Downstream Plasma Device 2450 MHz, 6 kW



Features



• Athmospheric plasma

- Compact plasma source device
- Frequency band 2400..2500 MHz
- Maximum 6 kW output power
- Max. gas temp.: approx. 3000 °C 5000 °C
- 99% energy coupling in the microwave plasma reactor (incl. 3-Stub-Tuner)
- Intuitive operation via touchscreen

Conceivable applications:

- Research at universities and industrial labs
- Rapid heating (alternative to melting processes)
- Methane pyrolysis
- CO² consumtion
- Surface treatment

Plasma can be considered as energy-enriched gas and is often referred to as the fourth state of matter. In fact, parts of the gas are ionized and molecules are split into atoms, ions and electrons in a plasma. Temperature up to approx. $3000 \,^{\circ}\text{C} - 5000 \,^{\circ}\text{C}$ (surface of the sun 6000 $^{\circ}\text{C}$).

In a microwave plasma reactor natural gas is directly converted to pure carbon and hydrogen. This is also the main benefit of the dry methane reforming reaction in a microwave plasma reactor over for example conventional steam methane reforming: no carbon dioxide is formed in the process. While steam methane reforming comes with the disadvantage of carbon dioxide emissions and needs expensive carbon capture and storage technologies, this extra step can be spared with a microwave plasma reactor. Additionally, the pure carbon adds value to the process as an extra revenue, since this chemical is desired for e.g. tire manufacturing, gaskets or simply for shoe soles.

Specification

Electrical and Technical Data of the Power Supply	
Magnetron Output Power	6000 W
Line Input	3 Phase: 400 V _{AC} 3 Phase 440 V _{AC} 3 Phase: 575 V _{AC}
Line Frequency	50 Hz / 60 Hz
Input Power	9,92 kVA @ 400 V _{AC}
Power Adjustment Signal Range	0 - 10 V _{DC}
Interface	Profinet or analog PLC
Microwave Plasma Reactor	
Igniter	Igniter pressurized cylinder
Igniter compressed air input	Compressed air 6 bar, 6 mm tube connection



Cooling

Cooling water

Mechanical Data

Dimensions (WxHxD)

Min. 15 l/min, 3.5 bar at 20 °C

1600 x 1280 x 630 mm





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Scope of delivery

- Switch Mode Power Supply 6 kW, controllable via touch panel
- Magnetron head 6 kW
- Plasma reactor
- 3 stub tuner with counting discs, infinitely adjustable
- 2 directional coupler , ready for monitoring forward and reflected power
- Equipment for compressed air (with connection for compressor)

Optionally available

- Equipment for other mediums like Propane, Methane, etc.
- Hot-S-Paramenter measurement device for measuring during the process and monitoring the energy coupling into the plasma reactor. Including 2 directional couplers.
- Suitable cooling unit
- Other mechanical sizes of the housing on request



Touchscreen operations



CONTROLLER MW SETPOINT [W] intern 5000 0 0 **MW Active** FORWARD PWR (W) **REVERSE PWR (W)** RUN 4985 281 6702 **7333** 914 A M **† 1** (1)

Main menu in switched off state



Monitoring of key datas





Submenu with additional datas

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