FC-Hy Guide

Training Course

Thurs. 1st September 2011, Berlin

Seminaris

Campus Hotel

Berlin

FC-Hy Guide

Data collection template

Data collection template - Hydrogen

Part I: General information on hydrogen production

- Hydrogen related information
- Description of hydrogen producer
- Description of the product system under investigation
- Description of by-products

Part II –VII : Different production technologies

General Part of the data collection template

Part I: General information on hydrogen production		unit
Please attach an additional sheet including a system functioning scheme and system's basic components		
Hydrogen related information		
[please add rows and other fields if needed]		
Purity of the hydrogen (XX %)		%
Aggregate state (liquid or gaseous) of the hydrogen		
Pressure of the hydrogen (YY bar)		bar
Temperature of the hydrogen (ZZ °C)		°C
Impurities (please state them below, if known)		%
Type of Impurities		
Amount		%
Quantity produced by volume		Nm^3/h or $Nm^3/year$
Quantity produced by mass		kg/h or kg/year
Description of hydrogen producer (general information on the producer)		
[please add rows and other fields if needed]		
Overall hydrogen production capacity (of the production company)		m^3
Number of hydrogen production sites		No.
Hydrogen production technologies used (e.g. steam reformer, electrolysis etc.)		
Geographical coverage by region (where are the major production locations of the producer)		country or region
Description of the product system under investigation		
[please add rows and other fields if needed]		
Hydrogen production technology used		
Location of the production site		country or region
Year of construction		
Is there electricity produced on-site used		yes/no
Amount of electricity produced on-site used (if applicable)		kWh/MJ hydrogen
Type of electricity production on-site (if applicable)		
Is there heat produced on-site used in the production of H_2		
Type of heat production on-site, e.g. gas boiler, oil CHP etc. (if applicable)		
Amount of heat production on-site (if applicable)		MJ/MJ hydrogen
H_2 production capacity per day		Nm^3/year or MJ/year
H_2 production capacity per year		Nm^3/year or MJ/year
Technical service life of H_2 production		
Scale of production site (laboratory, pre-commercial, commercial scale)		
Type of storage (including e.g. liquefaction facility or other device)		
Capacity of storage		Nm^3

Specific Part of the data collection template

Part II: Hydrogen production by steam reforming	amount (per unit of product)	unit
Hydrogen production - Functional unit is "1 MJ of hydrogen (net calorific value (NCV) with XX % purity and YY ba		
[please add rows and other fields if needed]		
Input		
Natural gas (if applicable)		Nm³/MJ hydrogen
Net calorific value of the natural gas used		MJ/Nm³
Liquefied petroleum gas (if applicable)		kg/MJ hydrogen
Net calorific value of the liquefied petroleum gas used (if applicable)		kg/Nm³
Refinery gas (if applicable)		Nm³/MJ hydrogen
Net calorific value of the refinery gas used (if applicable)		MJ/Nm³
Other process gases (e.g. off gas from H_2 purification) (please specify if applicable)		m³/MJ hydrogen
Net calorific value of the process gas used (if applicable)		
Composition of the process gas (e.g.% H2, % CO2 etc.) (if applicable)		
Cooling water		
Temperature of the cooling water		
Tap water		
Average temperature of the tap water		
Electricity		
Operating supplies and spare parts (e.g. kg catalyst for reformer)		
Operating supplies for the desulphurisation (e.g. kg catalyst per year)		
Operating supplies for the de-ioniser (if applicable)		
Output		
CO_2 (Emissions)		
NO_x (Emissions)		
CO (Emissions)		
Other emissions (please specify)		
Waste water		
Miscellaneous waste		
Amount of H_2 losses during purification		
Are the H_2 losses used as process gas? (if yes please specify in proces		

Part III: Hydrogen production by electrolysis	amount (per unit of product)	unit
Hydrogen production - Functional unit is "1 MJ of hydrogen (net calorific value (NCV) with XX % purity and YY ba		
Method of production: Alkaline electrolysis		
[please add rows and other fields if needed]		
Input		
Electricity		kWh/MJ hydrogen
Tap water		m³/MJ hydrogen
Potassium hydroxide		kg/MJ hydrogen
Process gases (e.g. off gas from H_2 purification) (please specify if applicable)		m³/MJ hydrogen
Net calorific value of the process gas used (if applicable)		MJ/m³
Composition of the process gas (e.g.% H_2, % O_2 etc.) (if applicable)		
Operating supplies and spare parts		
Output		
Is the Oxygen used? (Please state the amount below if yes)		yes/no
Oxygen		Nm³/MJ hydrogen
Amount of H_2 losses during purification		%
Are the H_2 losses used as process gas? (if yes please specify in process gas column above in inputs)		yes/no
Other emissions (please specify)		kg/MJ hydrogen

Use of the data collection template

White cells - have to be filled
Purple cells - can be filled

Legend:	
cells to be filled out with requested data are white (mandatory)	
cells to be filled out with additional information are purple (optional)	
Comments and explanations are given in italic	

Part I: General information on hydrogen production should be filled out generally. The other parts (II-VII) are specialised towards main production technologies. Pleas fill out the corresponding one, if none is corresponding please fill out the best fitting one and add additional rows if necessary.

The specialised parts (II-VII) are relative to the production of hydrogen. Please enter the energy and material ressources which are necessary for the production of:

"1 MJ of hydrogen (net calorific value (NCV) with XX % purity and YY bar @ ZZ °C)".

Scale basis for all data

Data collection template - specified

Attach additional informations as functioning schemes

13			
14	**Part I: General information on hydrogen production**		unit
15			
16	***Please attach an additional sheet including a system functioning scheme and system's basic components***		
17	**Hydrogen related information**		
18	***[please add rows and other fields if needed]***		
19	Purity of the hydrogen (XX %)		%
20	Aggregate state (liquid or gaseous) of the hydrogen		

Include all available information which seem to be relevant, change template if necessary

Part II

Choose the suitable production technology:

II Steam reforming

III Electrolysis (Alkaline or Chlorine-Alkali)

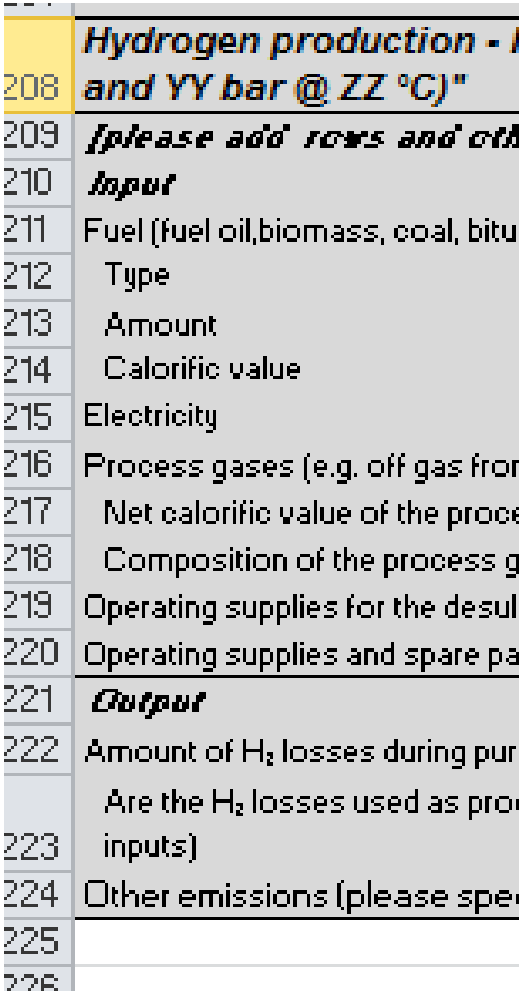
IV Partial Oxidation

V Catalytic reforming

VI Gasification

VII Other

Fill out the appropriate input and output cells



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