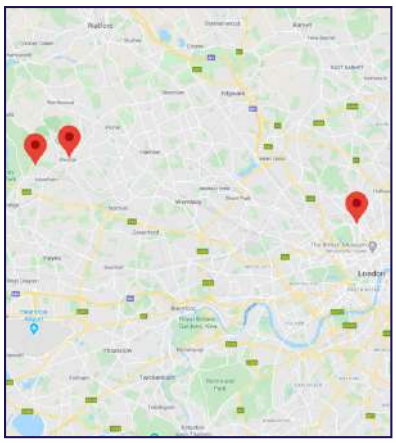
Ecosmart ZERO

CASE STUDY

HS2, Camden & Ruislip

Daily usage, solar charge & hydrogen fuel consumption. Measured from remote telemetry systems.

AJC Product	Customer	End User
Ecosmart ZERO	CAP GROUP WELFARE SERVICES	SKANSKA COSTAIN Working on behalf of HS2



Project	HS2
Location	Camden & Ruislip, London
Dates	**2nd March 2020 -to- 28th June 2020**

Power usage data

17 Operational weeks total

6 cabins 2nd March to 28th June

Hydrogen used = 4.5 Bottles

CO^2 created to produce Brown Hydrogen = 6.43kg

CO^2 created to deliver the hydrogen to site = NONE

Solar charge = 1648 kWh

Power used = 1291 kWh

= Equivalent to over 30,000 cups of tea

CO^2 Emissions = NONE

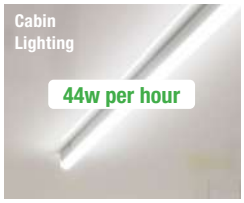
Total local CO^2 Emissions saved =

25 tons

Equivalent to planting

1138 Trees

to absorb this amount of CO2 over a year.



AJC Product	Customer	End User
Ecosmart ZERO	GAP GROUP WELFARE SERVICES	SKANSKA COSTAIN STRABAG Working on behalf of HS2

Review Period	**11th May to 28th June 2020**
ZERO	**GAP ECOsmart 16 ZERO H6127 - 3374594 - HA4 7DQ**
Supplier	**GAP Group**
End User	**Costain Skanska - JV - HS2**

	Generic Diesel Welfare	*ZERO Welfare*
		
Total Solar Gain, kW	0	*75*
Power From Hydrogen/Solar/Batteries, kW	0	*67*
Total Consumption, kW	67	*67*
Generator Hours	1,176	-
Total Local CO2 Created, kg	5,839	-

Summary

Solar Gain	**75**	**kW**		
Total silent running hours, Power from Hydrogen/Solar/Batteries only	**1,176**	**100%**		
Total Hydrogen Usage	**-**	**Bottles**		
Total local Co2 Emissions, Tonnes saved	**5.8**		**292**	**Trees for a year**

Carbon emission statistics are from Department for Business, Energy & Industrial Strategy.
Greenhouse gas reporting: conversion factors 2019. https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2019.
https://www.boilerjuice.com/red-diesel-prices/

AJC Product	Customer	End User
Ecosmart ZERO	GAP GROUP WELFARE SERVICES	SKANSKA COSTAIN STRABAG Working on behalf of HS2

Review Period	**2nd March to 28th June 2020**
ZERO	**GAP ECOsmart 16 ZERO H6364 - 3377117 - UB9 6LT**
Supplier	**GAP Group**
End User	**Costain Skanska - JV - HS2**

	Generic Diesel Welfare		*ZERO Welfare*	
Total Solar Gain, kW	0		*376*	
Power From Hydrogen/Solar/Batteries, kW	0		*427*	
Total Consumption, kW	427		*427*	
Generator Hours	2,856		-	
Total Local CO2 Created, kg	14,179		-	

Summary

Solar Gain	**376**	**kW**		
Total silent running hours, Power from Hydrogen/Solar/Batteries only	**2,856**	**100%**		
Total Hydrogen Usage	**21**	**Bottles**		
Total local Co2 Emissions, Tonnes saved	**14.2**		**709**	**Trees for a year**

Equivalent to planting

AJC Product	Customer	End User
Ecosmart ZERO	GAP GROUP WELFARE SERVICES	SKANSKA COSTAIN STRABAG Working on behalf of HS2

Review Period
30th April to 28th June 2020

ZERO
GAP ECOsmart 16 ZERO H6605 - 3392589 Camden

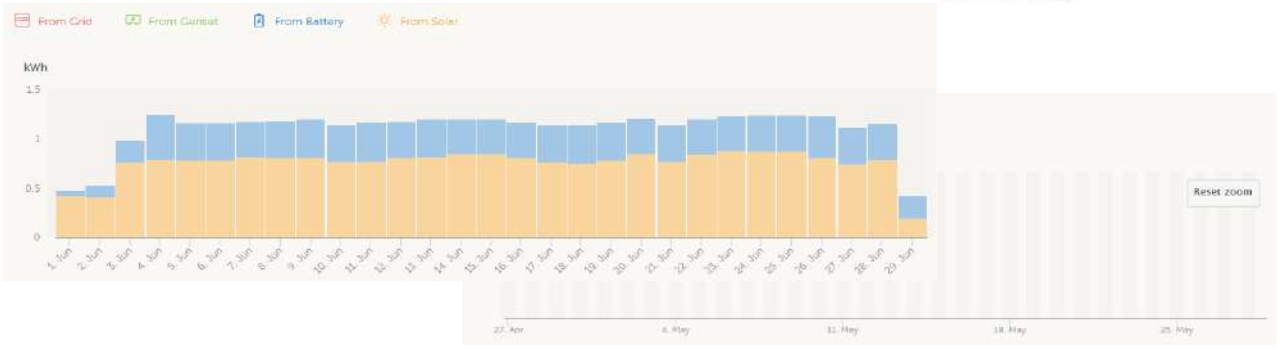
Supplier
GAP Group

End User
Costain Skanska - JV - HS2

	Generic Diesel Welfare	*ZERO Welfare*
		
Total Solar Gain, kW	0	*32*
Power From Hydrogen/Solar/Batteries, kW	0	*32*
Total Consumption, kW	32	*32*
Generator Hours	1,440	-
Total Local CO2 Created, kg	7,149	-

Summary

Solar Gain	**32**	**kW**			
Total silent running hours, Power from Hydrogen/Solar/Batteries only	**1,440**	**100%**			
Total Hydrogen Usage	**-**	**Bottles**	H_2 GAS		
Total local Co2 Emissions, Tonnes saved	**7.1**		Equivalent to planting	**357**	**Trees for a year**



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AJC Product	Customer	End User
Ecosmart ZERO	GAP GROUP WELFARE SERVICES	SKANSKA COSTAIN STRABAG Working on behalf of HS2

Review Period	**2nd March to 28th June 2020**
ZERO	**GAP ECOsmart 20 Xtra ZERO H6319 - 3376413 - HA4 7DQ**
Supplier	**GAP Group**
End User	**Costain Skanska - JV - HS2**

	Generic Diesel Welfare	*ZERO Welfare*
		
Total Solar Gain, kW	0	*301*
Power From Hydrogen/Solar/Batteries, kW	0	*328*
Total Consumption, kW	328	*328*
Generator Hours	2,856	-
Total Local CO2 Created, kg	14,179	-

Summary

Solar Gain	**301**	**kW**		
Total silent running hours, Power from Hydrogen/Solar/Batteries only	**2,856**	**100%**		
Total Hydrogen Usage	**12**	**Bottles**		
Total local Co2 Emissions, Tonnes saved	**14.2**		**709**	**Trees for a year**

AJC Product	Customer	End User
Ecosmart ZERO	GAP GROUP WELFARE SERVICES	SKANSKA COSTAIN STRABAG Working on behalf of HS2

Review Period
2nd March to 28th June 2020

ZERO
GAP ECOsmart 22.9 ZERO H6336 - 3376412 - HA4 7DQ

Supplier
GAP Group

End User
Costain Skanska - JV - HS2

	Generic Diesel Welfare	*ZERO Welfare*
		
Total Solar Gain, kW	0	*209*
Power From Hydrogen/Solar/Batteries, kW	0	*127*
Total Consumption, kW	127	*127*
Generator Hours	2,856	-
Total Local CO2 Created, kg	14,179	-

Summary

Solar Gain	**209**	**kW**		
Total silent running hours, Power from Hydrogen/Solar/Batteries only	**2,856**	**100%**		
Total Hydrogen Usage	**4**	**Bottles**		
Total local Co2 Emissions, Tonnes saved	**14.2**		**709**	**Trees for a year**

Equivalent to planting

AJC Product	Customer	End User
Ecosmart ZERO	GAP GROUP WELFARE SERVICES	SKANSKA COSTAIN STRABAG Working on behalf of HS2

Review Period	**2nd March to 28th June 2020**
ZERO	**GAP ECOsmart 22.9 ZERO H6337 - 3377252 - UB9 6LT**
Supplier	**GAP Group**
End User	**Costain Skanska - JV - HS2**

	Generic Diesel Welfare	*ZERO Welfare*
		
Total Solar Gain, kW	0	*103*
Power From Hydrogen/Solar/Batteries, kW	0	*109*
Total Consumption, kW	109	*109*
Generator Hours	2,856	-
Total Local CO2 Created, kg	14,179	-

Summary

Solar Gain	**103**	**kW**		
Total silent running hours, Power from Hydrogen/Solar/Batteries only	**2,856**	**100%**		
Total Hydrogen Usage	**16**	**Bottles**		
Total local Co2 Emissions, Tonnes saved	**14.2**		**709**	**Trees for a year**

CASE STUDY

Ecosmart ZERO

Our replacement for traditional diesel power systems, combining solar & hydrogen power to eliminate local carbon emissions.

As a result of winning multiple Green Apple awards, we have been asked by many of our customers to develop site welfare solutions that produce zero emissions at point of use. As a result we have been busy designing, building and testing a new concept, ready for the demands of future CO^2 reduction targets.

Ecosmart ZERO is the first viable welfare alternative for companies that are working to reduce their carbon footprint and, more importantly, improve the environment for communities in the vicinity of operation.

We have had overwhelming demand from large national hire companies to trial the Ecosmart ZERO with end users in the field. It is important that hydrogen and solar alternative fuel solutions are proven to work and provide the same welfare to outdoor workers as a traditionally powered welfare cabins.

Challenging perceptions

There is a lot of work to do to dispel myths and misconceptions of hydrogen power. It's been a proven power source in industry for decades. More hydrogen powered machines leads to lower hydrogen prices and cleaner air.

Solar panels are also a hot topic in the welfare industry. Myths that solar panels cannot cope with the power draw needed to run a welfare cabin, are untrue. Solar panels used with our patented power management systems, can run the unit without the need of the fuel cell or any other power source (free energy!)

This 6 week long field test proves the power of solar when used with our power management systems.

Working in partnership

Intelligent Energy

AJC EasyCabin

Intelligent Energy is a world-leading fuel cell engineering company focused on the development, manufacture and commercialisation of its Proton Exchange Membrane (PEM) fuel cell products, for customers in the automotive, stationary power and Unmanned Aerial Vehicle (UAV) sectors. Fuel cells are used in multiple applications, where clean, lightweight, high efficiency and cost-effective power is required.

Intelligent Energy's 800 Series Fuel Cell Modules are used in the Ecosmart ZERO and they are suitable for a wide variety of off-grid applications.