marked and export as Gabi exchange data
Import	Please make and activate first a new project named RENEW

The starting point calculation and scenario 1 are exported in two different projects and in two different files. It is not possible to use both projects together because process and flow names are partly the same.

Data is retrievable from http://www.esu-services.ch/renew/ (login: renew; pw: dublin) in the "LCI data" subsection.

Discrepancies in results with regard to the public LCA report occur in the following quantities:

GWP (100 yrs)	The GaBi-Method applied includes biotic carbon dioxide emissions and uptake of biogenic carbon dioxide , which is not the case in the official LCA report. A characterisation factor for carbon monoxide is missing. The results have been roughly checked by subtracting the result for biogenic CO_2.
Photochemical oxidation	In Gabi all unspecified NMVOC are characterised with a factor. This is not proposed by the original CML method. Furthermore NOx and water emissions are also characterised with a factor. Thus indicator results are considerably higher than in the LCA report of the RENEW project.
Other category indicators	also for other category indicators discrepancies in comparison to the results calculated in the LCA for RENEW can be observed. These differences might be up to 10% (e.g. eutrophication). Further investigations about the differences are not part of this project.

Differences between the integrated and the plain version of ecoinvent data have not been published in detail by the software supplier. Several elementary flows in the ecoinvent database are linked to the flows according to the Gabi structure. It is not clear if this integration has any influence on the results of the calculation.

Please note that only the results shown in the public LCA report are valid according to the goal and scope of this LCA and not the results calculated with the integrated Gabi version. The implementation of LCIA methods within the Gabi software is not in the responsibility of ESU-services and has not been changed according to the goal and scope definition of the LCA elaborated in the RENEW project.

ESU-services Ltd. does not take responsibility for the implementation of the LCIA methods in the Gabi software. ESU-services did also not change the LCIA methods in this software according to the goal and scope definition in the RENEW project.

4 Excel

Excel datasets can be directly extracted from the Zip-File and opened with EXCEL ©.

Data is retrievable from http://www.esu-services.ch/renew/ (login: renew; pw: dublin) in the "LCI data" subsection.

4.1 Starting point

Del-5.2.09-xls-SP.zip

4.2 Scenario 1

Del-5.2.09-xls-SC1.zip

(containing only data differing from starting point)

References

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Hedemann & König 2003   Hedemann J. and König U. (2003) Technical Documentation of the ecoinvent Database. Final report ecoinvent 2000 No. 4. Swiss Centre for Life Cycle Inventories, Institut für Umweltinformatik, Hamburg, DE, Dübendorf, CH, retrieved from: www.ecoinvent.org.

IKP & PE Europe 2004   IKP and PE Europe (2004) GaBi 4: The software system for Life Cycle Engineering. IKP Universität Stuttgart, Institut für Kunststoffprüfung und Kunststoffkunde, PE Europe GmbH, Stuttgart, DE, retrieved from: www.pe-europe.com.

Jungbluth et al. 2007a   Jungbluth N., Frischknecht R., Faist Emmenegger M. and Tuchschmid M. (2007a) Life Cycle Assessment of BTL-fuel production: Goal and Scope Definition (revised). RENEW - Renewable Fuels for Advanced Powertrains, Sixth Framework Programme: Sustainable Energy Systems, Deliverable: D 5.2.2. ESU-services Ltd., Uster, retrieved from: http://www.renew-fuel.com.

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PRé Consultants 2007   PRé Consultants (2007) SimaPro 7.1, Amersfoort, NL, retrieved from: www.pre.nl.