Energy Calculator Instructions

The most important step in energy management and conservation is measuring and accounting for energy consumption.

A measurement of current energy use will allow growers to identify their potential energy and cost saving opportunities and will highlight success post optimisation.

Multiple factors influence energy intensity such as geographic area, fuel type and type of produce. The energy calculator is designed to support growers in understanding a basic energy measurement.

Key

- Editable
- Total sum of cells
- Calculation output
- Drop down reference for coal

Step 1:

Fill in covered crop area by m². The tool allows for sites with up to 4 green houses.

Step 2:

Fill in monthly production data. The tool allows for multiple entries of production in kg.

Step 3:

Enter your energy usage. This can be found in your energy bills - the amount of energy consumed within that given month. The tool has inputs for many different types of fuel. Enter the total consumed under the relevant fuel type.

Note it is important that you enter under the correct fuel type as the energy intensity in MJ and emissions factors are different for each different fuel type.

If coal is used on site then it is important to select the coal type in cell Q3.

Step 4:

The energy intensity for the given month will be displayed in orange (if steps 1-3 have been filled in correctly).

This will show the energy used per kg of crop for that month and the energy used for the area.

Total tons of CO_2 emissions are also displayed.

Step 5:

Repeat steps 2 & 3 for each month and the tool will calculated the annual energy intensity along with displaying the month.

This helps display variations in season and other anomalies.

Notes:

- Moving cells or changing calculations will cause in inaccurate results
- Do not change anything on the parameters tab, this will affect results

Energy Calculator Example

This example is a covered crop grower with 2 greenhouses. The grower only uses gas.

Key

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- Drop down reference for coal

*If using coal select coal type | N/A

* Select Coal type:	N/A

Covered crop area m²

	Crop 1	Crop 2	Crop 3	Crop 4	Total (m²)
Area	300	200	0	0	500.00

Crop production in kg

	Crop 1	Crop 2	Crop 3	Crop 4	Total (kg)
January	10	20	0	0	30.00
February	10	20	0	0	30.00
March	0	0	0	0	-
April	0	0	0	0	-
May	0	0	0	0	-
June	0	0	0	0	-
July	0	0	0	0	-
August	0	0	0	0	-
September	0	0	0	0	-
October	0	0	0	0	-
November	0	0	0	0	-
December	0	0	0	0	-
Total	20	40	0	0	60

Energy & Fuel consumption

	Electricity (kWh)	Gas (GJ)	LPG (L)	LPG (kg)	Diesel (L)	Waste oil (L)	* Coal (T)	Total (MJ)
January	0	7	0	0	0	0	0	7,000.00
February	0	6	0	0	0	0	0	6,000.00
March	0	0	0	0	0	0	0	-
April	0	0	0	0	0	0	0	-
May	0	0	0	0	0	0	0	-
June	0	0	0	0	0	0	0	-
July	0	0	0	0	0	0	0	-
August	0	0	0	0	0	0	0	-
September	0	0	0	0	0	0	0	-
October	0	0	0	0	0	0	0	-
November	0	0	0	0	0	0	0	-
December	0	0	0	0	0	0	0	-
Total	0	13	0	0	0	0	0	13000

Energy intensity / Total emissions

	MJ/kg	MJ/m²	t CO2-e
January	233.33	14.00	0.42
February	200.00	12.00	0.36
March	-	-	-
April	-	-	-
May	-	-	-
June	-	-	-
July	-	-	-
August	-	-	-
September	-	-	-
October	-	-	-
November	-	-	-
December	-	-	-
Total	433.33	26.00	0.78

Step 1: Enter covered crop area in m_2

The editable cells have allowed for the case where a site may have multiple green houses. In this example the site has 2 green house. One that is of 300 m² and a second of 200 m³.

The grey total sum cell will automatically change. The value displayed will be a sum of the total area of all covered crops.

Step 2: Enter covered crop production for each month

The editable cells have allowed for the case where a site may have multiple greenhouses. In this example the site has 2 greenhouses. One that produces cucumbers and a second of tomatoes.

The site was able to produce 10kg of cucumbers in January and 20kg of tomatoes.

The grey total sum cell will automatically change. The value displayed will be a sum of the total production for that month.

Step 3: Enter energy consumed within that month of production

The editable cells have allowed for the case where a site may have multiple fuel options. Within this example the grower only uses natural gas. In this example all fuels are left a 0 as only natural gas was used.

If coal is used, use drop down in cell Q3 to select coal type.

Step 4: Total monthly energy intensity is calculated in the orange.

This calculates how much energy was required to produce 1 kg of production and the energy required for the total area.

This is converted to tons of CO_2 emissions.

Continued monthly data enables visibility of variations within the sites energy use.

Step 5: Total accumulative energy is displayed in the bottom 'totals'

This demonstrates a total over the months that data is inputted for.

* Note this is an example site designed only for the purpose of demonstrating the tool and the information does not reflect a true site.