





## Standards Workshop **Operations & Maintenance**

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#### Standards

- **EMEC** THE EUROPEAN MARINE ENERGY CENTRE LTD
- Provides guidance and regulation
- Risk Reduction
- Commercial opportunities
- Knowledge sharing
- Requirements management
- Commonality skills & language
- H&S consistency

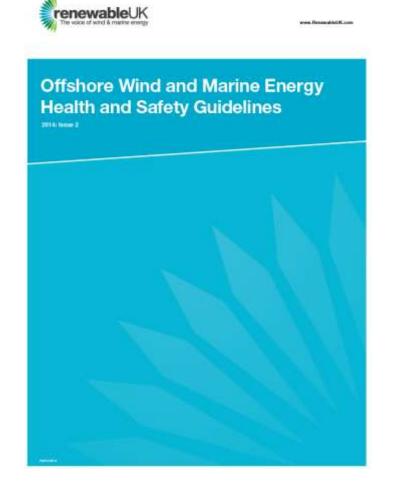


### Health & Safety



- Covers all areas under discussion today
- Why no Standard?



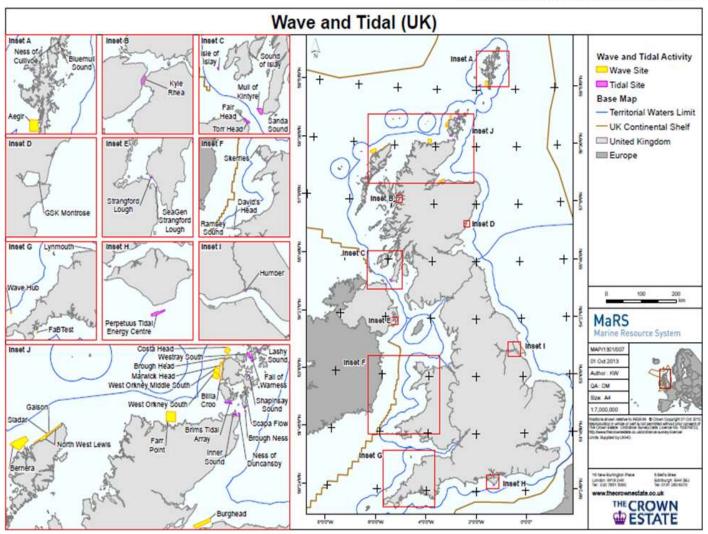


### **EMEC Activity**



#### **Crown Estate**





### Delivery

## What will be needed to deliver 1 GW of marine renewables capacity:

•	Energy converters	1100-1200
	Connecting cables	

Connecting cables 1000/6000km

<ul> <li>Sub stations</li> </ul>	10
<ul> <li>New 132kv connections</li> </ul>	10
<ul> <li>Converter stations</li> </ul>	1-2

• GW grid connection 1

Co-gen/storage scheme
Large purpose built vessels
Emergency tugs
Work boats
1-2
20-30

• Expanded/new ports 3-4

• Assembly/maintenance yards 2-3

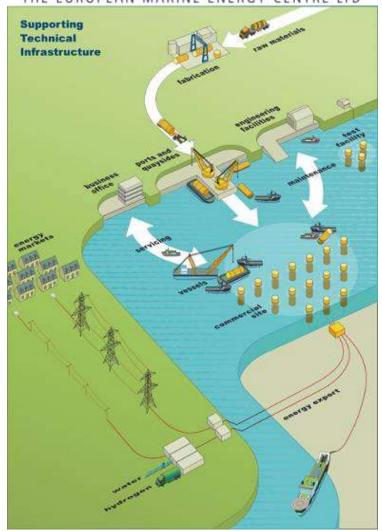
• Local workforce 500-1500

• Expanded and new offices 50

• New houses 300-1000

Operations control centre





#### **Onshore Facilities**



- Ports & Facilities
- **Operations Base**
- Logistics
- Maintenance facilities
- Engineering facilities
- Welfare facilities?





### **Vessel Requirements**









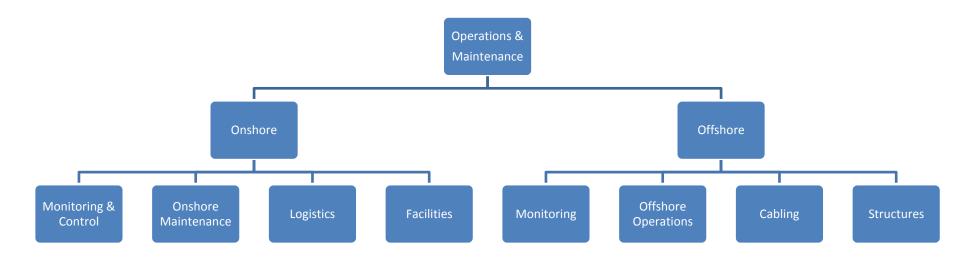






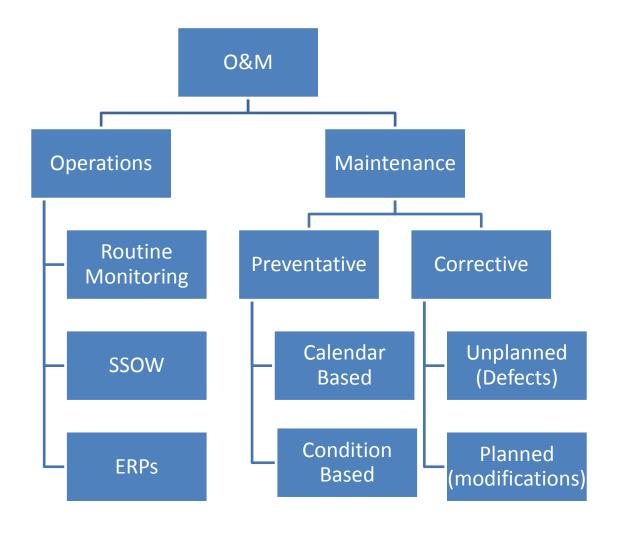
#### **O&M** Areas





## Maintenance – Good Practice

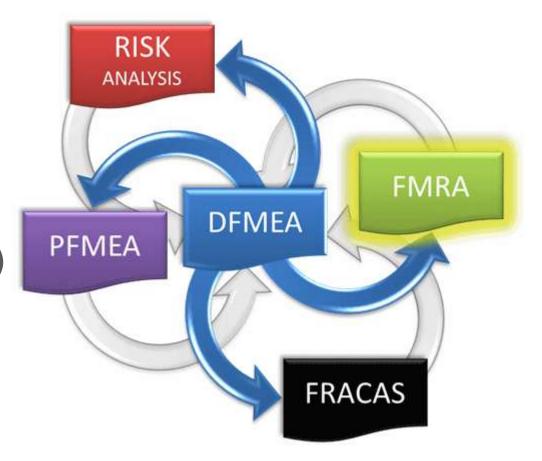




## Unscheduled Maintenance



 Reliability Centred Maintenance (RCM)



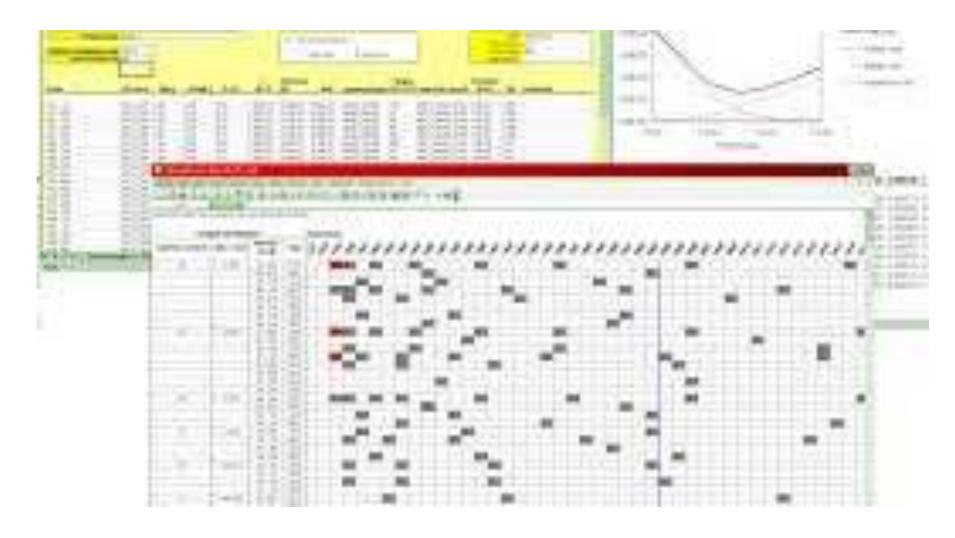
## Records & Administration





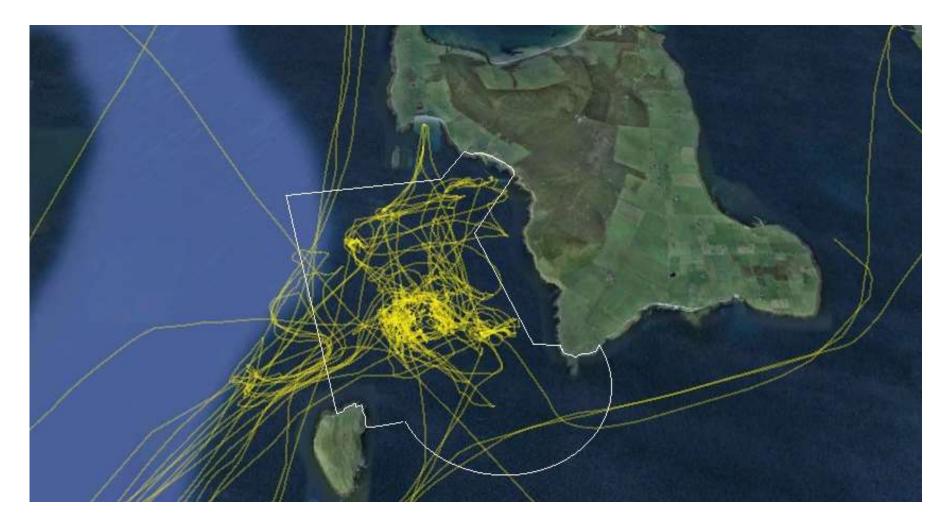
# Maintenance records & planning





## Just another day.....





#### Offshore Working



- Command & Control
- Communications
- Emergency Response
- Safe Systems of Work



MARINE GUIDANCE NOTE

MGN 371 (M+F)

Offshore Renewable Energy Installations (OREIs) - Guidance on UK Navigational Practice, Safety and Emergency Response Issues.

Notice to Other UK Government Departments, Offshore Renewable Energy Developers, Offshore Transmission Owners, Port Authorities, Ship owners, Masters, Ships' Officers, Fishermen and Recreational Sailors.

### Risk Management





## Competencies



























### Thank you







