

## Fuel Cell Typology :

Class	Electrolyte	Operating Temperature	Fuel	Oxidizer	Sensitive to ...	Electric efficiency	Application	Advanced of technology
AFC Alcaline Fuel Cell	Potassium hydroxide solution	50-200°C	Industrial grade H <sub>2</sub>	Oxygen Air	CO <sub>2</sub> , Hg, Cl, S	66-65 %	Mobile and Stationary	Mature
PEMFC Proton Exchange Membrane Fuel Cell	Solid polymer	30-100°C	H <sub>2</sub> , high content H <sub>2</sub> syngas such natural gas, coal gas, treated reforming biogas.	Oxygen Air	CO, S, Cl	35-50 %	Portable, mobile and stationary	Under development, soon to be commercialized
DMFC Direct Methanol Fuel Cell	Solid polymer	20-90°C	Methanol	Oxygen Air	S, métaux lourds	20-30 %	Portable and mobile	Under development
PAFC Phosphoric Acid Fuel Cell	Phosphoric acid	180-220°C	H <sub>2</sub> , high content H <sub>2</sub> syngas such natural gas, coal gas, treated reforming biogas.	Oxygen Air	CO, S, C	35-40 %	Stationary	Commercially available
MCFC Molten Carbonate Fuel Cell	Molten carbonate	600-700°C	H <sub>2</sub> , high content H <sub>2</sub> such natural gas, coal gas, biogas and similar gas, internal reforming and CO shift are in principle possible, methanol after external conversion and pre-treatment.	Oxygen Air	S, Cl	50-60 %	Stationary	Under development
SOFC Solid Oxide Fuel Cell	Solid electrolyte	700-1000°C	H <sub>2</sub> , high content H <sub>2</sub> such natural gas, coal gas, biogas and similar gas, internal reforming and CO shift are in principle possible, methanol after external conversion and pre-treatment.	Oxygen Air	S, Cl	50-65 %	Stationary	Under development