

# PowerCell Sweden AB

## Company Presentation

Per Wassén, CEO  
2018.11.28



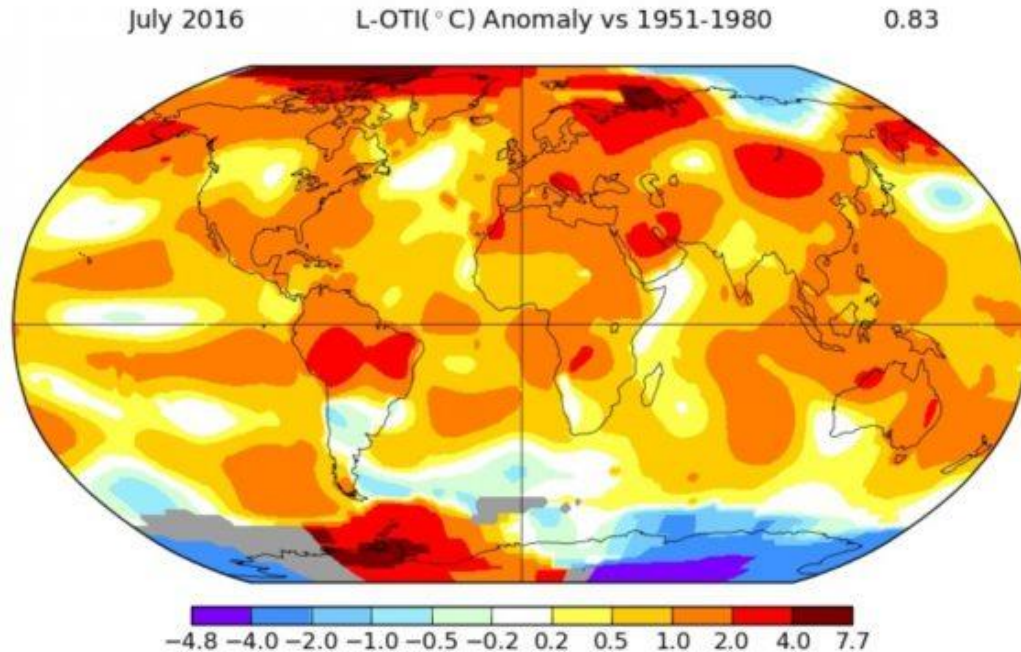
# An innovative pioneering tech company

- Founded in 2008, spin-off from Volvo Group
- Outstanding Fuel Cell Expertise
- Central functions located in Gothenburg
  - Subsidiary in Germany
  - Distributors in Japan, South Korea
  - JV in Norway for marine applications
- Extensive patent portfolio
- ISO Certified 9001 & 14001
- Listed on Nasdaq First North
  - Over 13 000 shareholders
- Three main industrial owners hold 40% of the shares – see below:



# Ten years left ..... (UN report)

2015, 2016, 2017 and 2018 so far, The Highest Temperature Since 1880



# The Scientists Agree: Cut CO<sub>2</sub> Emissions Immediately!



Photo: Victoria Reay



# Bio-fuels Also Add to the CO<sub>2</sub> Problem!



Photo: Xenja Santarelli


# Global Political Agreement for Carbon Free Solutions



Ratification of COP21

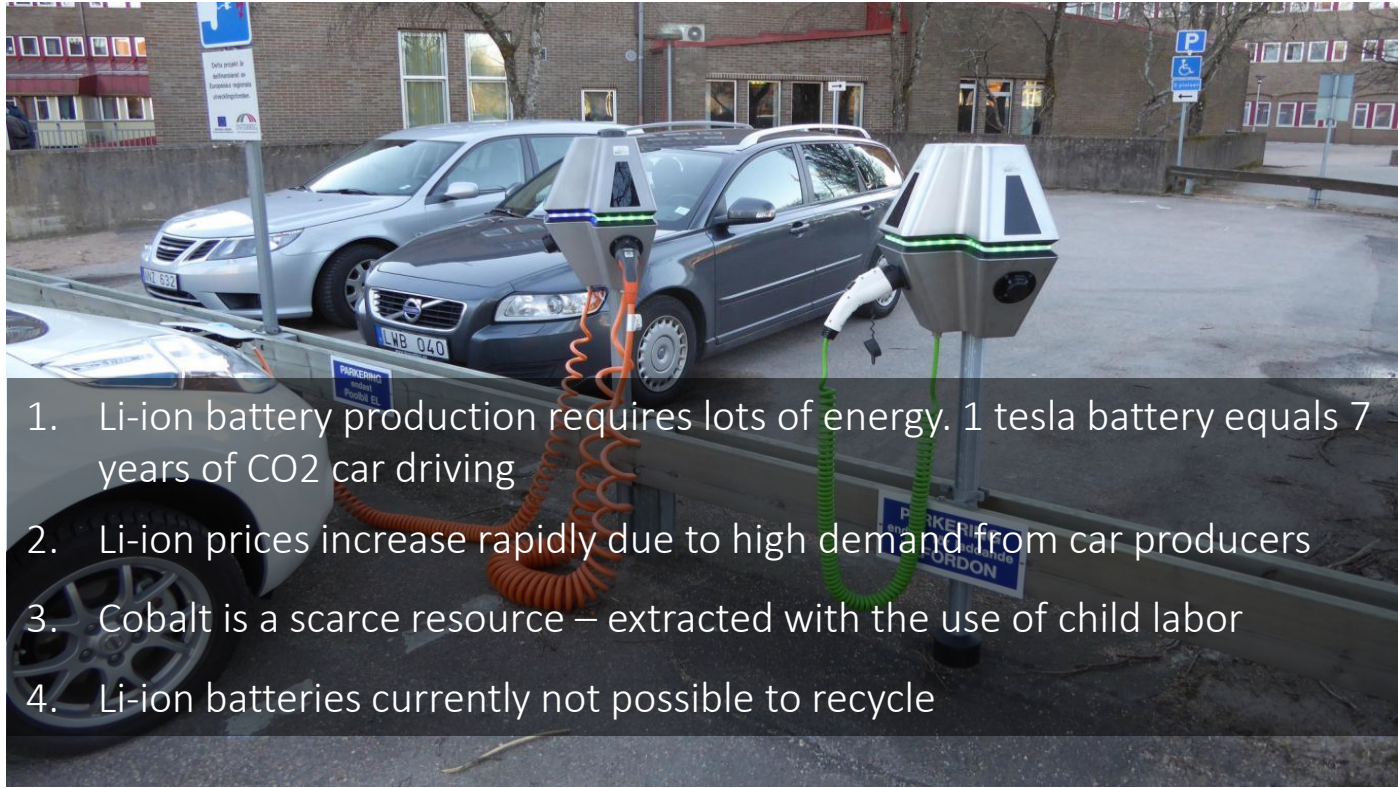
Photo: Benjamin Géminel

# Diesel Gate – NOX and Partikels - Health problem

- 
- Cities with diesel free zones expected to increase rapidly



# Li-ion Batteries Face a Number of Challenges



1. Li-ion battery production requires lots of energy. 1 tesla battery equals 7 years of CO2 car driving
2. Li-ion prices increase rapidly due to high demand from car producers
3. Cobalt is a scarce resource – extracted with the use of child labor
4. Li-ion batteries currently not possible to recycle

Photo: Magnus Johansson



# Batteries Only One Step in the Needed Transition...

Sweden: Total no of cars 4.9 Million

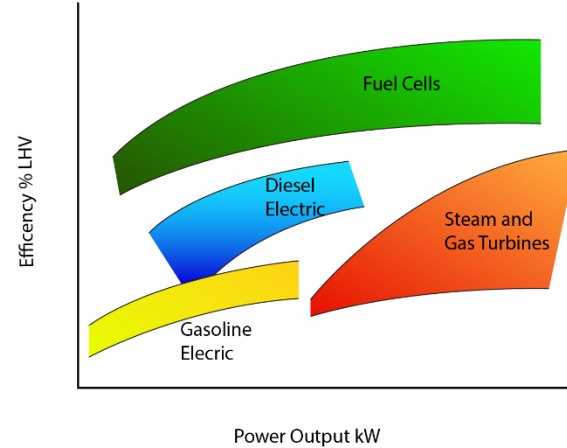
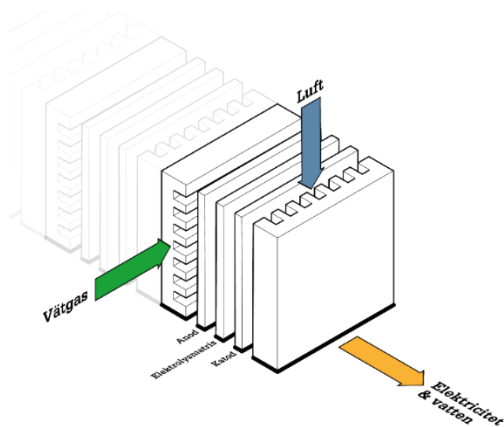
China: Total no of cars 120 Million

US: Total no of cars 250 Million

**Sufficient volume of charging stations and  
grid capacity in the cities  
– the bottle neck for battery vehicles**

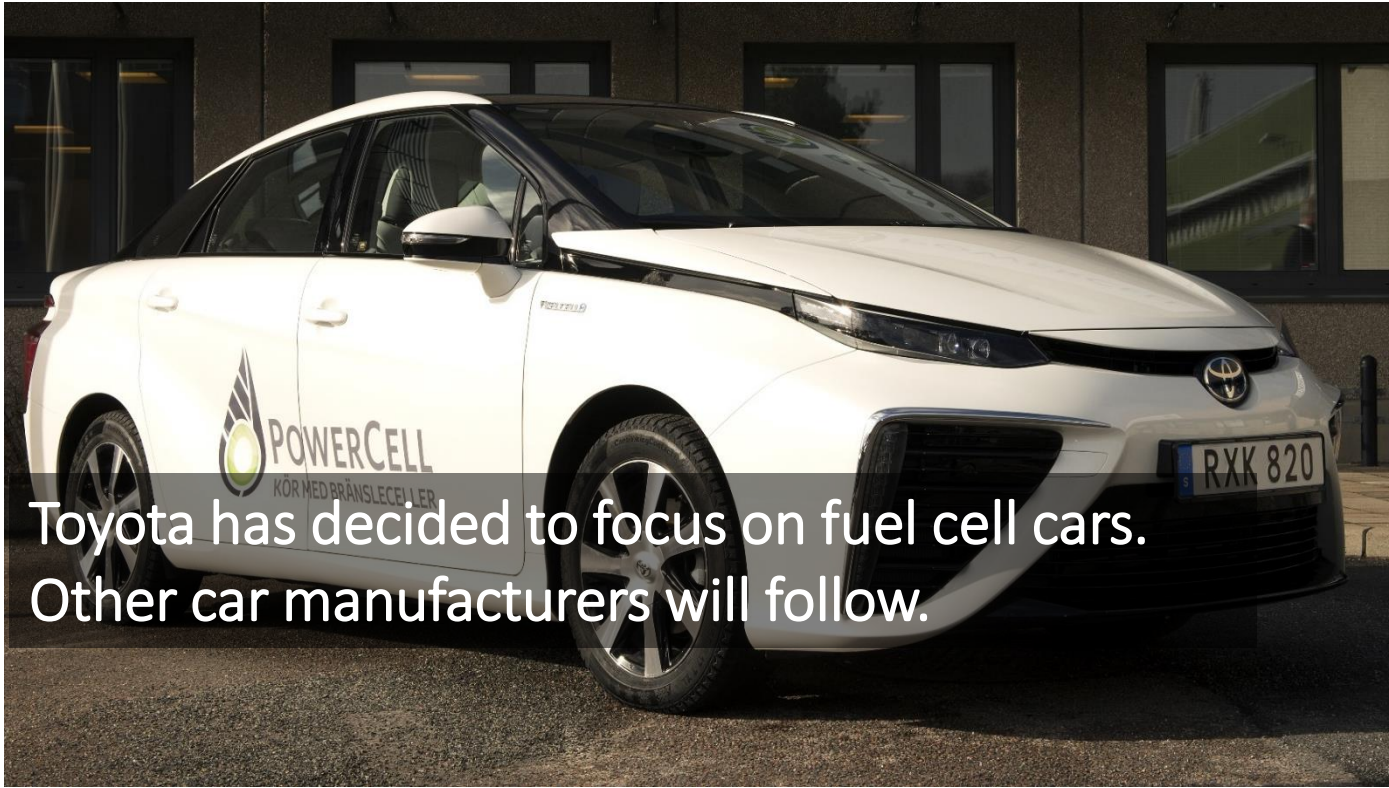
Photo: Oran Virivincy

# Fuel Cells – the Game Changer



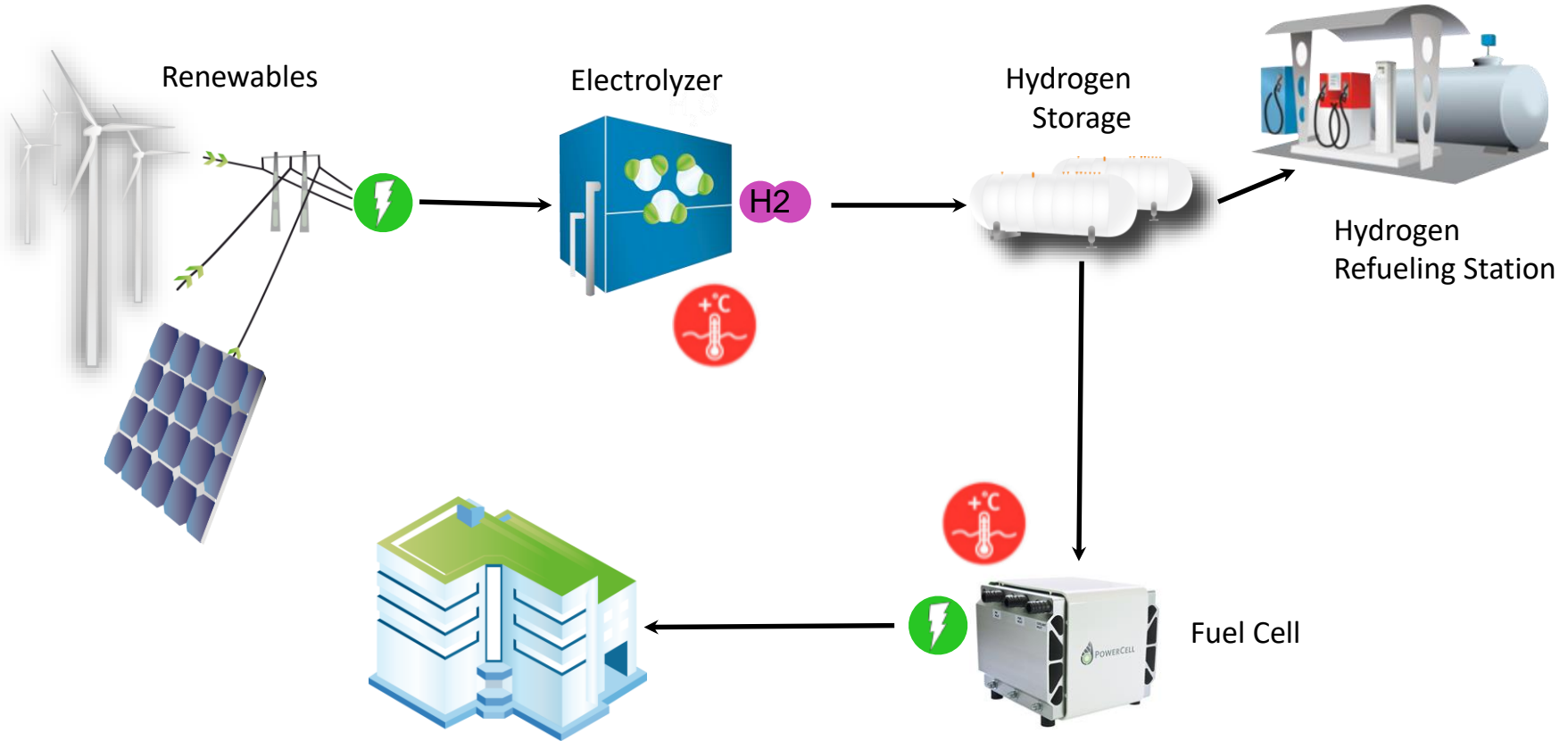
- The only exhaust from a fuel cell system is purified water –ZERO EMISSION
- High efficiency in a broad range
- A minimum of maintenance is needed
- Hot water for heating generated in the process

# The World's Largest Car Manufacturer Leads the Way



Toyota has decided to focus on fuel cell cars.  
Other car manufacturers will follow.

# The Flexible Energy Society Based on Renewable Hydrogen





# Hydrogen Infrastructure Is Growing



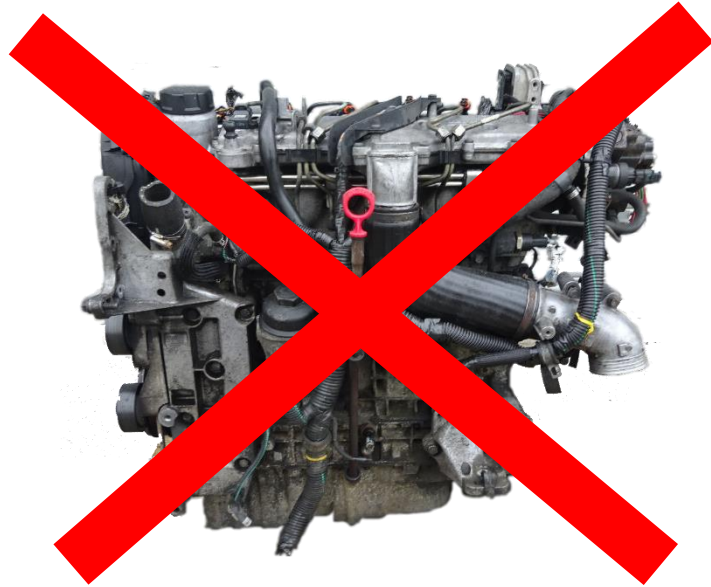
Oil companies introducing hydrogen pumps

# Tough CO2 Targets Facing Commercial Vehicles in Europe (Latest Proposal from the EU Environment Council October 9, 2018)

New trucks:

35 % reduction of CO2 per vehicle km by 2030 Cf. 2019

20 % reduction of CO2 per vehicle km by 2025 Cf. 2019



# The Capital Market Has Started to Recognize the Unavoidable and Disruptive Change



# PowerCell

## Customer Segments & Products





# Customer Segmentation

## Transportation



Cars



Buses



Trucks



Material  
Handling

## Stationary



Micro CHP



Power  
Container



Small Generators

## Marine



Cruise Ships



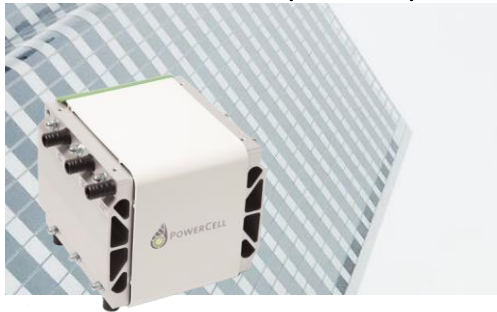
Ferries



Leisure marine

# PowerCell's Product Strategy

PowerCell S1 (1-5 kW)



PowerCell S2 (5-35 kW)



PowerCell S3 (30-125 kW)



- Scalable fuels cell stacks & modular systems
- PEM fuel cells
- Low temperature, water cooled
- S1 and S2 fuel flexible - hydrogen or reformat
- S2 and S3 designed for high volumes

# Strong Industrial Partner Strategy

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VOLKSWAGEN  
GROUP



DAIMLER



3M



KALMAR

ABB



HEXAGON  
COMPOSITES

nel<sup>•</sup>



Fraunhofer



SIEMENS

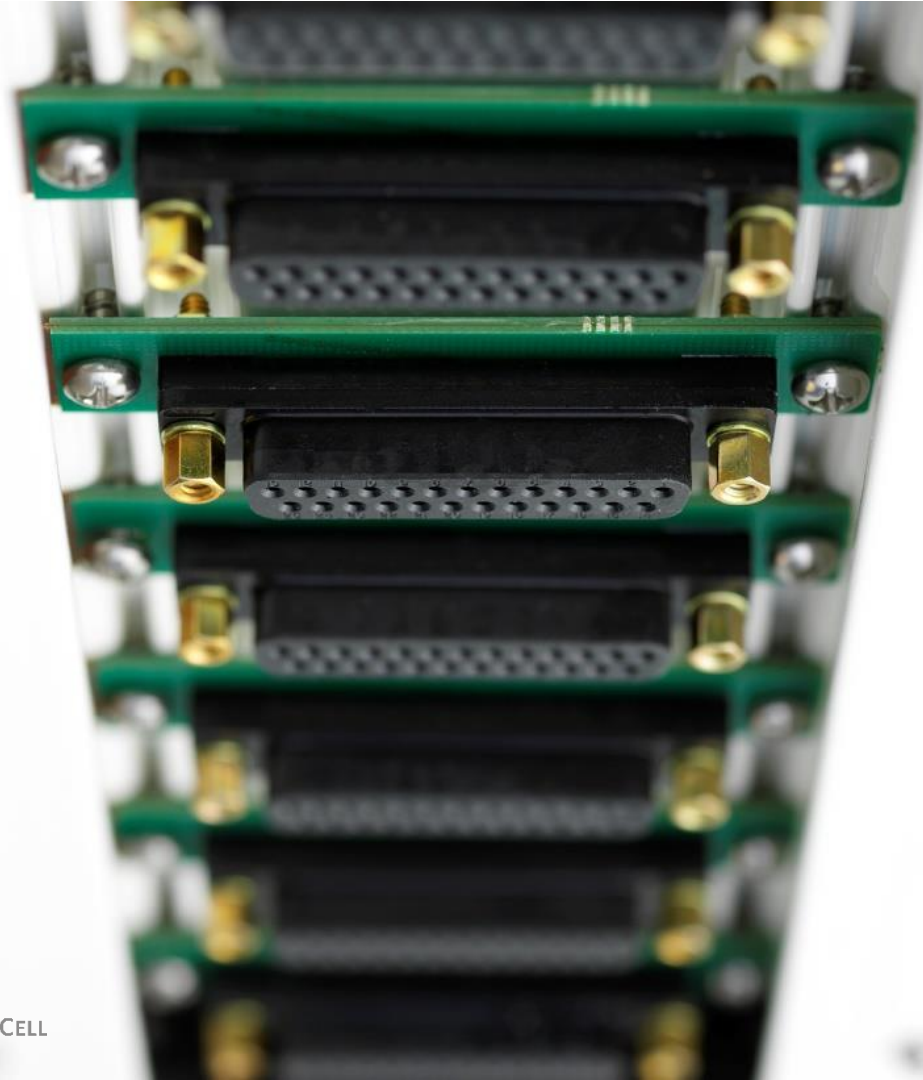


BOSCH



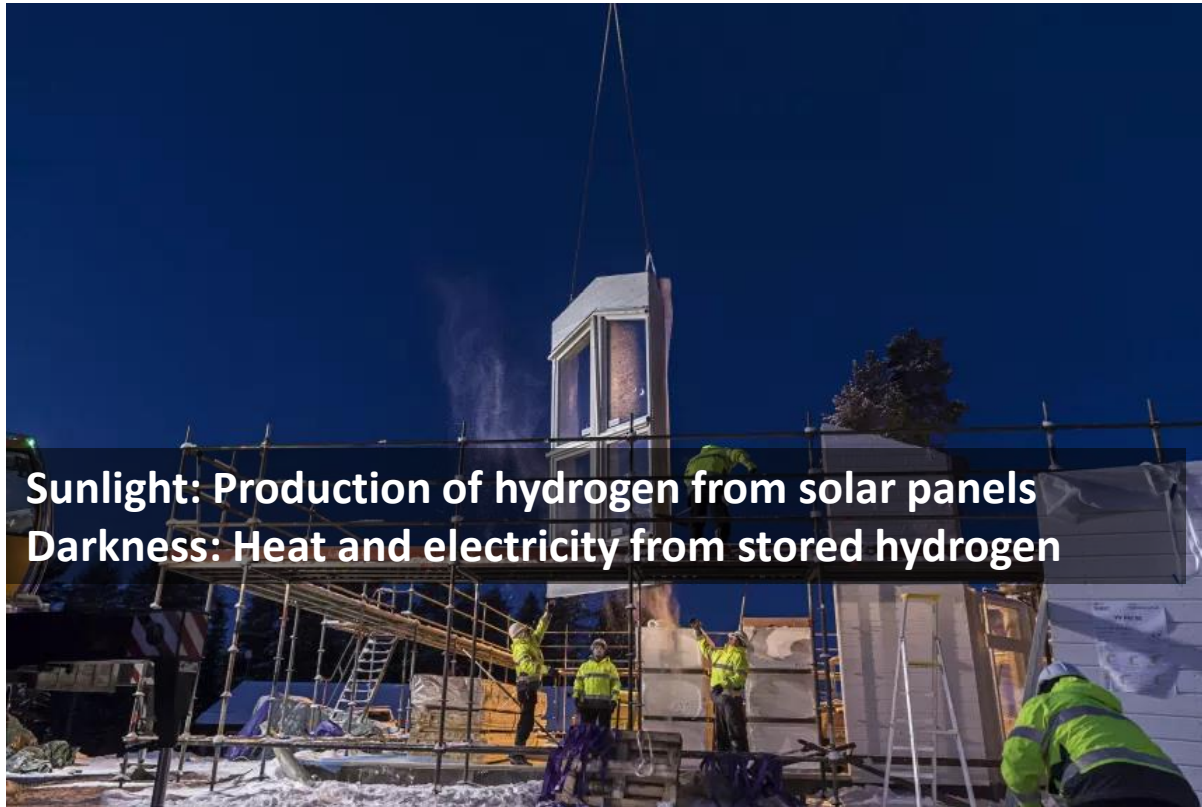
# PowerCell

- Customer Cases





# Off-grid Houses: Skellefteå Kraft

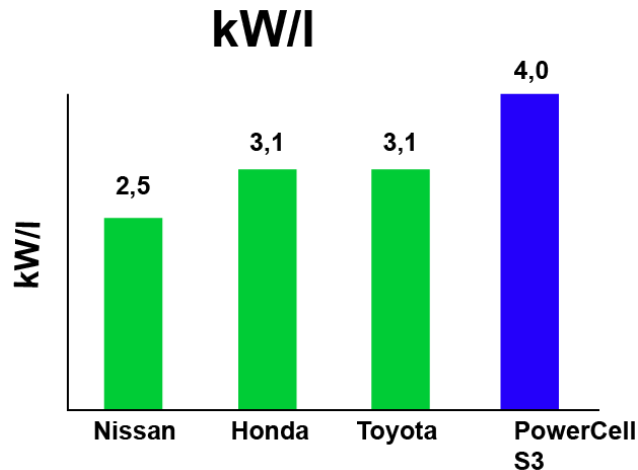


# Off-grid Power Generation: Mariestads kommun



# Automotive: AutoStack-Industrie

- Technical cooperation with German automotive industry:
  - BMW, Daimler, Ford, VW
- PowerCell's responsibility:
  - construction of the fuel cell stack
  - development of technology for mass volume production



# Positioned to Benefit from Chinese Market Drivers

- Strong governmental support for transition
- S2 REX perfect fit for Chinese market
- Many ongoing customer tests
- New subsidies for hydrogen vehicles



**50 000 Euro**



**80 000 Euro**



**130 000 Euro**



PowerCell S2 as REX, Range Extender



# Material Handling: Kalmar and SSAB/Vattenfall

- A fuel cell system based on PowerCell S2
- 18 ton forklift for SSAB
- Currently under testing



*PowerCell MS-30*

# The World's First FC Distribution Truck: Coop Switzerland

- 34 ton Heavy Duty Truck
- Refilling in 10 minutes
- 36 kg Hydrogen on board, 350 bar
- PowerCell S3 integrated into fuel cell system used as range extender
- Successfully tested in electric truck



Property of PowerCell Sweden AB

# Nikola Motor Company: Heavy Duty trucks

- PowerCell appointed as primary fuel cell stack supplier
- Nikola to launch day cab class 8 truck in 2021
- Starting with pre-production test vehicles in 2018



PowerCell S3



# Hyon AS – JV Offers Customer a One-Stop Solution

- World class hydrogen & fuel cell technologies
- Clean and profitable energy solutions
- Tailored and integrated systems

nel<sup>•</sup>

Hydrogen production



Hydrogen storage



Power generation





# Siemens MoU on Marine Applications



# *PowerCell's Mission Save the Planet – Now !*



Med delfinansiering av



[www.powercell.se](http://www.powercell.se)

Nasdaq First North: PCELL.ST