

Fuel Cell Integration Systems

Shell Eco-Marathon 2010



Special Offer

Get on the Fast Lane with Heliocentris

Shell Eco-Marathon 2010

Heliocentris supports the teams

The construction of a fuel cell powered vehicle for the Shell Eco-Marathon competition is a huge project which requires the qualification of a multitude of components to set-up the car's drive section.

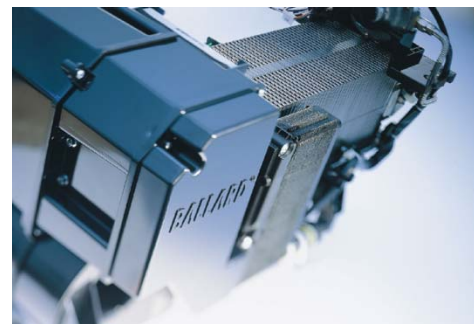
For 2010's race, Heliocentris offers complete fuel cell integration packages including the fuel cell system and all additional integration components - pre-qualified and compliant to the regulations of the Shell Eco-Marathon.

Just as last year, two Heliocentris technicians will also be present at the Lausitz Speedway, giving last minute technical support to all teams running Heliocentris systems.

Complete integration packages

The integration packages sport technologically advanced, next generation fuel cell systems. Besides the fuel cell system, they also include matching DC/DC converters, a hydrogen leak detection kit and additional components like tubes or cables, which are required for the integration. One package even includes a complete drive set. All sets in the packages can also be purchased alone.

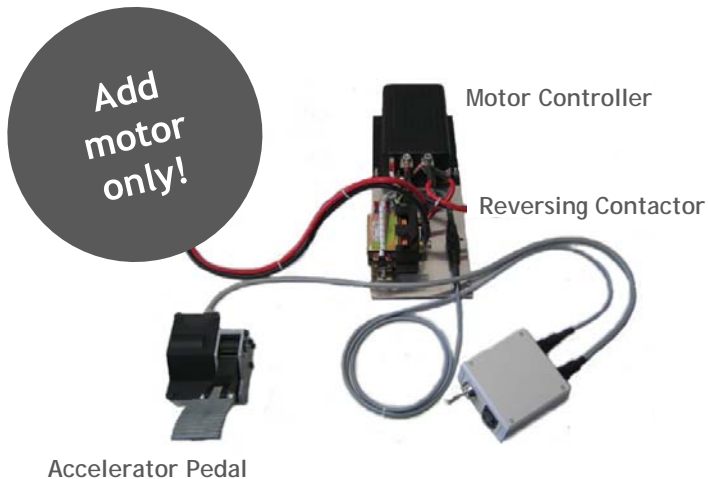
The components are fully harmonized and qualified according to the regulations of the Shell Eco-Marathon. An optional Hydrogen Safety Set including a H₂-sensor (25% LEL), a solenoid emergency shutdown valve and a load relay as well as hydrogen supply solutions for the construction phase are also available.



Winners
run
Heliocentris

Nexa 1200 Package

1,2 kW air-cooled fuel cell integration system



Accelerator Pedal

A real starter's package

The Nexa 1200 package is the ideal package for teams, who are planning to set-up an entirely new car or who are planning to change their gear. Except for the motor it includes a full drive-section.

The fully integrated, next generation Heliocentris Nexa 1200 fuel cell system houses the efficient Ballard FCGen 1020 ACS stack and outcompetes the old Nexa generation on hydrogen consumption owed to a reduced amount of parasitic loads. A matching 24 V DC/DC converter ensures stabilized output.

The package is available with a Drive Set, consisting of a motor controller, reversing contactor and an accelerator pedal. You only need to add a 24 V electric motor to get going.

All components are perfectly harmonized. Don't waste time with component qualification when you could already design your car.

FC-42 Package

720 W water-cooled fuel cell integration system



Components may differ

For advanced system designers

Commercial fuel cell vehicles are usually water-cooled. The FC-42 package now brings water-cooled fuel cell technology to the Eco-Marathon. The package is the ideal choice for teams, who would like to go the next technological step.

It includes a water-cooled FC-42 fuel cell stack with peak output of 720 W from Schunk. The stack is run through a special operator module - designed by Heliocentris. An additional controller ensures comfortable operation of the system. All tubes and cables required to connect stack and operator module and a matching 24 V DC/DC converter are also included in the package.

Its modular design allows for decentralized system setups. The Drive Set is not available for this system.

Hydrogen Supply

Safe and reliable hydrogen supply components



Safety first - Hydrogen supply from Heliocentris

Even though you are only allowed to use the official hydrogen cylinders on the race track, you may look for a hydrogen supply solution for the construction phase.

Metal hydride canister 760 sl

The low-pressure metal hydride canister allows for safe and easy intermediate storage of hydrogen in compact form. An integrated quick coupling ensures the safe connecting and disconnecting.

H₂ refilling kit

The refilling kit enables the safe refilling of metal hydride canisters from compressed gas cylinders. An included pressure reducer ensures that the cylinder pressure is reduced to the suitable inlet pressure of the metal hydride canister.

Package Overview

Fuel Cell Integration Systems for Shell Eco-Marathon

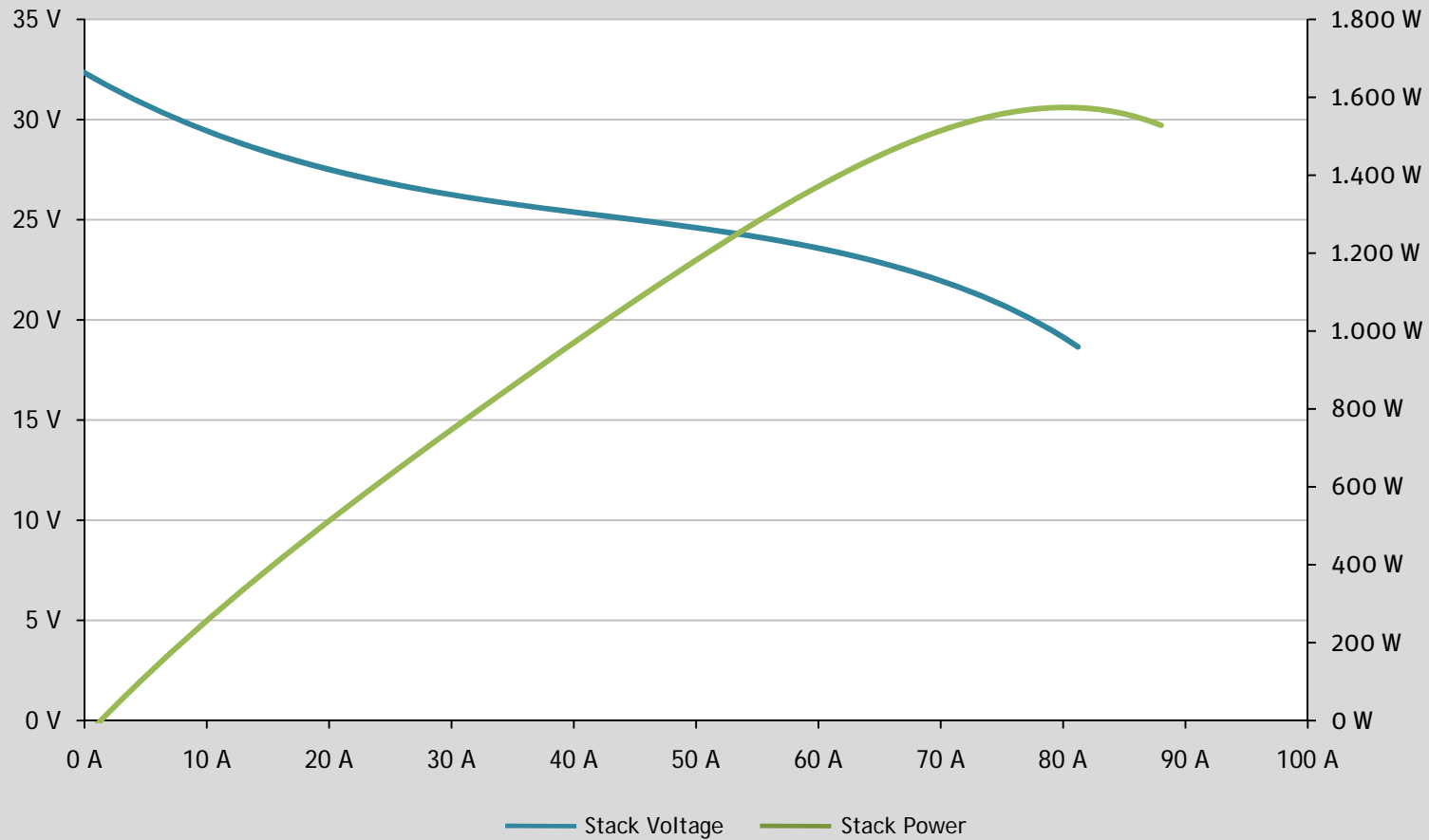
The packages are available as complete packages or divided into single sets, if parts have already been purchased before.

Please contact us for package and set prices.

	Nexa 1200 Package	FC-42 Package
Fuel Cell Set	<ul style="list-style-type: none"> » 1,2 kW air-cooled Nexa 1200 fuel cell power module » Start-up kit with all cables » 24 V DC/DC converter » Hydrogen Leak Detection Kit 	<ul style="list-style-type: none"> » 720 W water-cooled fuel cell stack » Operator Module » Controller Module » Set of tubes and cables » 24 V DC/DC converter » Hydrogen Leak Detection Kit
Safety Set	<ul style="list-style-type: none"> » Hydrogen sensor (25% LEL) » Solenoid emergency shutdown valve » Load relay 	
Drive Set	<ul style="list-style-type: none"> » Accelerator pedal » Motor controller » Reversing contactor <p>** 24 V electrical motor required, not scope of delivery!</p>	Not available

Power Curve

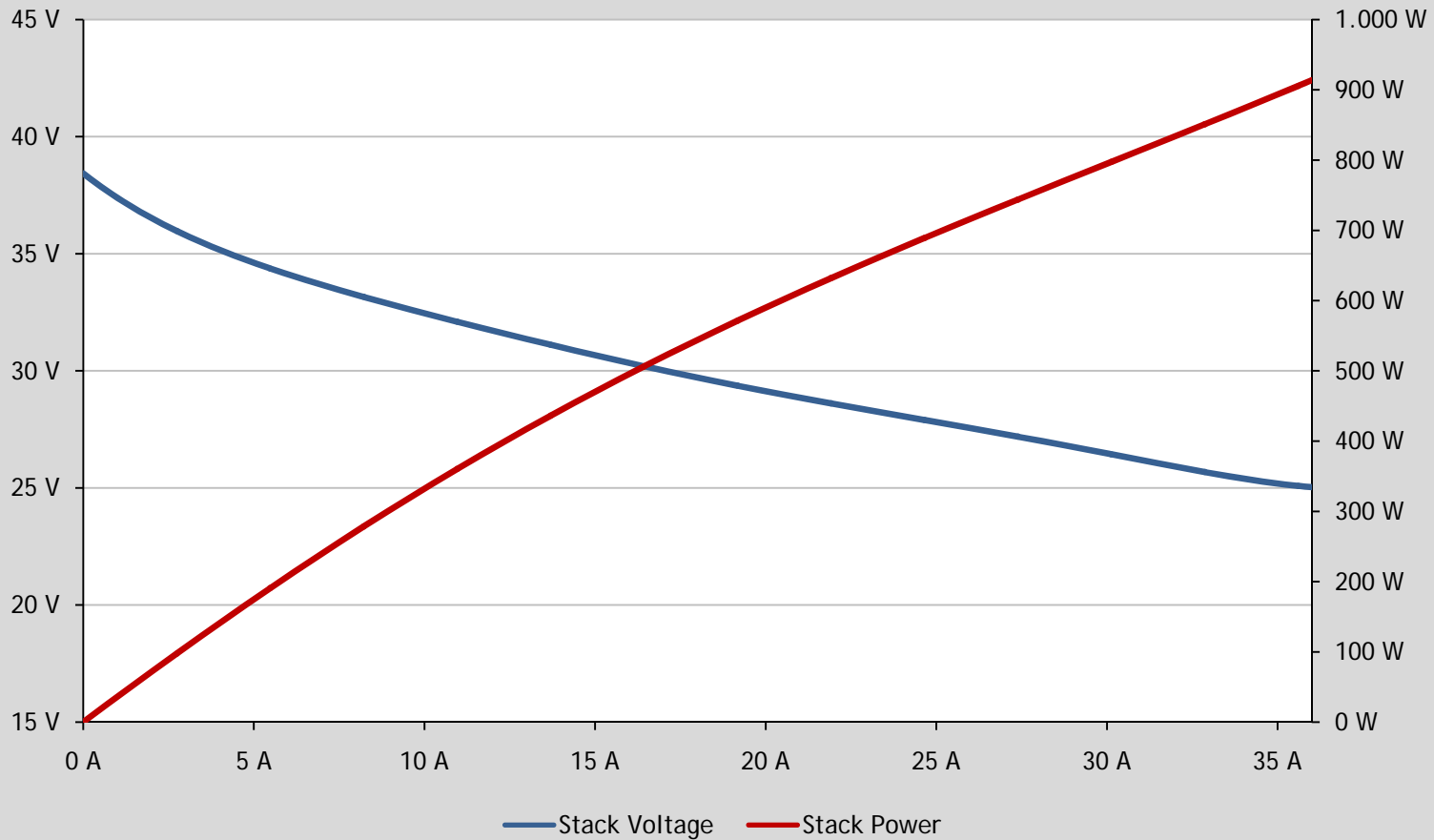
Heliocentris Nexa[®] 1200



Power Curve

FC-42 Stack 720 W

Data measured with the FC-42 Evaluation Package



Technical Data

FC-42 Fuel Cell System

Rated stack power	720 W
Rated current	30 A
DC voltage range	24 ... 42 V DC
Fuel	Hydrogen, min purity 99.99 %
Fuel pressure	1 ... 17 bar
Fuel consumption	8 SLPM @ rated power
Dimensions	
Operator module	28 x 29 x 50 cm
Controller module	9 x 27 x 16 cm
Stack	17 x 20 x 12 cm
Total weight	15 kg

Safety Set

Emergency shut down valve	normally closed type
Load relay	normally open type
Hydrogen Sensor	
Trip level	25 % lower explosive limit = 1 % H ₂ in air
Operating voltage	5 ... 40 V DC
Power consumption	100 mW

Nexa 1200 Fuel Cell System

Rated net power	1200 W
Rated current	52 A
DC voltage range	23 ... 36 V DC
Fuel	Hydrogen, min. purity 99.95 %
Fuel pressure	1 ... 17 bar
Fuel consumption	15 SLPM @ rated power
Dimensions (WxHxD)	40 x 22 x 55 cm
Weight	22 kg

Drive Set

Motor Control

Rated voltage	24 ... 36 V
Rated current	125 A (max. 1 h)
Max. current	275 A (max. 2 min.), 200 A (max. 5 min.)
Frequency range	15 kHz

Reversing contactor

Rated voltage	24 V
Rated current	100 A
Operating voltage	24 V
Power consumption	7 ... 13 W



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