



MeyGen Phase 1A Lessons Learnt - Operations Phase

12th May 2022

Andy Baldock
Director, Baldock Energy



BALDOCK ENERGY
CRAFTING THE FUTURE



Introduction

- Latest Lessons from MeyGen 1A
- Knowledge sharing per DECC/BEIS grant and CES/SE expectations
- Focus on Operations Phase
- Assist the whole industry
- Not a critique of MeyGen or partners!
- Photographs courtesy of MeyGen
- On behalf of CES/SE (as FTA) & MeyGen

Lessons Learnt from MeyGen Phase 1A
Part 2/3: Construction Phase



'Siem Daya' undertaking cable works at the MeyGen site

May 2018



Technical Advisor Perspective: Lessons Learnt to date

- This presentation is an update to that at All Energy 2016, 2017, 2018 & 2019
- Previous reports published via Wave and Tidal Knowledge Network
- Links below for post conference
 - As always, details are important

EIA Non-technical summary

<http://www.waveandtidalknowledgenetwork.com/ItemDetails.aspx?id=34049#>

Lessons Learned Reports:

[Lessons-Learnt-from-MeyGen-Phase-1a-Part-2-of-3-Design-Phase.pdf \(catapult.org.uk\)](#)

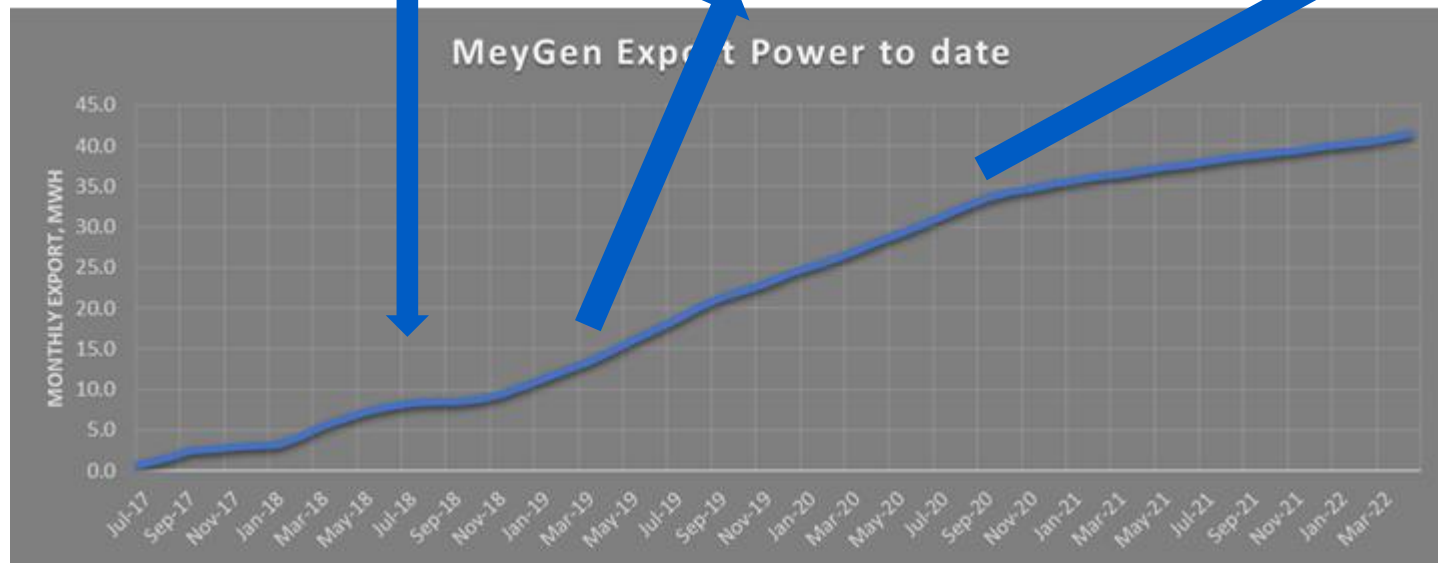
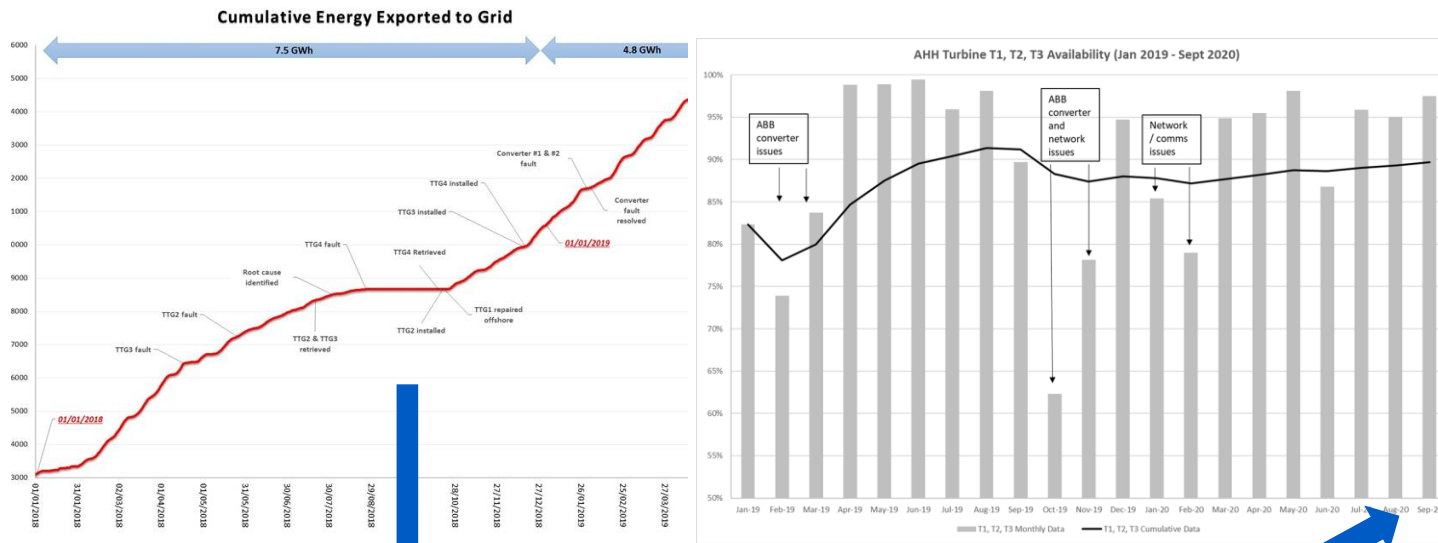
[MeyGen Lessons Learnt Full Report.pdf \(stackpathcdn.com\)](#)

Technical Advisor Perspective: Health, Safety & Environment

- General lessons:
 - Minimise crew transfers and mobilisation / demobilisation
 - Use vessel crane to lift turbine
 - Not having cable tails on deck
 - Production line approach - same people repeating tasks
 - Review the design phase lessons
-
- In Oct 2021, there was a failure of a vessel crane wire at 150t
 - RIDDOR reportable, no risk to life but showed why have stringent procedures



Technical Adviser Perspective: Operational Phase Data (1)

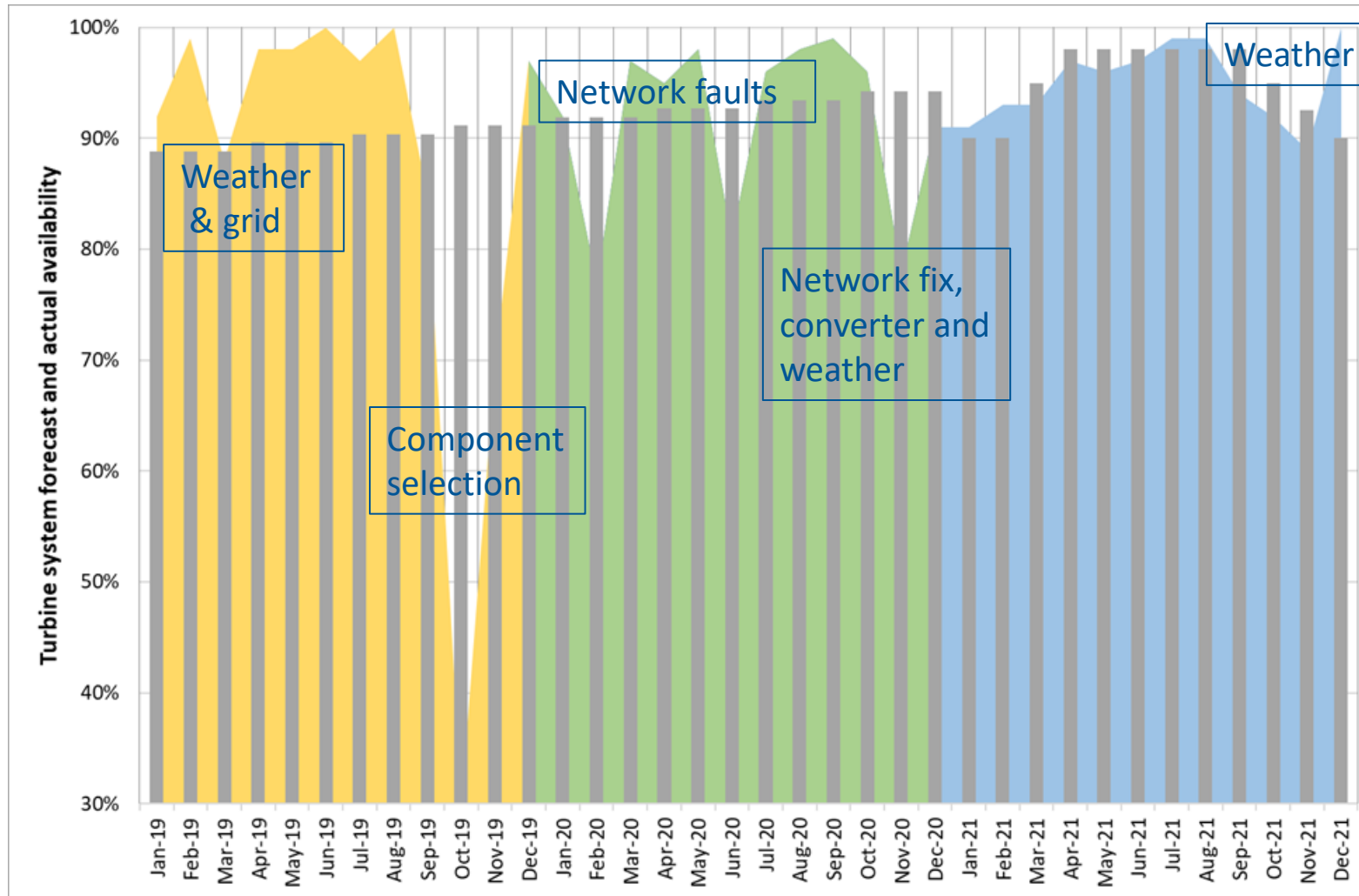


> 50% of all global MEC GWh.
Long-term CF: 36%.

Availability:

2018: 1-off serial QA fault on TTG1-3 & initial design fault on TTG4.
2019-Q3 2020: Averaged 90% availability on TTG1-3, with most downtime due to converter and network issues not turbine issues.
Q4 2020-Q1 2022: 2 turbines removed for repair and early PM - 1st due to be installed, 2nd due to be installed in Q1 2023. AR1500 reinstalled in March 2022.

Technical Adviser Perspective: Operational Phase Data (2)




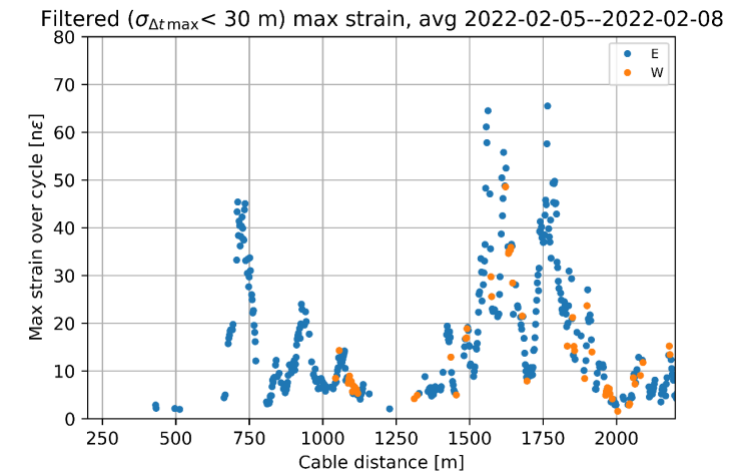
> 50% of all global MEC GWh.
Long-term CF: 36%.

Availability for TTG3 (chart):

- Losses include forced outages from metocean conditions exceeding operating limits (typically waves), grid outages & grid faults, nuisance trips, planned maintenance, and turbine faults.
- Planned ramp met/exceeded and in 2021 switched to seasonal forecast based on experience of metocean conditions.

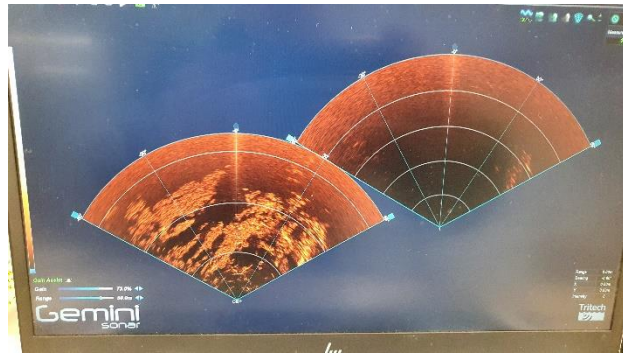
Technical Adviser Perspective: Operational Lessons (1)

- Faults: Minor fault can cause major downtime. Designing to Standards and ensuring QA/QC at all construction stages will minimise the chances of such faults.
- Insurance: Challenging ‘niche’ market. Working on two related TIGER projects, one with ASN related to gaining more confidence in offshore cable stability. 
- Wet-mate connectors far easier and cheaper to handle:
 - AR1500 designed from scratch with wet-mate
 - AHH turbines planned to be retrofitted (1st in Q1 2023)
- Devil is always in the detail, e.g.
 - Parasitic electrical loads – like turning your TV off!
 - Removing during slack tides could save £1m in lifetime...



Technical Adviser Perspective: Operational Lessons (2)

- Planned Maintenance: Lots of lessons from 1st major planned maintenance.
 - Reviewing options to extend PM interval significantly.
- Environmental monitoring: Bird observation studies using video cameras identified a bird swimming under a nacelle while the turbine was at rated power:
 - Rotor RPML 14.4
 - Flow speed at the nacelle: 4.14m/s, 8 knots
 - Generator power: 1.5MW
 - New NERC platform
 - New Gemini sonar



Thank you for listening – get in touch with any questions

Andy Baldock

- P: +44 (0)7789 922 419
- E: andy@baldockenergy.co.uk
- LinkedIn: [linkedin.com/in/andybaldock](https://www.linkedin.com/in/andybaldock)

Craft the future with experienced, authoritative, yet innovative and flexible support for your renewable energy / low carbon transition.

Significant expertise in strategy development, business development and project origination, contract negotiation, project and business management, policy development, techno-economics, competitive award structuring, legislation interpretation, as well as technical due diligence, engineering, analysis and advice.