Carbon2Chem®

LCA Community Environmental Evaluation

The Carbon2Chem® Communities

PRE-PROCESSING Simulation | ENGINEERING Process Design | POST-PROCESSING GWI Analysis | POST-PROCESSING Cost Estimation

Carbon2Chem® LCA Community represented by
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The Carbon2Chem® LCA Community applies international LCA standards with latest software solutions and databases to predict 1st the environmental impacts of production of methanol, urea and other basic chemicals from 2nd steel mill gases and other CO_2 sources, as well as 3rd hydrogen provision. The LCA community delivers 4th product-specific environmental impacts and 5th environmental break-even points of process concepts.

COMMUNITY OF ENVIRONMENTAL ANALYSIS EXPERTS

The environmental analysis of sector-coupling networks needs a network of experts. Therefore the Carbon2Chem® LCA Community currently pools together 15 people from scientific and industrial institutions with expertise in:

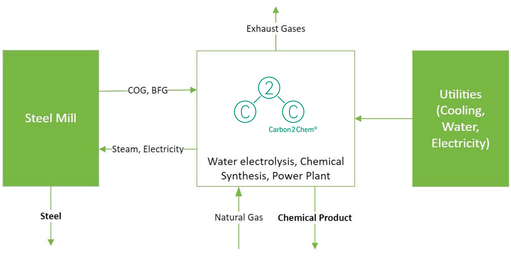
- ISO Standards for Life Cycle Assessment
- Industry-specific LCA methodologies
- LCA Modeling, Evaluation & Interpretation
- Process Engineering

The LCA models are built on the basis of:

- Results of detailed simulation models evaluated by the Carbon2Chem® Simulation Community, as well as the
- Process engineering know-how in the Process Design Community

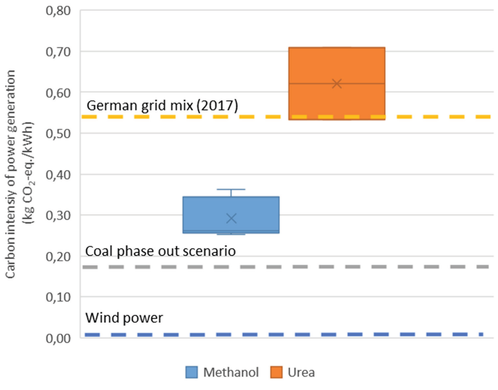
The LCA community coordinates the environmental assessment-related activities for:

- Collection of data from peer-reviewed literature
- Collection of data from case-specific process engineering calculations
- Rational selection of LCA methodologies
- Discussion and validation of LCA results



Cross industrial network evaluated

LIFECYCLE ASSESSMENT OF CROSS-INDUSTRIAL NETWORK



Break-even points to indicate the carbon intensity of power generation, lower than which the Carbon2Chem® concepts become favorable compared to conventional steel and chemicals production in terms of global warming impact. Based on [doi: 10.1002/cite.202200040]

LCA models are needed for the following tasks:

- To assess the environmental footprint of coupled production of steel and chemicals
- To calculate environmental footprints of chemicals such as methanol, urea, etc. from various CO_2 sources
- To derive environmental break-even points of process concepts
- To investigate the influence of various H_2-production & transport options
- To understand the potential of climate change mitigation achieved by Carbon2Chem® processes utilizing industrial & atmospheric CO_2 sources

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A KEY BUILDING BLOCK FOR THE CLIMATE PROTECTION

CO_2 reduction by cooperation of process industrial sectors