

European Marine Energy Centre

A scenic view of a coastline with waves crashing against a rocky shore, with hills in the background. The sky is overcast and the water is a mix of blue and white from the waves.

John Griffiths

(Technical Director - EMEC Ltd)

The Future?

An aerial photograph of London, England, showing the city's architecture and the River Thames. The image is a composite where the sea level has risen significantly, flooding the city. The Houses of Parliament and Big Ben are prominent on the left. The water is dark and turbulent, with white foam from waves crashing against the buildings. The sky is overcast and grey.

- Global Warming
- Global dimming
- Ocean Acidification

But even with none of these threats - we should still do marine renewables

Why test independently?

What are we trying to do?



Build a new industry

What do we need?



Technology that works

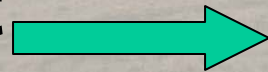


Investors, insurers



Credibility

How will we get these things?



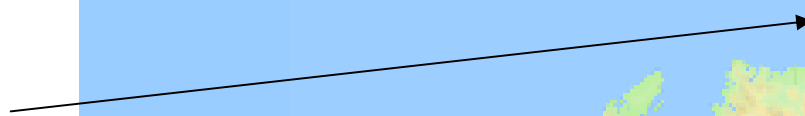
Objective test results

EMEC - Key Issues

- **Independent**
- **Accredited - UK Accreditation Service (ISO 17025)**
- **Centre of Excellence - build skills and knowhow + set Governance standard**
- **Stimulate the industry**
- **Encourage Standards and RP's**
- **Foster and initiate R&D projects**
- **Strong links with Funder's Group**

EMEC

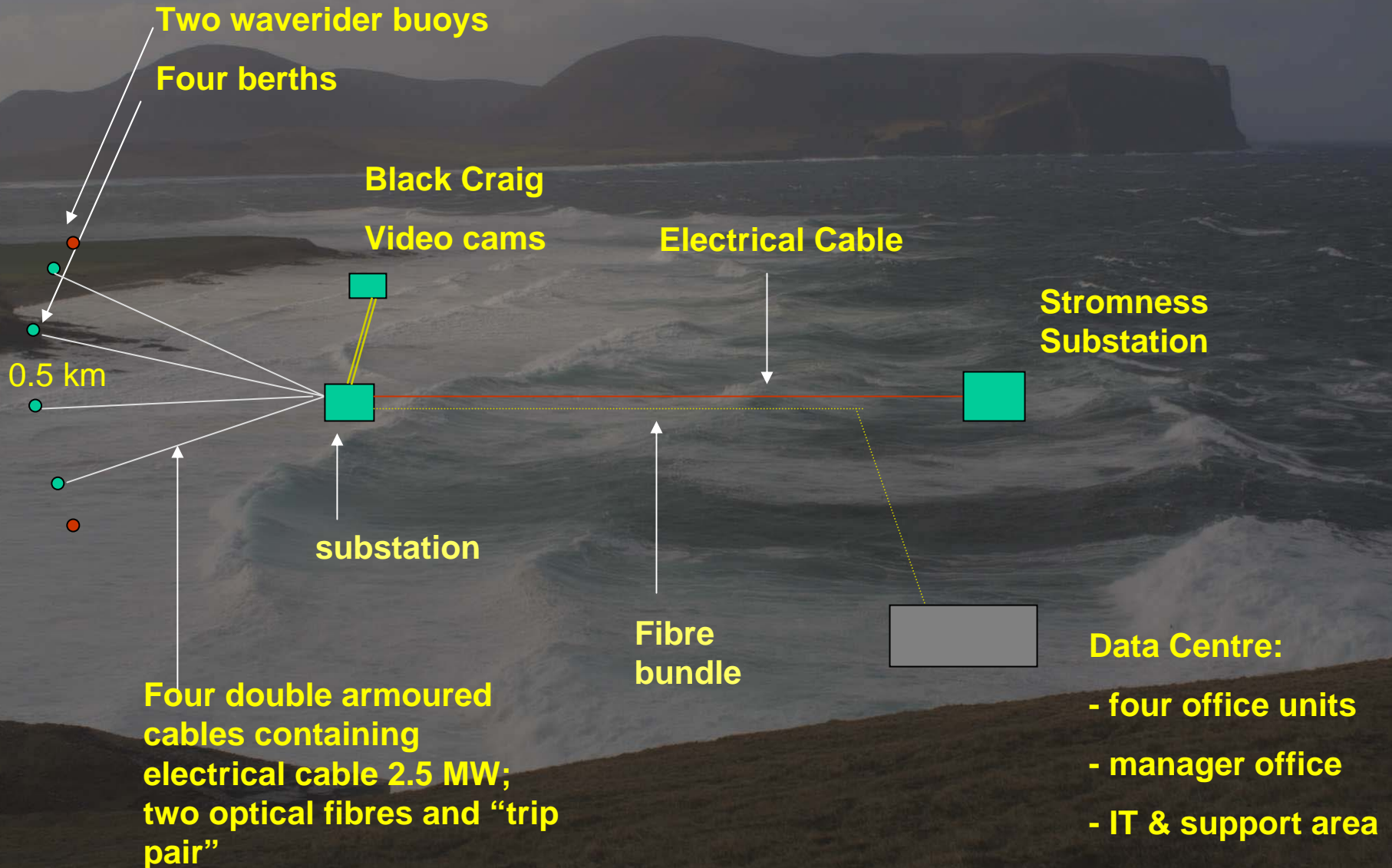
Orkney



Billia Croo Bay, Orkney



EMEC Schematic Diagram - WAVE



Construction at Billia Croo - Wavesite



EMEC ORKNEY

**STROMNESS SUB STATION
LINK TO GRID, CAPACITY
FOR 4MW PER YEAR**

**EMEC - ORKNEY OFFICE
OLD ACADEMY, STROMNESS
CENTRE ADMINISTRATION
& DATA MANAGEMENT**

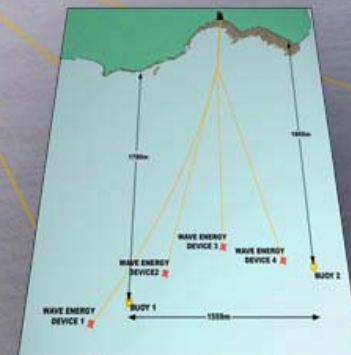
**STROMNESS HARBOUR
MARINE SUPPORT
FACILITIES**

**SCAPA FLOW
SHELTERED
ANCHORAGE**

**COASTGUARD
LOOKOUT POST
OBSERVATION
EQUIPMENT**

**BILLIACROO CABLE
LANDFALL SWITCHGEAR
BUILDING**

**SUBSEA CABLE
& FIBRE OPTIC
LINK**



Wave & Tidal Test Facilities

Cost and Programme

- **Cost in the £12-13 million range**
- **Generation capability - up to 11 MW**
- **Op-cost around 8 % pa of capital cost**

- **Surveys & studies to mid-October 2001**
- **Main design-build contract let May. 2002**
- **Ready for first Wave Device – October 2003**
- **“Pelamis” on-site July 2004**
- **Tidal site go-ahead - May 2005**
- **Tidal site ready for first device – April 2006**
- **First Tidal device installed – August 2006**

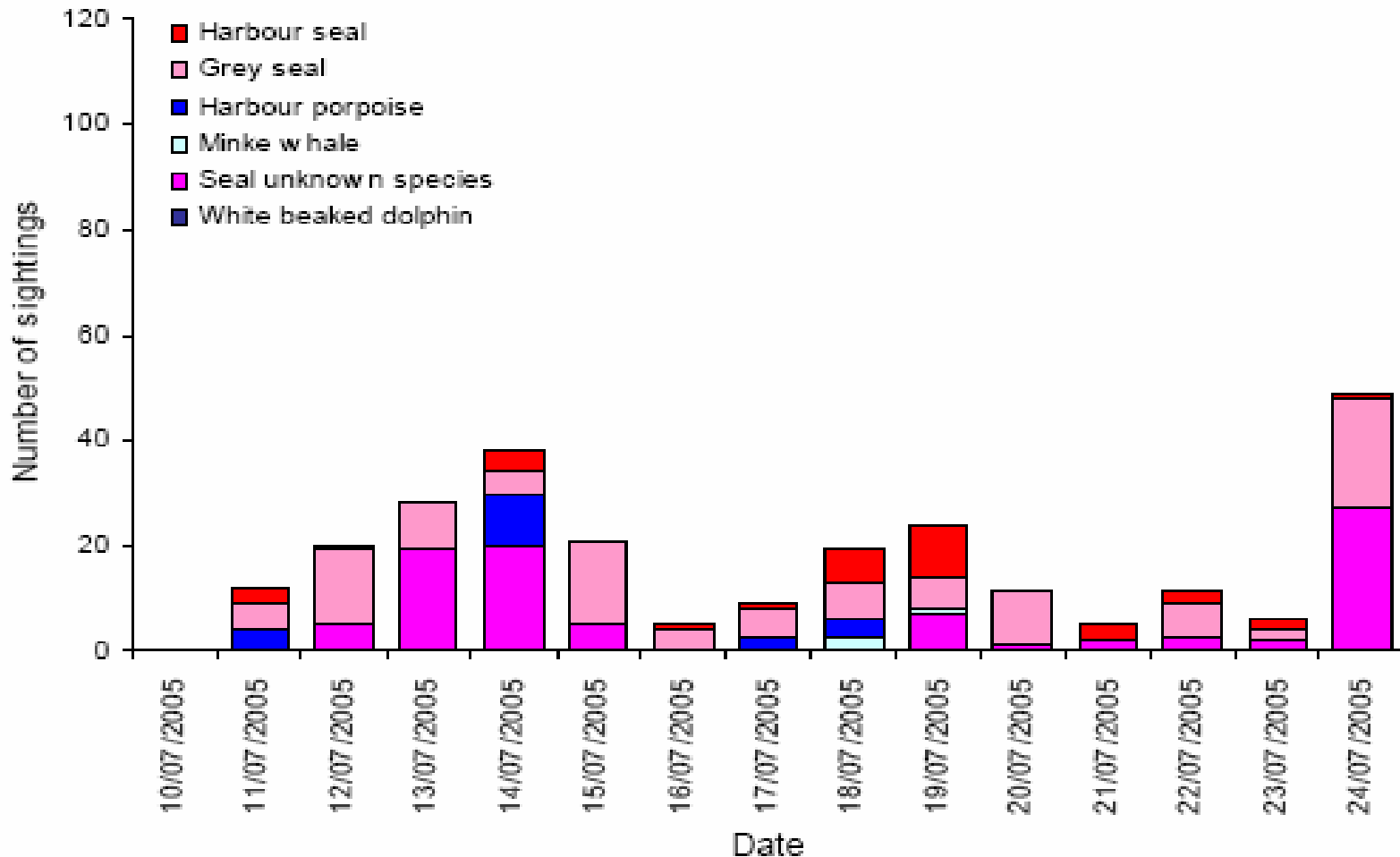
WARNESS



Environmental Monitoring

Figure 2.
area

Total number of sightings in July for each species over the whole survey area



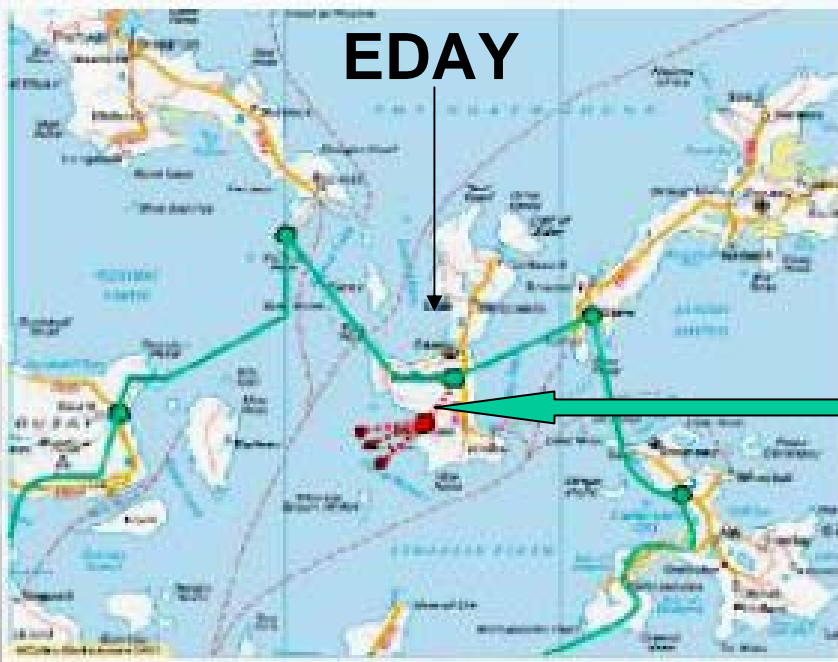
EMEC - Tidal Site

Currently under construction:

- **Surveys of tide race ongoing**
- **5 cables in the water**
- **Earthworks, track and hardstanding in progress**
- **Engineering finalising and equipment procurement in hand**

Site for Tidal sub-station on Eday





Eday - site construction

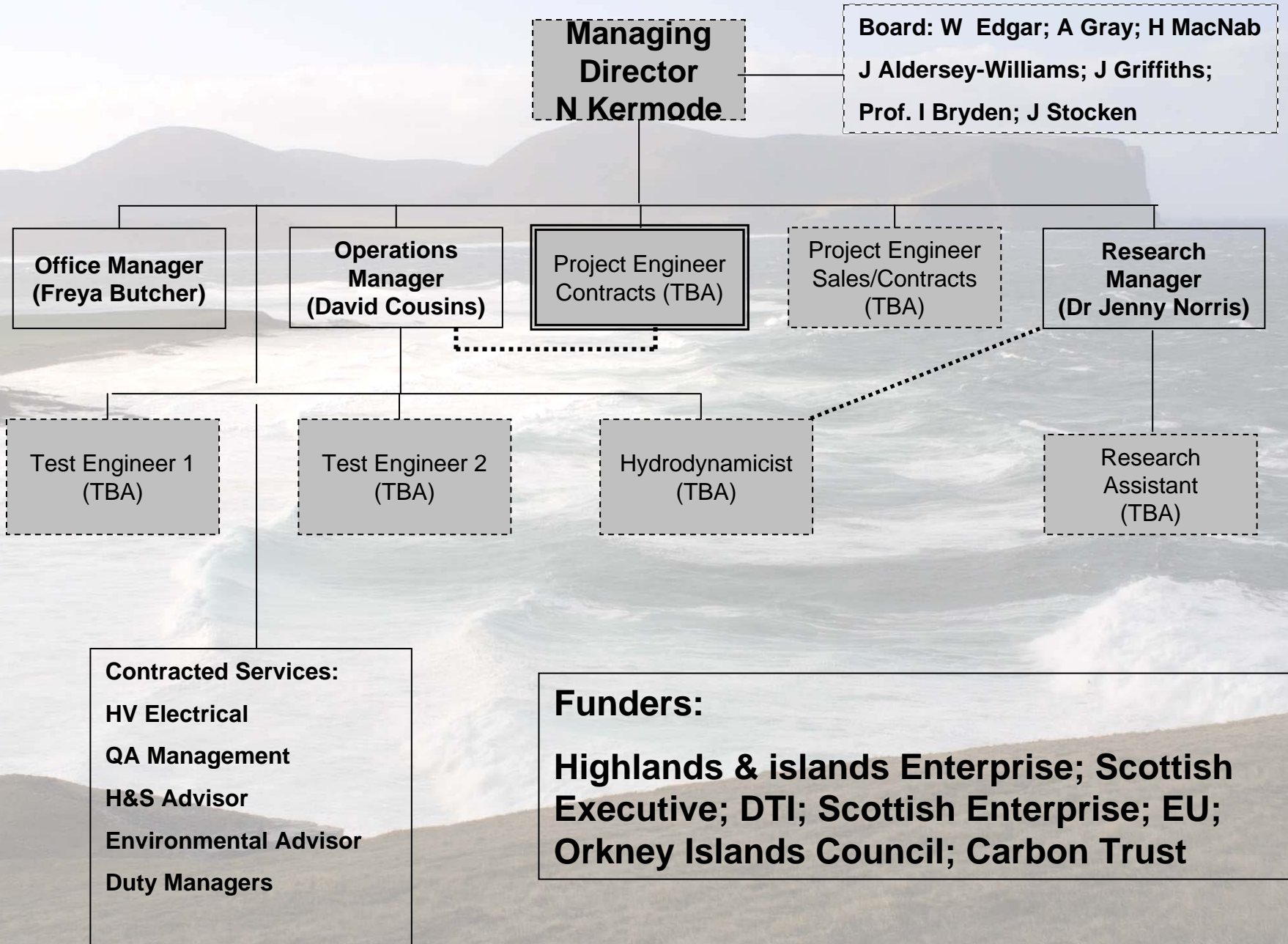


Top Right - Site of substation building

Bottom Right - Cables run from beach



EMEC Organisation Chart



Getting Devices Commercial

- **Qualification** is the initial route to assess the requirements of any new or unproven technology (**Classification House**)
- **Verification** is the development of the qualification process to verify the key parameters of a specific device (**EMEC**)
- **Certification** is a recognised route once the design, manufacture, testing and final product evaluation is recognised to accepted industry standards (**Classification House + EMEC**)

What is the purpose of standards?

- To be a **framework** for development of industry **requirements**
- Defines methods & equipment construction and performance on an **accepted** basis
- Allows effective collaboration on an **international** scale and the **opening** of markets

What the Open Sea Wave Test Standard Does

- **Gives criteria for test sites & facilities**
- **Shows key parameters of performance**
- **Suggests how to measure & what to measure**
- **Indicates how testing and reporting should be done**
- **Lists the uncertainties involved in calculating performance**



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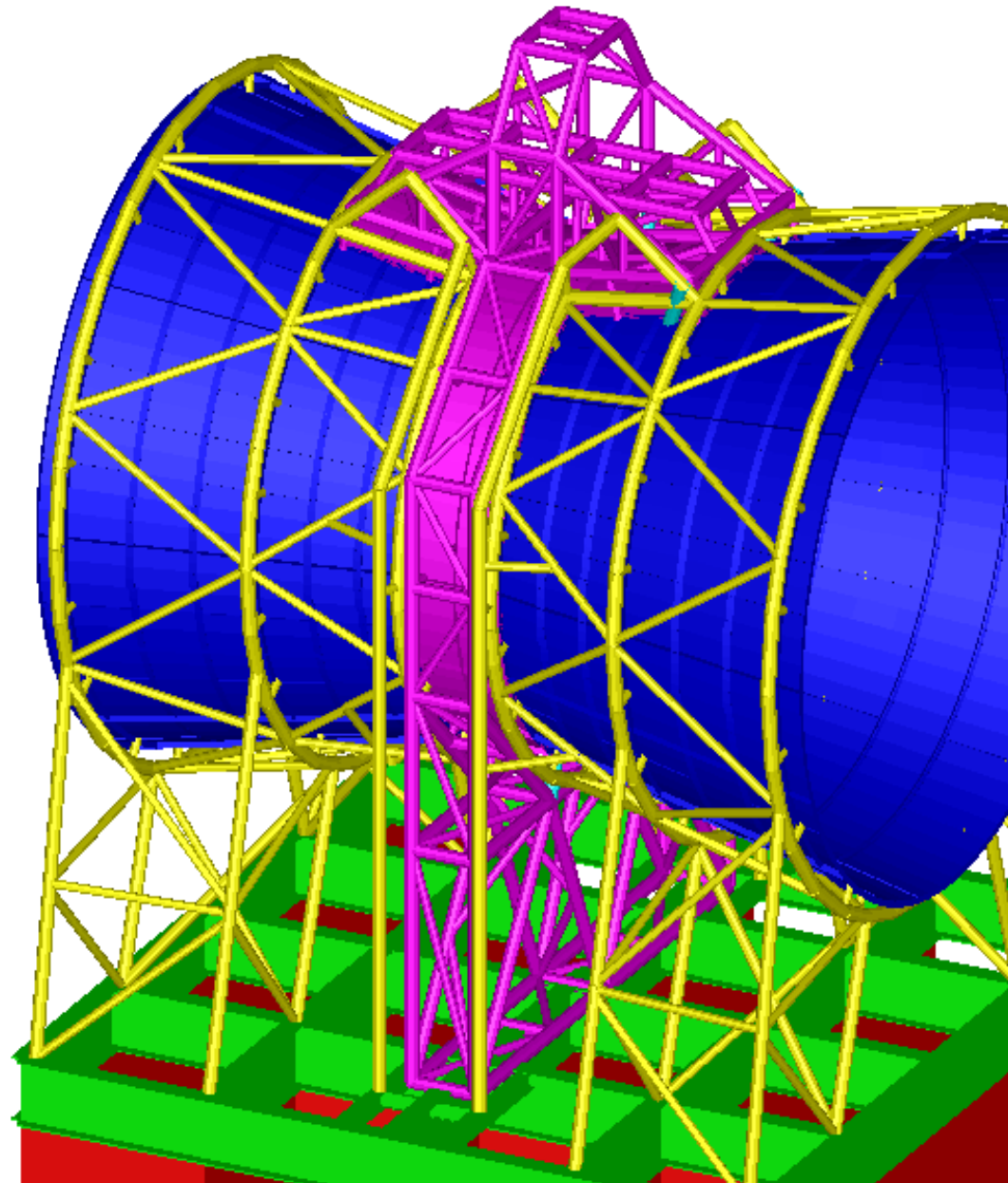
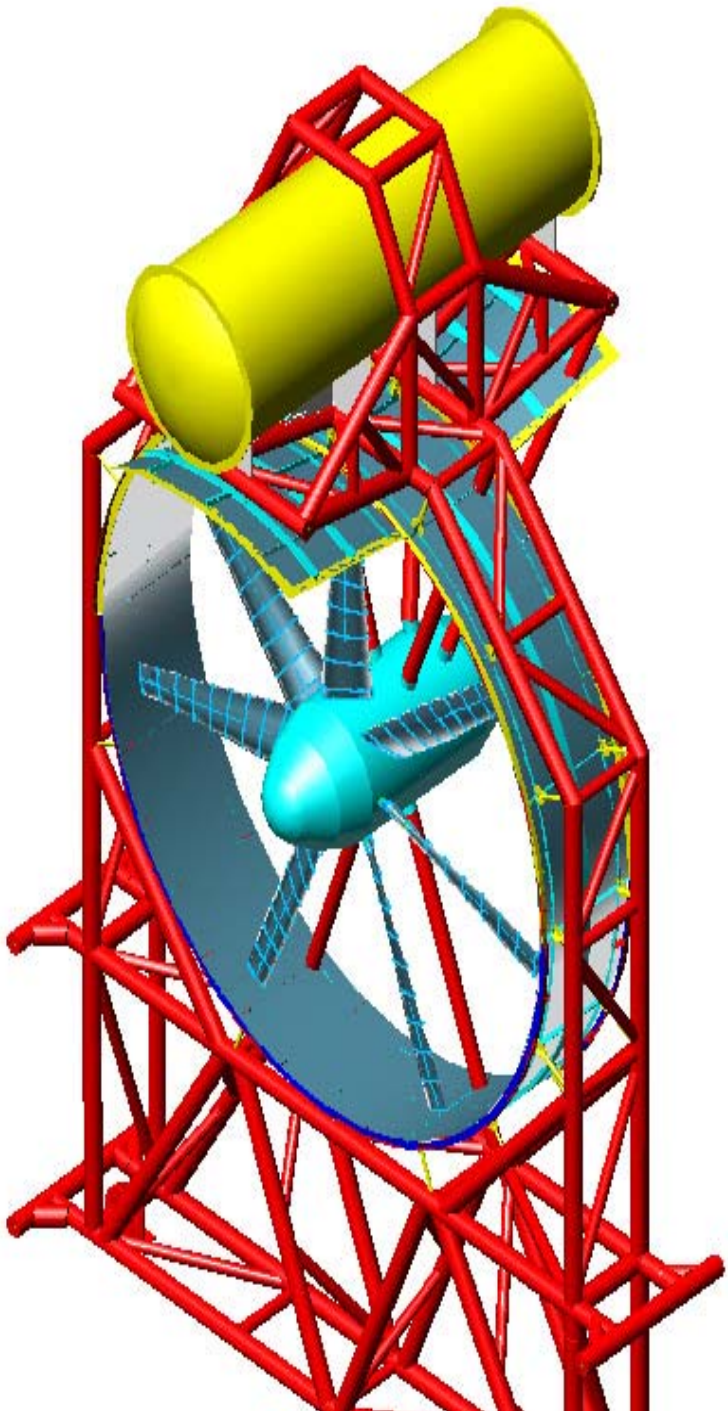
**John Griffiths
(Technical Director - EMEC Ltd)**

EMEC's Clients

“Pelamis” being towed onto station



Lunar Energy Ltd



EMEC's Clients

To full scale at
Fall of Warness



**TidEL – 1/10 scale on test
at NaREC**

Courtesy SMD Hydrovision Ltd

And Last week ...

