EMEC: Why hydrogen?

Neil Kermode
Managing Director
New in 2016

- SRTP’s SR2000
- SME’s PLATO
- Nautricity’s CoRMaT

OpenHydro: 2006 – present (7 turbines)

Pelamis: 2004-2007 (1 P1)

E.ON: 2009-2013

ScottishPower Renewables: 2011- present

Flumill: 2011

Voith: 2013-present (1 turbine)

Wello Oy: 2011-present (1 WEC: Penguin)

Seatricity: 2011-2014 (1 WEC: Oceanus)

ANDRITZ Hydro Hammerfest: 2011-present (1 tidal turbine)

Scotrenewables Tidal Power Ltd: 2011-present (1 tidal turbine)

Atlantis Resources Corporation: 2009-present

Tidal Generation Ltd: 2009-2013

Alstom: 2013-present (2 turbines)

Aquamarine Power: 2009 – present (2 WECs: Oyster 1 & Oyster 800)

ANDRITZ Hydro: 2013-present (2 turbines)

Nautricity: 2014-present (1)

Magallanes: 2014
Infrastructure

Openhydro

Sustainable Marine Energy

Scotrenewables

EMEC
17 marine energy developers have tested

- 26 variations of wave and tidal devices
- spanning 9 countries

So what’s next on a grid constrained site?
‘We haven’t any money so we have to THINK’
Options for a full grid

- Turn people away?
- Make the most of the limited grid we have
- Plan B?
Maybe….

*If the grid is the problem*

*stop thinking about grid as the solution*……
What we need….

‘……is a cunning plan!’
The challenge
The opportunity

PERIODS OF NON GENERATION

grid limit
The opportunity
Can this be done?

- How do we store?
- How long do we store?
- How do we get rid of the energy?
- Who will this affect?
Can electricity be stored?

Hydrogen
Xodus/Element Energy study

- **Regeneration**
- **Road transport**
  - H₂ ICEVs: <10kg/day
  - H₂ APUs: 10s kg/day
  - H₂ ferries: c.200kg/day
- **Marine transport**
  - H₂ ICEVs: <10kg/day
  - H₂ ferries: c.200kg/day
- **Heating**
  - c.60kg/day
- **Ammonia production**
  - 100s kg/day

Scale of potential demand for hydrogen on Eday in the relatively near term. Ammonia figure assumes product can be transported off Eday for use elsewhere. A 1MW WE system produces up to around 450kgH₂/day at full utilisation.

ICEV = internal combustion engine vehicle, FCEV = fuel cell electric vehicle, APU = auxiliary power unit
Can this be done?

- Technically – it’s just engineering
- Practically – lots to work out, but OK
- Legally – some bits to fix
- Politically – popular
- Financially – probably

So let’s do it anyway and deal with the unknowns as we go!
Right now - 2016
Watch this space.....