

concaawe



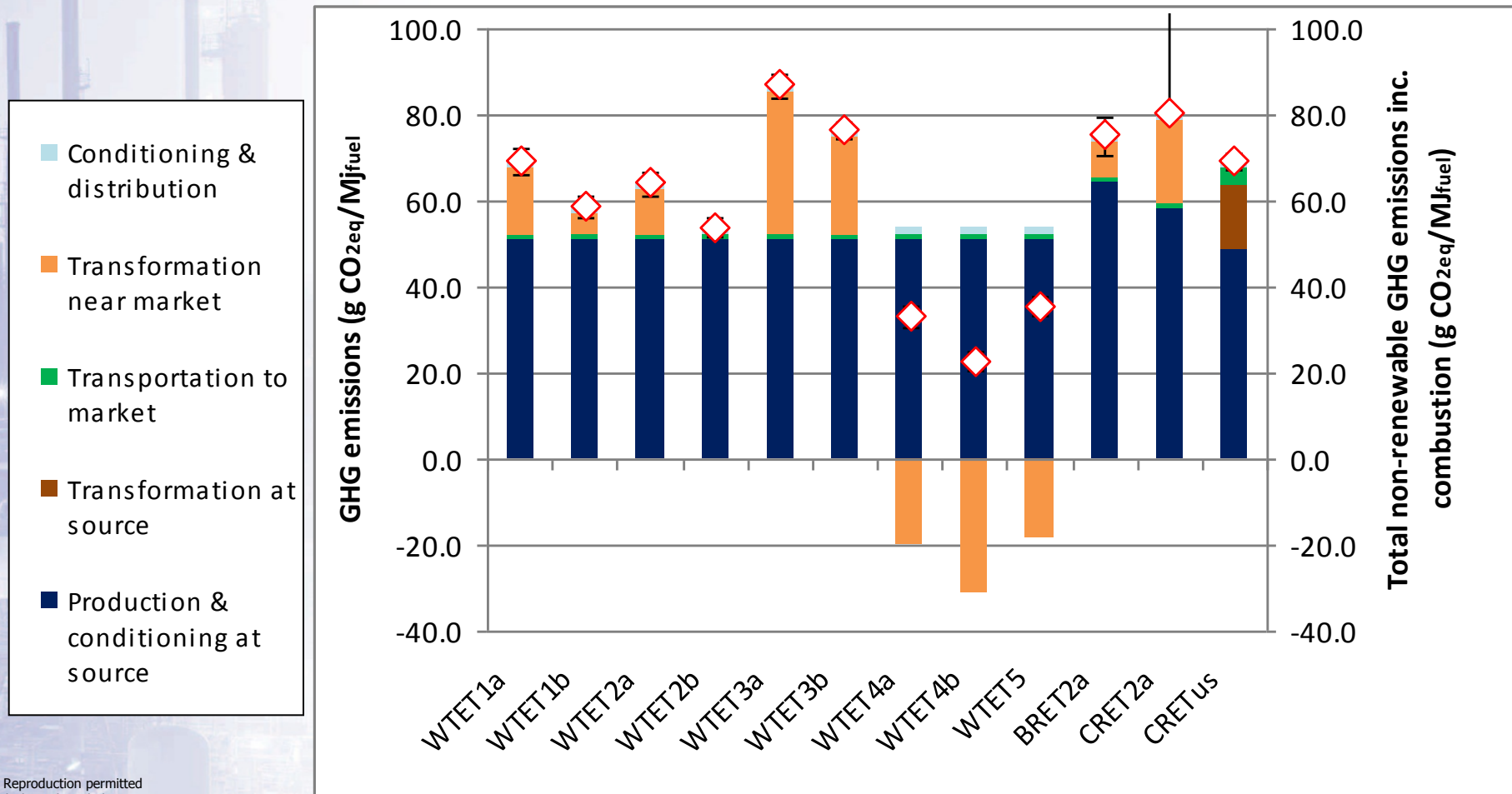
Graphing Tools for Well-to-Wheel Results

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- ▶ Let's face it! Understanding WTW results without graphs is impossible!
 - ▶ Multiple pathways, different outputs, and different units of interest



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- ▶ This problem has been recognised by others (Daimler, in this case) resulting in the recently released Optiresource graphing tool



Tool for the determination of the energy efficiency of a passenger-car-drivetrain from the energy source to the powered wheel (well-to-wheel)

The software allows the creation of various expedient combinations of energy sources, fuels and powertrains.

Based on studies for life cycle assessment from the energy source to the powered wheel, you can determine the expected fuel consumption and the corresponding greenhouse gas emissions, expressed in grams of CO₂-equivalent.

The result of the calculation is presented as a comparison between a current gasoline-fueled compact car and the accomplished selection. Start the tool in several runs with different combinations of energy sources, fuels and vehicle powertrains

to learn more about the impact on the corresponding equivalent fuel consumption and the CO₂-emissions.

Scientific background of this software is the "Well-to-Wheels analysis of future automotive fuels and powertrains in the European context, version 3.0", published by CONCAWE, EUCAR and JRC in November 2008.



DAIMLER

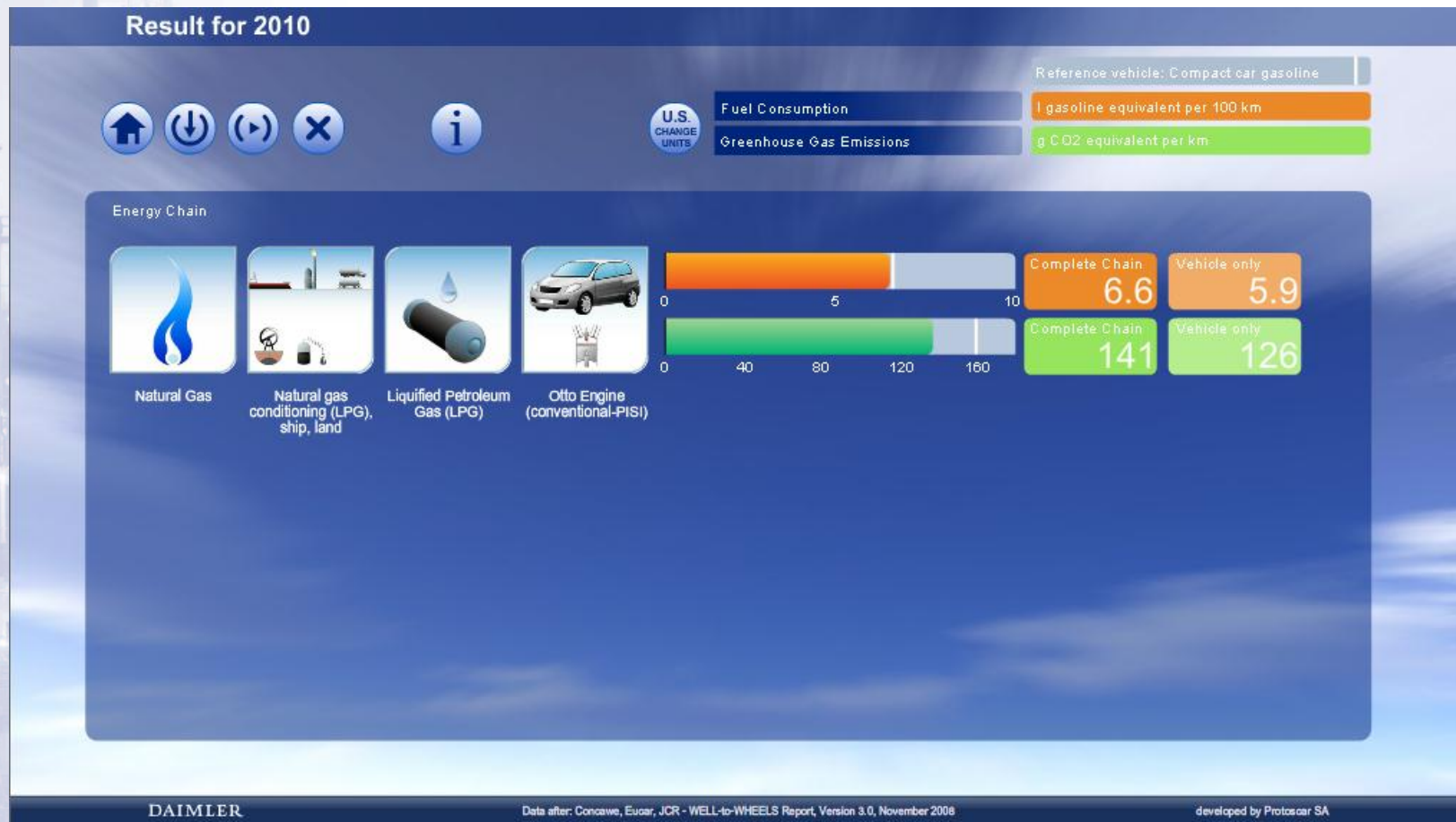
Data after: Concaawe, Eucar, JCR - WELL-to-WHEELS Report, Version 3.0, November 2008

developed by Protesoar SA

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- ▶ Selectable pathways and easy-to-visualise outputs driven by the JEC WTW results Version 3



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- ▶ This is such a good idea that we are working on a similar tool!
 - ▶ Offers opportunity to improve transparency of JEC WTW results

concaawe Well-2-Wheel Database

Search | View Selected | Compare Selected

SEARCH FOR PATHWAYS

SEARCH PARAMETERS

Feedstock Name:

SEARCH FILTERS

Pathways Reference:

Fuel:

End Use Type:

End Use:

Modeller:

☐ Include archived pathways

Search for Pathways

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concaawe Well-2-Wheel Database

Search

View Selected

Compare Selected

Clear

SEARCH RESULTS FOR PATHWAYS

Your Search Provided the Following Pathways

<input type="checkbox"/>	CONCAWE GPME1a / Methanol / NG-CIS	E3 Database	JEC 2011 v3c	Natural Gas
<input type="checkbox"/>	CONCAWE GPME1b / Methanol / NG-Southern-Asia	E3 Database	JEC 2011 v3c	Natural Gas
<input type="checkbox"/>	CONCAWE GRCH3 / CGH2 / Methanol (APC) / NG-Remote	E3 Database	JEC 2011 v3c	Natural Gas
<input type="checkbox"/>	CONCAWE GRME1 / Methanol / NG-Remote	E3 Database	JEC 2011 v3c	Natural Gas
<input type="checkbox"/>	CONCAWE KOME / Methanol / Hard Coal Mix EU	E3 Database	JEC 2011 v3c	Coal
<input type="checkbox"/>	CONCAWE SBET1a / Ethanol / sugar beet (animal fodder export)	E3 Database	JEC 2011 v3c	Sugar Beet
<input type="checkbox"/>	CONCAWE SBET1b / Ethanol / sugar beet (animal fodder export)	E3 Database	JEC 2011 v3c	Sugar Beet
<input type="checkbox"/>	CONCAWE SBET3 / Ethanol / sugar beet (pulp for combustion, waste water and slop for biogas)	E3 Database	JEC 2011 v3c	Sugar Beet
<input type="checkbox"/>	CONCAWE STET1 / Ethanol / Wheat straw (Iogen)	E3 Database	JEC 2011 v3c	Wheat Straw
<input type="checkbox"/>	CONCAWE WFET1 / Ethanol / Farmed Wood	E3 Database	JEC 2011 v3c	Farmed Wood
<input type="checkbox"/>	CONCAWE WFME1 / Methanol / Biomass / Farmed Wood / BCL	E3 Database	JEC 2011 v3c	Farmed wood
<input checked="" type="checkbox"/>	CONCAWE WTET1a / Ethanol / Wheat (NG fueled boiler)	E3 Database	JEC 2011 v3c	Wheat
<input checked="" type="checkbox"/>	CONCAWE WTET1b / Ethanol / Wheat (NG fueled boiler), DDGS for Energy	E3 Database	JEC 2011 v3c	Wheat
<input checked="" type="checkbox"/>	CONCAWE WTET2a / Ethanol / Wheat (NG fueled CHP)	E3 Database	JEC 2011 v3c	Wheat
<input checked="" type="checkbox"/>	CONCAWE WTET2b / Ethanol / Wheat (NG fueled CHP, DDGS for energy)	E3 Database	JEC 2011 v3c	Wheat
<input checked="" type="checkbox"/>	CONCAWE WTET3a / Ethanol / Wheat (lignite fueled CHP)	E3 Database	JEC 2011 v3c	Wheat
<input checked="" type="checkbox"/>	CONCAWE WTET3b / Ethanol / Wheat (lignite fueled CHP, DDGS for energy)	E3 Database	JEC 2011 v3c	Wheat
<input checked="" type="checkbox"/>	CONCAWE WTET4a / Ethanol / Wheat (straw fueled CHP)	E3 Database	JEC 2011 v3c	Wheat
<input checked="" type="checkbox"/>	CONCAWE WTET4b / Ethanol / Wheat (straw fueled CHP, DDGS for energy)	E3 Database	JEC 2011 v3c	Wheat
<input checked="" type="checkbox"/>	CONCAWE WTET5 / Ethanol / Wheat (DDGS for biogas)	E3 Database	JEC 2011 v3c	Wheat
<input type="checkbox"/>	CONCAWE WWET1 / Ethanol / Residual Wood	E3 Database	JEC 2011 v3c	Waste Wood
<input type="checkbox"/>	CONCAWE WWME1 / Methanol / Biomass / Wood residue / BCL	E3 Database	JEC 2011 v3c	Waste wood

Search for more
Pathways

Compare the
Selected Pathways

Start a new
Search

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concaWE Graphing Tool for WTW Results: WTT Emissions

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Well-2-Wheel Database

Search

View Selected

COMPARE THE PATHWAYS

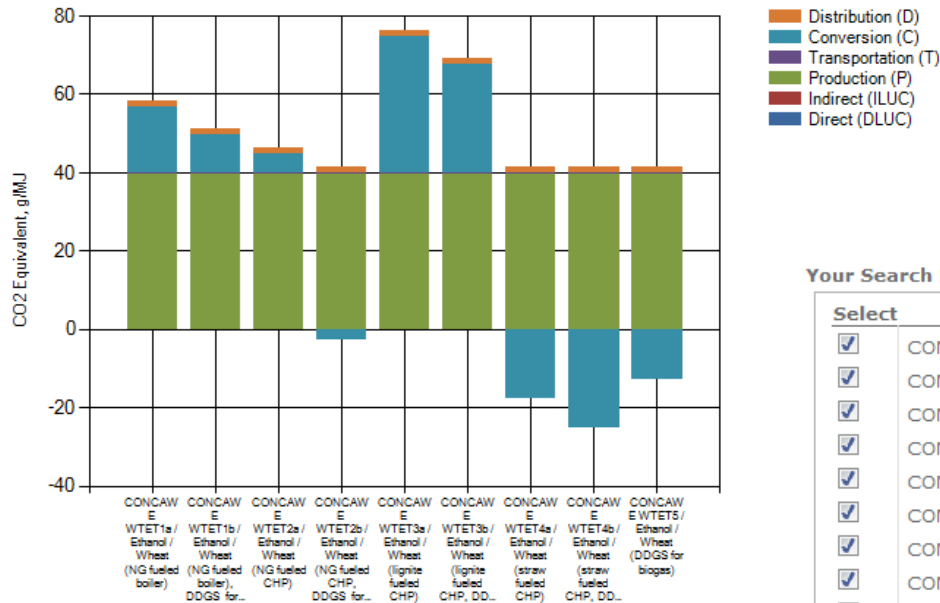
Pathways

WtT and TtW Chart

Emissions Break-Down Chart

WtW Chart

WELL-TO-TANK EMISSIONS



Your Search Provided the Following Pathways

Select	Pathway
<input checked="" type="checkbox"/>	CONCAWE WTET1a / Ethanol / Wheat (NG fueled boiler)
<input checked="" type="checkbox"/>	CONCAWE WTET1b / Ethanol / Wheat (NG fueled boiler), DDGS for Energy
<input checked="" type="checkbox"/>	CONCAWE WTET2a / Ethanol / Wheat (NG fueled CHP)
<input checked="" type="checkbox"/>	CONCAWE WTET2b / Ethanol / Wheat (NG fueled CHP, DDGS for energy)
<input checked="" type="checkbox"/>	CONCAWE WTET3a / Ethanol / Wheat (lignite fueled CHP)
<input checked="" type="checkbox"/>	CONCAWE WTET3b / Ethanol / Wheat (lignite fueled CHP, DDGS for energy)
<input checked="" type="checkbox"/>	CONCAWE WTET4a / Ethanol / Wheat (straw fueled CHP)
<input checked="" type="checkbox"/>	CONCAWE WTET4b / Ethanol / Wheat (straw fueled CHP, DDGS for energy)
<input checked="" type="checkbox"/>	CONCAWE WTET5 / Ethanol / Wheat (DDGS for biogas)

OPTIONS

Choose unit type: ☒ g/MJ ☐ g/km

☐ Include Tank-to-Wheel Data?

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concaawe Graphing Tool for WTW Results: WTW Emissions

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Well-2-Wheel Database

Search

View Selected

COMPARE THE PATHWAYS

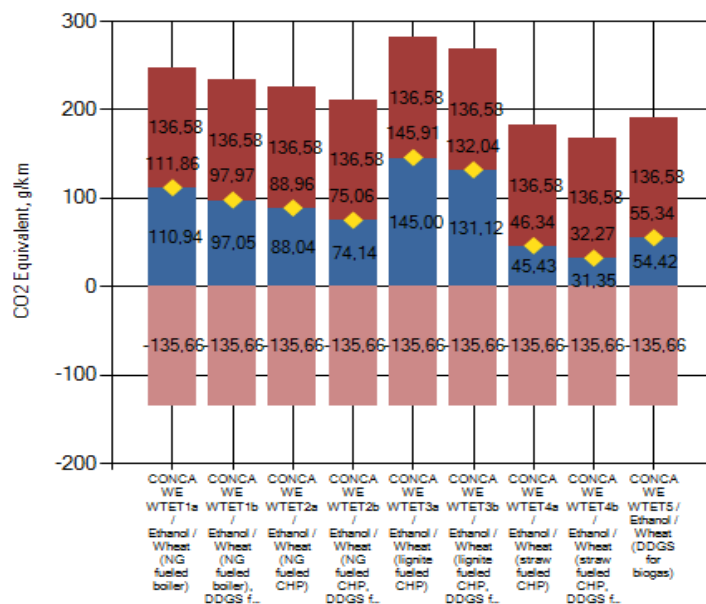
Pathways

WT and TtW Chart

Emissions Break-Down Chart

WtW Chart

WELL-TO-WHEEL EMISSIONS



- Well-to-Wheel
- Renewable Combustion Credit
- Tank-to-Wheel
- Well-to-Tank

Your Search Provided the Following Pathways

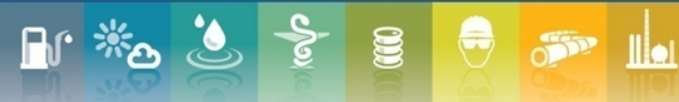
Select	Pathway
<input checked="" type="checkbox"/>	CONCAWE WTET1a / Ethanol / Wheat (NG fueled boiler)
<input checked="" type="checkbox"/>	CONCAWE WTET1b / Ethanol / Wheat (NG fueled boiler), DDGS for Energy
<input checked="" type="checkbox"/>	CONCAWE WTET2a / Ethanol / Wheat (NG fueled CHP)
<input checked="" type="checkbox"/>	CONCAWE WTET2b / Ethanol / Wheat (NG fueled CHP, DDGS for energy)
<input checked="" type="checkbox"/>	CONCAWE WTET3a / Ethanol / Wheat (lignite fueled CHP)
<input checked="" type="checkbox"/>	CONCAWE WTET3b / Ethanol / Wheat (lignite fueled CHP, DDGS for energy)
<input checked="" type="checkbox"/>	CONCAWE WTET4a / Ethanol / Wheat (straw fueled CHP)
<input checked="" type="checkbox"/>	CONCAWE WTET4b / Ethanol / Wheat (straw fueled CHP, DDGS for energy)
<input checked="" type="checkbox"/>	CONCAWE WTET5 / Ethanol / Wheat (DDGS for biogas)

OPTIONS

Choose unit type: ☐ g/MJ ☒ g/km

☒ Include Tank-to-Wheel Data?

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▶ Next Steps:

- ▶ Improve the user interface
- ▶ Adapt the data driver to the Version 4 WTT and TTW results
- ▶ Test the graphing tool for robustness
- ▶ If successful, make graphing tool available to interested users through the JEC Consortium site

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