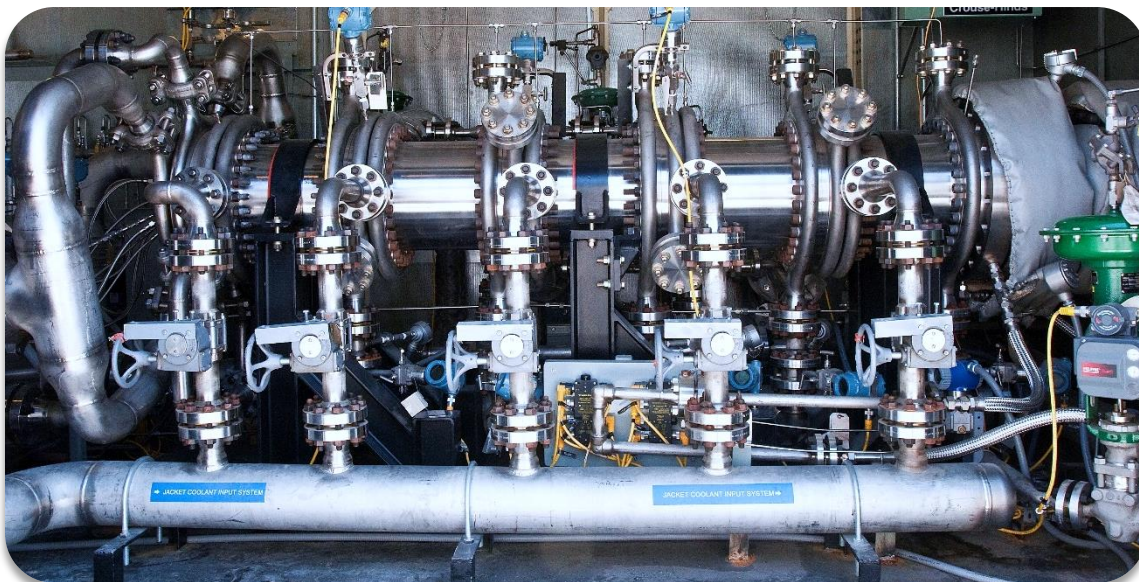


Direct Steam Gas Generator: DSGG1200



Product Description

The DSGG1200 is a pressurized gas generator that combusts gaseous fuel with oxygen and controls combustion temperature via water injection. It creates thermal energy for power, industrial, or chemical processes while enabling >99% carbon capture and is rated for 200 MW_t when operating on pipeline quality natural gas fuel at design pressures. The combustion products are primarily steam and carbon dioxide (H₂O and CO₂) which enables simple carbon capture via gas liquid separation without the need for harsh chemicals such as amines.

Applications

- Clean Firm Power
- Combined Heat and Power (CHP)
- Industrial Decarbonization
- Clean Steam Production
- Produced Water Treatment & Thermal Enhancement
- Enhanced Oil and Gas Recovery (EOR, EGR)

Features

- Fully containerized or skid mounted solutions for minimal install time and cost
- Fully automated control system via Allen Bradley PLC, e.g. fuel demand, temperature control, load following, etc.
- Independent control over produced gas pressure and temperature
- Easy access maintenance system for full module or component replacement
- Unit can be completely overhauled in <24 hours
- Built to ASME BPVC Section VIII Division 2
- Increased safety via high-speed ignition detection (on the order of <500ms) and minimal stored volume; unit can be tripped, purged, and made safe for internal work in <15min.

Materials of Construction

Typical materials of construction are SS316 for a wide array of applications and corrosion resistance. The burner is manufactured with Inco 600 for high pressure oxygen compatibility. Non-standard applications may require the use of nickel alloys, stabilized stainless such as SS321, copper, or copper alloys.

Typical Dimensions: L 40-45' x W 11' x H 11' (12-14m x 4m x 4m) in operational enclosure

Operating Conditions

	Nominal	Customizable Range
Thermal Rating	682 MMBtu/hr (200 MWt)	Up to 1,705 MMBtu/hr (500 MWt)
Fuel Type	Pipeline NG	Other gaseous fuels upon request
Fuel Heating Value	20,260 Btu/lb (47.1 MJ/kg)	3,500 - 51,590 Btu/lb (120 MJ/kg)
Fuel Flow Rate	33,480 lb/hr (15,180 kg/hr)	Up to 83,000 lb/hr (37,650 kg/hr)
Oxidizer Type	98 mol% Oxygen	90 - 100 mol% Oxygen
Oxidizer Flow Rate	128,160 lb/hr (58,130 kg/hr)	Up to 321,100 lb/hr (145,650 kg/hr)
Diluent Type	Water	Water, salt water, produced water
Diluent Flow Rate*	433,350 - 900,000 lb/hr (196,565 – 408,230 kg/hr)	Based on required drive gas exit temperature
Coolant Type	Boiler quality water	Boiler quality water, ethylene glycol, TEG
Coolant Flow Rate	72,000 lb/hr (32,600 kg/hr)	Varies by design and site conditions
Drive Gas Output	594,990 lb/hr (269,875 kg/hr)	Up to 1,655,000 lb/hr (750,700 kg/hr)
CO₂ Output Flow Rate	18,500 mscfd (970 tonnes/day)	Up to 60,000 mscfd (3,140 tonnes/day)
Drive Gas Composition	~94 mol% H ₂ O, 6 mol% CO ₂	Up to 90% CO ₂ content
Exit Temperature	Saturation up to 3,200 °F (1,760 °C)	
Supply Pressure	600 psi (41.5 bar)	Up to 1,825 psi (126 bar)
Exit Pressure	500 psi (34.5 bar)	Up to 1,520 psi (105 bar)
Operating Range	35 – 100% fuel demand	

*Diluent flow varies according to temperature control inputs and diluent supply temperature