



	AC Graphite Electrode Plasma Arc	Metal Electrode Plasma Arc	Microwave Plasma	Pulsed Methane Pyrolysis (PMP)
Process shown	Plenesys	Based on the Hüls process	Transform Materials	Ekona Power
Hydrogen content at reactor outlet	~98% using recycle loop (70 to 80% single pass conversion)	Potentially >95% hydrogen on single pass	86% hydrogen, 12% acetylene	70 to 80%
Carbon production	Solid carbon	Solid carbon	Acetylene	Solid carbon & CO ₂
Catalyst required	No	No	No	No
Heating mechanism	Hydrogen gas AC electrical plasma	High temperature plasma arc (20,000 °C)	Microwave plasma	Partial combustion and fired heater
Reactor temperature	1,500 to 1,800 °C	Gases in the range of 1,200 to 1,500 °C	1,200 to 1,500 °C	1,200 to 1,500 °C
Reactor pressure	Close to atmospheric pressure	Close to atmospheric pressure	Close to atmospheric pressure	Pressure cycles up to 20 bar with each pulse at approximately 1 Hz