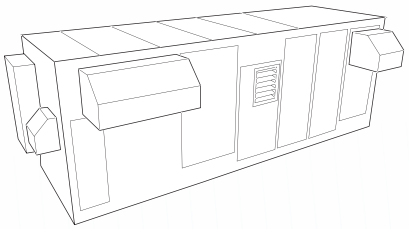


PureCell®

Model 400
FUEL CELL SYSTEM

PURECELL® SYSTEM BENEFITS

Energy security
proven, continuous generation that is setting durability records

Energy productivity
increased efficiency that is reducing energy costs

Energy responsibility
clean operation that is driving greener customer facilities

PURECELL SYSTEM COMPETITIVE ADVANTAGE

Long life
industry best, 10-year cell stack life assures high availability and low service cost

High efficiency
up to 90% overall efficiency

Modular and scalable
systems can be clustered to meet growing energy demands

Experience
most knowledgeable and experienced team in the industry

Grid-independence
proven performance in providing power when the utility grid fails

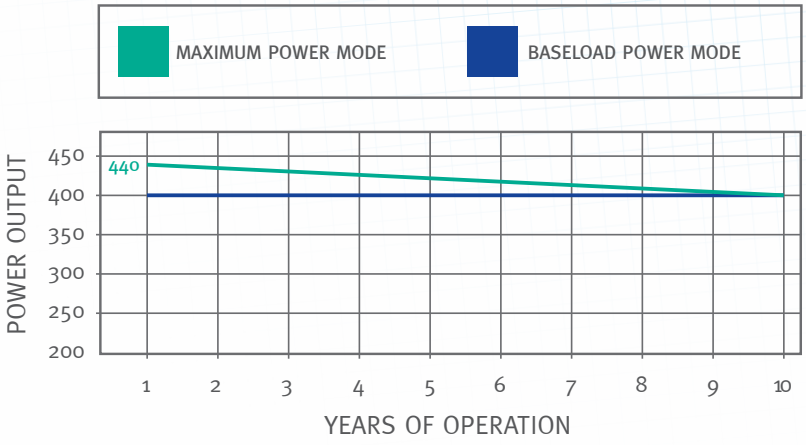
Load-following
can modulate power output to match building needs

Small footprint
high power density takes less space on site

Flexible siting
indoor, outdoor, rooftop, multi-unit

RATED POWER OUTPUT: 440KW, 480VAC/60HZ

Characteristic	Units	Operating Mode	
		Maximum Power [1]	Baseload Power [1]
Electric Power Output	kW/kVA	440/440	400/471
Electrical Efficiency	%, LHV	41%	42%
Peak Overall Efficiency	%, LHV	90%	90%
Gas Consumption	MMBtu/h, HHV (kW)	4.06 (1,190)	3.60 (1,056)
Gas Consumption [2]	SCFH (Nm^3/h)	3,961 (106.1)	3,515 (94.2)
High Grade Heat Output @ up to 250°F	MMBtu/h (kW)	0.76 (223)	0.64 (188)
Low Grade Heat Output @ up to 140°F	MMBtu/h (kW)	0.99 (290)	0.88 (258)



FUEL

Supply ..... Natural Gas
Inlet Pressure ..... 10 to 14 in. water (25 - 35 mbar)

EMISSIONS [3, 4]

NOx ..... 0.01 lbs/MWh (0.006 kg/MWh)
CO ..... 0.02 lbs/MWh (0.009 kg/MWh)
VOC ..... 0.02 lbs/MWh (0.009 kg/MWh)
SO_2 ..... Negligible
Particulate Matter ..... Negligible
CO_2 (electric only) ..... 1,049 lbs/MWh (476 kg/MWh)
(with full heat recovery) ..... 495 lbs/MWh [5] (225 kg/MWh)

OTHER

Ambient Operating Temp. ..... -20°F to 104°F (-29°C to 40°C)
Sound Level ..... <65 dBA @ 33 ft. (10m)
Water Consumption ..... None (up to 85°F (30°C) Ambient Temp.)
Water Discharge ..... None (Normal Operating Conditions)

CODES AND STANDARDS

ANSI/CSA FC1-2012: Stationary Fuel Cell Power Systems
UL1741: Inverters for Use With Distributed Energy Resources

NOTES

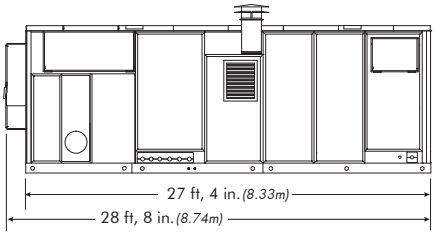
1. Average performance during 1st year of operation. Refer to the Product Data and Applications Guide for performance over the operating life of the powerplant.
2. Based on natural gas higher heating value of 1025 Btu/SCF (40.4 MJ/Nm3)
3. Emissions based on 400 kW operation.
4. Fuel cells are exempt from air permitting in many U.S. states.
5. Includes CO_2 emissions savings due to reduced on-site boiler gas consumption.

DOOSAN

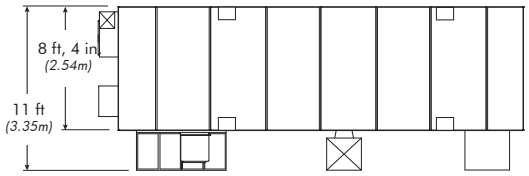
PureCell Model 400
FUEL CELL SYSTEM

SYSTEM DIMENSIONS

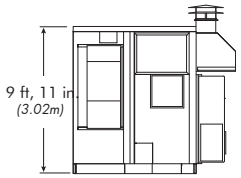
Power Module



Front View

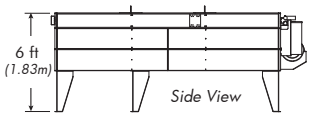


Top View

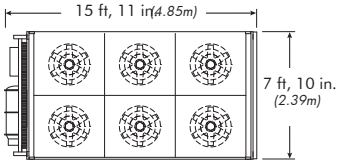


Side View

Cooling Module



Side View



Top View

Shipping Dimensions

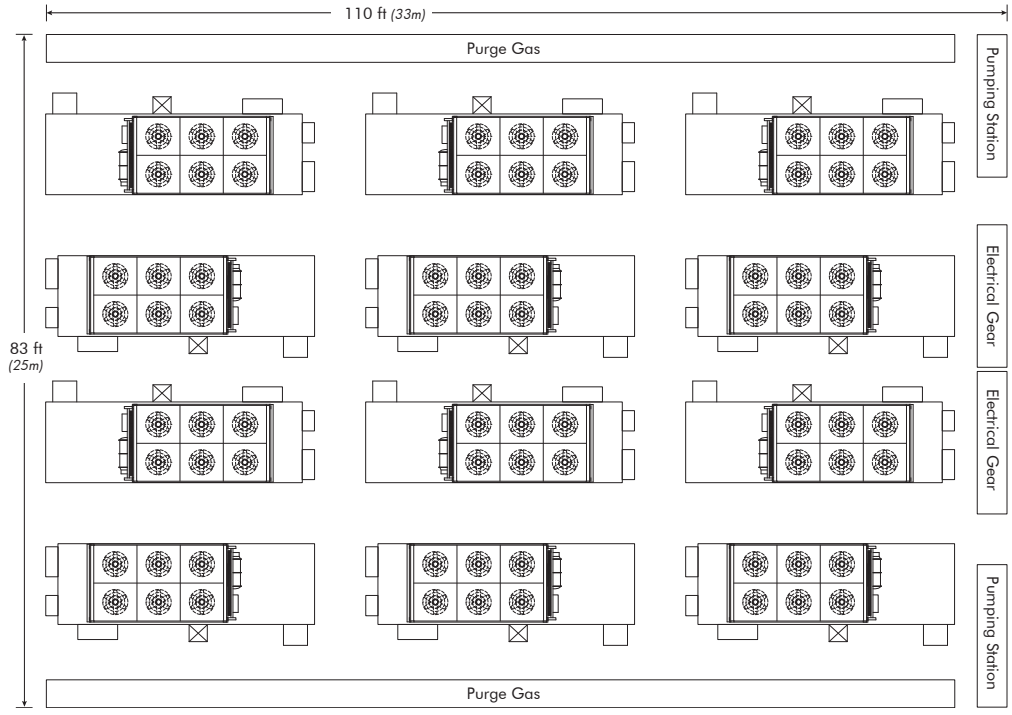
	Power Module	Cooling Module
Length	28 ft, 8 in. (8.74m)	15 ft, 11 in. (4.85m)
Width	8 ft, 4 in. (2.54m)	7 ft, 10 in. (2.39m)
Height	9 ft, 11 in. (3.02m)	6 ft (1.83m)
Weight	60,000 lb (27,216 kg)	3,190 lb (1,447 kg)

MULTI-MEGAWATT CAPABILITY

For multi-megawatt sites, individual power plants can be arranged in multiple orientations. The 12-unit layout defined below represents one option with cooling modules located on the roof of the power plants minimizing the overall footprint of the site.

No. of Units	Baseload Electric Output	High-Grade Heat	Low-Grade Heat	Fuel Consumption	Site Area
	MW	MMBtu/h (kW)	MMBtu/h (kW)	MMBtu/h, HHV (kW)	ft² (m²)
6	2.4	3.8 (1,128)	5.3 (1,548)	21.6 (6,334)	4,400 (410)
12	4.8	7.7 (2,256)	10.6 (3,096)	43.2 (12,668)	8,900 (830)
24	9.6	15.4 (4,512)	21.1 (6,192)	86.5 (25,337)	17,800 (1,650)
36	14.4	23.1 (6,768)	31.7 (9,288)	129.7 (38,005)	26,700 (2,480)
48	19.2	30.8 (9,024)	42.3 (12,384)	172.9 (50,673)	35,600 (3,310)
60	24.0	38.5 (11,280)	52.8 (15,480)	216.2 (63,341)	44,500 (4,140)

12-Unit System Layout



NOTES

- Space required for electrical gear and pumping stations is representative only.
- Purge gas is required to purge the system of unspent fuel during shutdowns and prior to start-up.

The manufacturer reserves the right to change or modify, without notice, the design or equipment specifications without incurring any obligation either with respect to equipment previously sold or in the process of construction. The manufacturer does not warrant the data on this document. Warranted specifications are documented separately.

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