simple.fuel.®

your on-site hydrogen fueling solution

AUTOMOTIVE • FLEET • INDUSTRIAL

IVYS Energy Solutions

pdc MACHINES

simple.fuel.®

HYDROGEN POWERED INDUSTRIAL TRUCKS

simple.fuel. is an ultra-small all-inclusive appliance from hydrogen generation through dispensing.

simple.fuel. uses water and electricity to generate high purity hydrogen, compress, store and dispense to 350 or 700 bar.

Model	SF-35-20	
	PERFORMANCE	
Nominal Daily Capacity [kg H2/day]	**20**	
Hydrogen Dispense Pressure	350 Bar Max	
Fueling Method[a]	Per CSA HPIT 2 - Max 0.5 kg/min SAE J2600 Compliant Nozzle	
Vehicle Tank Categories Supported	Up to 3 kg per Vehicle with standard storage	
Hydrogen Purity	Meets ISO I4687-2 and SAE J2719	
Hydrogen Storage System[b]	Onboard ASME, PED or KHK Storage System 4.7 kilograms at 400 BAR (1,989 SCF) External 7kg (2,962 SCF) auxiliary storage module available	
User Interface and Communications	Touchscreen HMI Provided for service and user operation Modbus TCP/IP Interface for customer provided SCADA Systems standard Optional Wireless fault/service notifications and fleet management data available	
Installation and Temperature Ratings	General Purpose (non-hazardous) Locations, Outdoors (Indoors as option) -20°C to 40°C (Expanded range as option)	
Noise Emissions at 1 Meter[c]	< 70 dBA	
Service Life [years][d]	15	
	DIMENSIONS	
SimpleFuel™ Enclosure [L x W x H]	2.63 x 1.4 x 2.39m (92" x 46" x 94") < 2,700 kg (5,952 lbs.)	
Control Panel [L x W x H]	1.2 x 1.2 x 2.2m (48" x 48" x 88") < 200 kg (441 lbs.)	
Station Foot Print	Average 8.3m x 2.5m (326" x 98.5")	
Hydronic Cooler	Included in station footprint dimensions	
	POWER AND UTILITIES	
Electrical Supply	380 - 460 VAC +/- 10% 3 Phase Delta + TN-S Ground, 60/50Hz	
Nominal Power Consumption [kW]	70	
Water Supply [l/hr]	10	
Water Quality	4-7 Bar Supply Pressure at flow Conductivity < 0.1 µS/cm (> 10 MΩ-cm resistivity); Total Organic Carbon (TOC) < 30ppb	
	PROCESS CONNECTIONS	
H2 Vent / O2 Vent[e]	3/4" NPT, 316SS	
Water Supply	1/2" Compression, 316SS	
External Storage	3/8" Compression, 316SS	
Liquid Cooling	1" Compression, 316SS	
	APPROVALS	
Approvals[f]	ETL Listing and Labeling Available for North America, Australia and Japan	
Hazardous Equipment Rating[g]	North America	UL Class 1, Division 2, Group B
	Australia / Asia Pacific	IECEx IIC Gb T4
	Europe	Ex IIC Zone 2 T4

Notes:

(a) Actual performance and end of fill pressures varies depending on station usage, storage capacity and ambient temperature.

(b) SCF calculated at 1 atmosphere and 70°F

(c) Excludes upset conditions such as safety valve activation and noise from low temperature chiller system

(c) Assumes adherence to regular maintenance and installation in non coastal area

(e) SimpleFuel vent systems shall be provided by the customer and designed in accordance applicable codes and standards for the local jurisdiction. Vents shall be minimum 10' above grade or 5' above impinging structures within 15' radius of discharge point. Oxygen byproduct is vented to atmosphere and not intended to be captured or stored for secondary uses.

(f) Available listings include CSA HPIT-2 series, SAE J2600, ISO 19880-1, ISO 22734, IEC 60204-1 and assessment to IEC 60079 Series of documents. KHK Approval avaliable for Japan. Assumes installation in accordance with NFPA-2 or applicable local regulations.

(g) Hazardous equipment ratings apply to SimpleFuel devices only. Does not include electrical control panel, process or low temperature chiller equipment. Refer to applicable area classification drawings for further infromation.

LIGHT DUTY AUTOMOTIVE

Model	SF-70-20	SFF-70-20
PERFORMANCE		
Nominal Daily Capacity [kg H2/day]	20	
Hydrogen Dispense Pressure	700 Bar Maximum	700 Bar Nominal (H70)
Fueling Method[a]	Draft SAE TIR J2601/4 Variable based on Use Profile, typical 5-10 min/kg SAE J2600 Nozzle with IrDA	SAE J2601 (MC Method) Fueling rate varies with vehicle and ambient conditions Typical ~1 kg/min at 95% SOC SAE J2600 Nozzle with IrDA
Vehicle Tank Categories Supported	2-7 kg (Category A, B)	2-10 kg (Category A, B, C)
Mass Flow Measurement	-	Coriolis Style Meter +/- 4% Accuracy
Hydrogen Purity	Meets ISO I4687-2 and SAE J2719	Meets ISO I4687-2 and SAE J2719
Hydrogen Storage System[b]	Onboard ASME, PED or KHK Storage System 4.7 kilograms at 400 BAR (1,989 SCF) External 7kg (2,962 SCF) auxiliary storage module available	External ASME, PED or KHK Storage System Capacity based on usage requirements, pressures up to 860 BAR
User Interface and Communications	Touchscreen HMI Provided for service and user operation Modbus TCP/IP Interface for customer provided SCADA Systems standard Optional Wireless fault/service notifications and fleet management data available	
Installation and Temperature Ratings	General Purpose (non-hazardous) Locations, Outdoors -20°C to 40°C (Expanded range as option)	
Noise Emissions at 1 Meter[c]	< 70 dBA	< 80 dBA
Service Life[d]	15 years	15 years
DIMENSIONS		
SimpleFuel™ Enclosure [L x W x H]	2.63 x 1.4 x 2.39m (92" x 46" x 94") < 2,700 kg (5,952 lbs.)	2.9 x 1.4 x 2.39 (115" x 46" x 94") < 3,630 kg (7,936 lbs.)
Control Panel [L x W x H]	1.2 x 1.2 x 2.2m (48" x 48" x 88") < 200 kg (441 lbs.)	1.2 x 1.2 x 2.2m (48" x 48" x 88") < 200 kg (441 lbs.)
Station Foot Print	Average 8.3m x 2.5m (326" x 98.5")	Varies by Station Configuration
Process Cooling	Included in station footprint dimensions	Varies by station and region
ELECTRICAL AND UTILITIES		
Electrical Supply	380 - 460 VAC +/- 10% 3 Phase Delta + TN-S Ground, 60/50Hz	
Nominal Power Consumption [kW]	70	80
Water Supply [l/hr]	10	10
	4-7 Bar Supply Pressure at flow Conductivity < 0.1 µS/cm (> 10 MΩ-cm resistivity); Total Organic Carbon (TOC) < 30ppb	
PROCESS CONNECTIONS		
H2 Vent / O2 Vent[e]	3/4" NPT, 316SS	1" NPT, 316SS / 3/4" NPT, 316SS
Water Supply	1/2" Compression, 316SS	1/2" Compression, 316SS
External Storage	3/8" Compression, 316SS	9/16" Medium Pressure Cone and Thread, 316SS
Liquid Cooling	1" Compression, 316SS	Hydronic: 1" Compression, 316SS Low Temp Coolant: 1-1/4" Compression, 316SS
APPROVALS		
Approvals[f]	ETL Listing and Labeling Available for North America, Australia and Japan	
Hazardous Equipment Rating[g]	North America: UL Class 1, Division 2, Group B Australia / Asia Pacific: IECEx IIC Gb T4 Europe: Ex IIC Zone 2 T4	

Notes:

(a) Actual performance varies depending on station usage, storage capacity and ambient temperature. Fueling performance statement assume 20 vehicles per week (4 vehicles per day) at 4.5 kilograms dispensed per fueling event and no more than 2 fueling events per hour with appropriately sized low temperature chiller and appropriately sized ground storage system capable of providing 5.7 kg at 875 BAR, 6 kg at 620 BAR and 21 kg at 450 BAR (usable). Actual fueling times vary between 4-25 minutes. Fueling only available at localized ambient temperatures between -40°C to +50°C.

(b) SCF calculated at 1 atmosphere and 70°F

(c) Excludes upset conditions such as safety valve activation and noise from low temperature chiller system

(d) Assumes adherence to regular maintenance and installation in non coastal area

(e) SimpleFuel vent systems shall be provided by the customer and designed in accordance applicable codes and standards for the local jurisdiction. Vents shall be minimum 10' above grade or 5' above impinging structures within 15' radius of discharge point. Oxygen byproduct is vented to atmosphere and not intended to be captured or stored for secondary uses.

(f) Available listings include CSA HGV 4 series, SAE J2600, ISO 19880-1, ISO 22734, IEC 60204-1 and assessment to IEC 60079 Series of documents. KHK Approval available for Japan. Assumes installation in accordance with NFPA-2 or applicable local regulations.

(g) Hazardous equipment ratings apply to SimpleFuel devices only. Does not include electrical control panel, process or low temperature chiller equipment. Refer to applicable area classification drawings for further information.

your on-site hydrogen fueling solution

safe • compact • practical • cost-effective

pdc MACHINES

30 Fretz Road
Souderton PA 18964 USA
www.pdcmachines.com

+1-215-443-9442
info@pdcmachines.com

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