

Swindon Hydrogen Hub Initiative – Car Stream



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BNP PARIBAS GROUP

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Quiz Time – Name the Technologies



Circa 1840's
Electric Vehicle



1955 Daf
Hydrogen Vehicle



1927 Fiat
Petrol Hybrid



1979 Citroen
Fully Autonomous

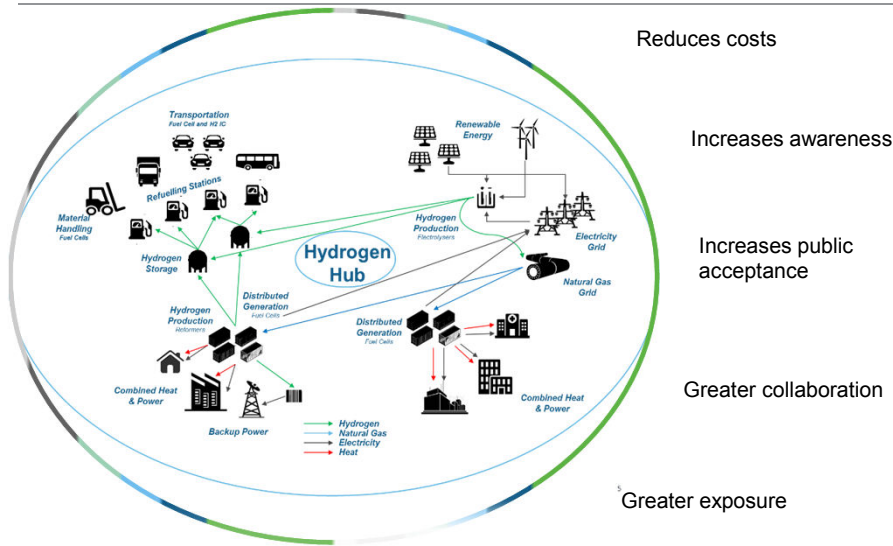


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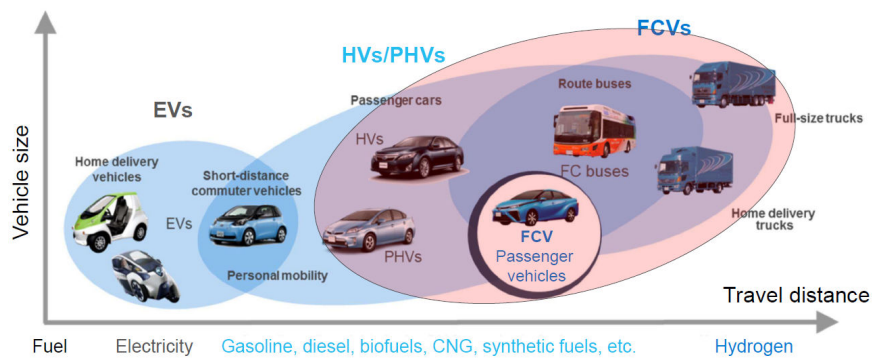
Why Hubs?



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Why Hydrogen?



- Refuelling time – 2-4 minutes from empty
- Emissions – Water
- Range – 300-350 miles per tank



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Objectives – Car Stream

- 2017
 - Open a second refuelling station at Lydiard Fields.
 - Opened Q3 2018
- Deploy 15 fuel cell cars around Swindon
 - Phase 1 completed
 - Arval - 2 (Toyota / Honda)
 - Nationwide - 1 (Toyota)
 - National Trust - 1 (Hyundai)
 - Johnson Matthey - 1 (Hyundai)
 - Science Museum - 2 (Toyota)
 - **Total – 7 Delivered**
 - Phase 2
 - Hydrogen Hub aiming to deliver at least 40 more
 - Develop Leasing model
 - Agreed this would be reviewed through the project



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Hydrogen Hub Vehicles



Other Manufacturers who have trialed hydrogen cars;

Audi, Aston Martin, BMW, Cadillac, Chrysler, Daihatsu, Fiat, Ford, GM, Honda, Kia, Lexus, Mazda, Mercedes Benz, Mitsubishi, Morgan, Nissan, Peugeot, Pininfarina, Renault, Suzuki, VW



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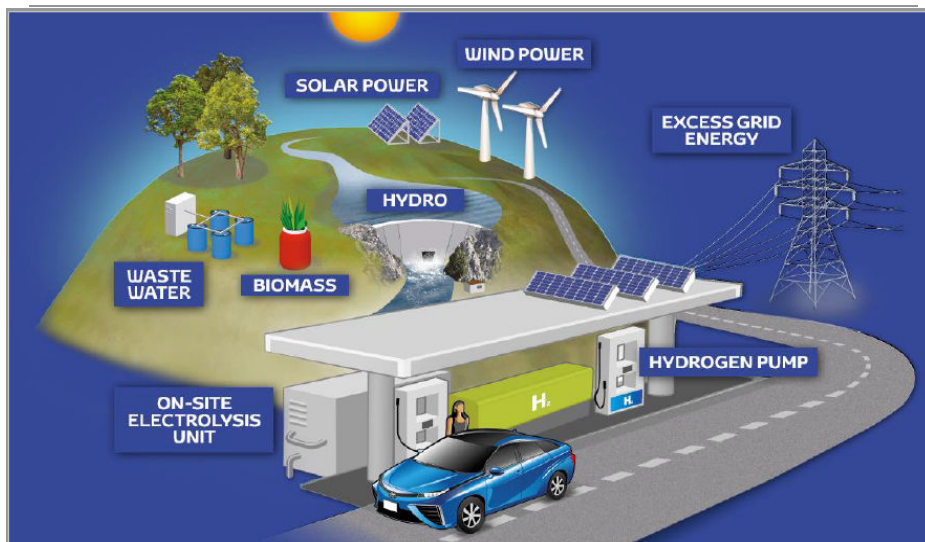
Hydrogen Refuelling Stations



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Excess Energy to Produce Hydrogen



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Events / Awareness to date

- Local Profile / CSR Profile
 - Official Launch at Lydiard Park
 - Brighton & Hove Motor show
 - BBC Wiltshire Radio Interview
 - BBC Points West interview
 - Local Paper article
 - Local schools event
- Customer exposure
 - Several of Arval's larger organisations have come to Swindon to view the vehicle
 - Presented the Hydrogen Hub concept to 50 of our large Corporate customers
 - Internal awareness presentations carried to encourage staff to use the vehicle
- Initial experiences
 - Working party set up for August
 - On the whole very positive
 - Generating a lot of engagement and curiosity
 - Local hydrogen station performance has caused a few aborted trips



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Public Awareness

- World's first emergency response hydrogen fleet – 11 Mirai (first batch of 140)



- 61 FCV deployed in the UK to date
- 6 Arval Roadshows being planned for 2019
 - Swindon / Manchester / Birmingham / Leeds / London / Oxford
- Arval Schools Education Programme being launched in January
 - Supporting GCSE Chemistry Syllabus
- Hyundai Nexo fuel cell SUV achieves top safety rating
 - Autocar review



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On-Going Commitment

- UK
 - £23m for Hydrogen Refuelling Stations for 2018
 - £25m for Hydrogen Supply from BEIS
- France
 - Euro 100m from the French Government in 2019
- Other Energy Players
 - Shell
 - Total
 - EDF
 - ITM Power



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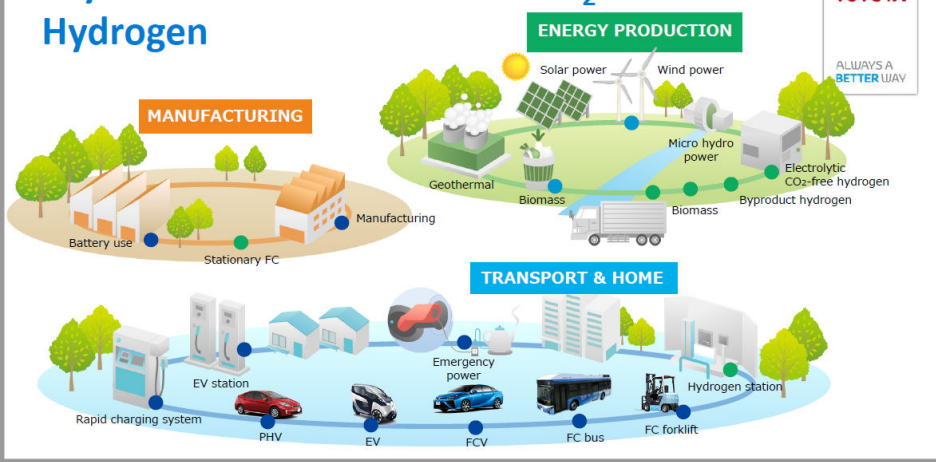
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OEM's view

Toyota view : Renewables & CO₂ Free Hydrogen



ALWAYS A BETTER WAY



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Arval On-going Commitment

- Deploy more vehicles
 - Driver Training
 - Refuelling and Using the vehicles
- Working Party
 - Working group to share experiences & best practice
 - Capture the relevant data for OLEV
 - Support each others local initiatives
- Early Access to Manufacturer Technology
 - On-going talks with manufactures
 - Further investigation with local fleets who may wish to adopt the technology
- Launched the Oxford Hydrogen Hub
 - Launch meeting held Q2 2018



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