

Experiences and bottlenecks of R&D logistics

Project: RAVE – Measurements and Data Management

GL Garrad Hassan – Wilhelm Heckmann

Funded on the base of an act
of the German Parliament

Supervisor

Coordination



Bundesministerium
für Umwelt, Naturschutz
und Reaktorsicherheit



1. • GL Garrad Hassan in 30 Seconds...

2. • Framework conditions for R&D logistics

3. • Major bottlenecks and hurdles for R&D logistics

4. • Final Remarks



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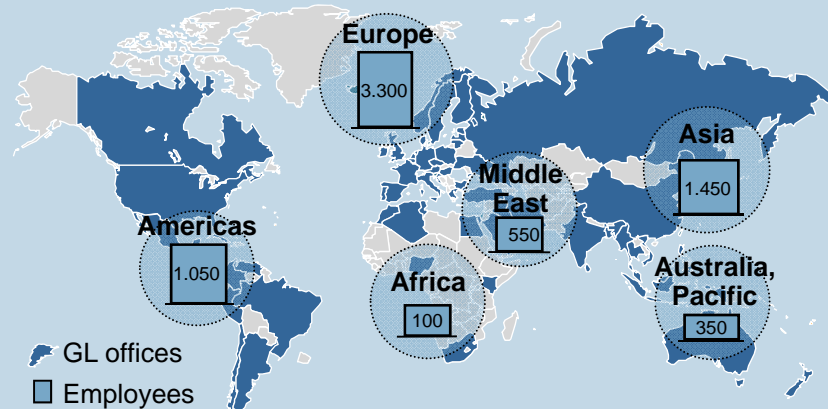


Renewables (GL Garrad Hassan)

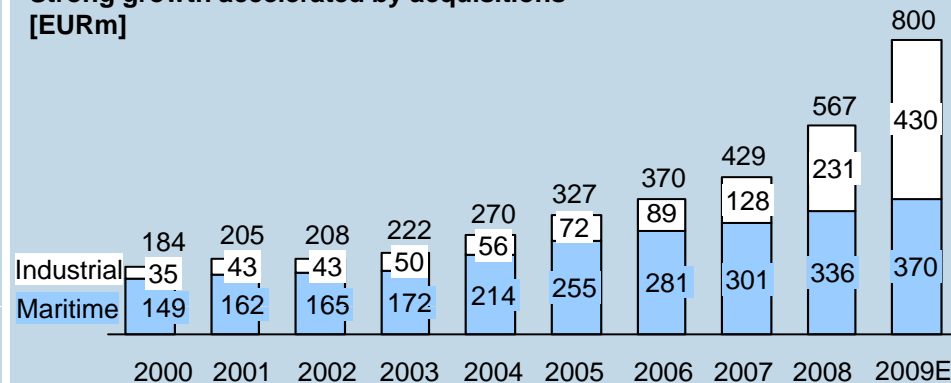
- Certification
- Engineering Consulting
- Marine Operations
- Measurements
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Measurements



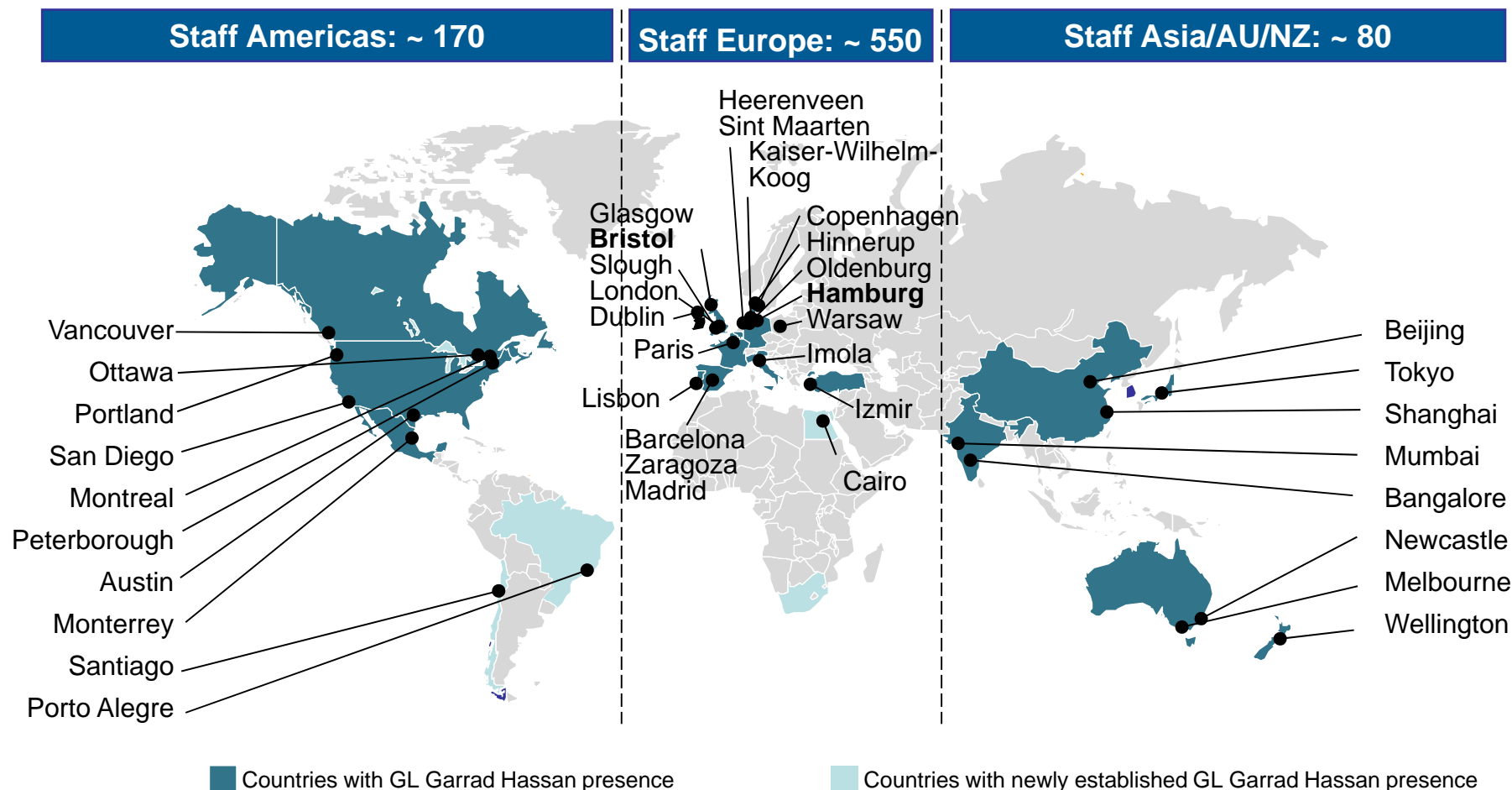
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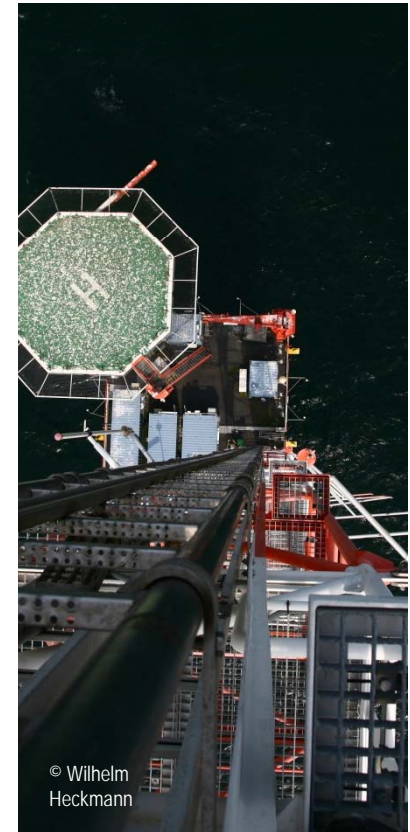


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Contracting Party

- Which party in the offshore wind farm project is the contracting party for the R&D work?
 - Turbine manufacturer
 - Wind farm owner/ operator
 - Federal Ministry (governmental sponsored R&D project)
- Contractual configuration defines priority settings within the project course



Position in the Schedule – at what time to install R&D equipment [1/3]

Installation of R&D equipment for measurements in offshore wind farms can be split into two major phases:

Phase 1: Installation Onshore

Pre-installation of measurement equipment which are not sensitive to major offshore installation works, or which are positioned in non-accessible areas offshore on the main components.

Phase 2: Installation Offshore

Final installation of all necessary measurement equipment and commissioning of the measurement system.



Framework conditions for R&D logistics

Position in the Schedule – at what time to install R&D equipment [2/3]

Phase 2: Execution of offshore installation maintenance works

How to schedule the installation, commissioning & maintenance of the measurement equipment:

1. simultaneously to installation & commissioning works of WTG and auxiliaries
2. after completion of installation & commissioning works of WTG and auxiliaries



Framework conditions for R&D logistics

Position in the Schedule – at what time to install and maintain R&D equipment [3/3]

Phase 2: Execution of offshore installation & maintenance works

Different logistic approaches for the execution of the R&D installation works offshore:

1. Integration of the R&D transfers into the offshore wind farm logistic
2. Separate R&D logistic as single transfers or campaign



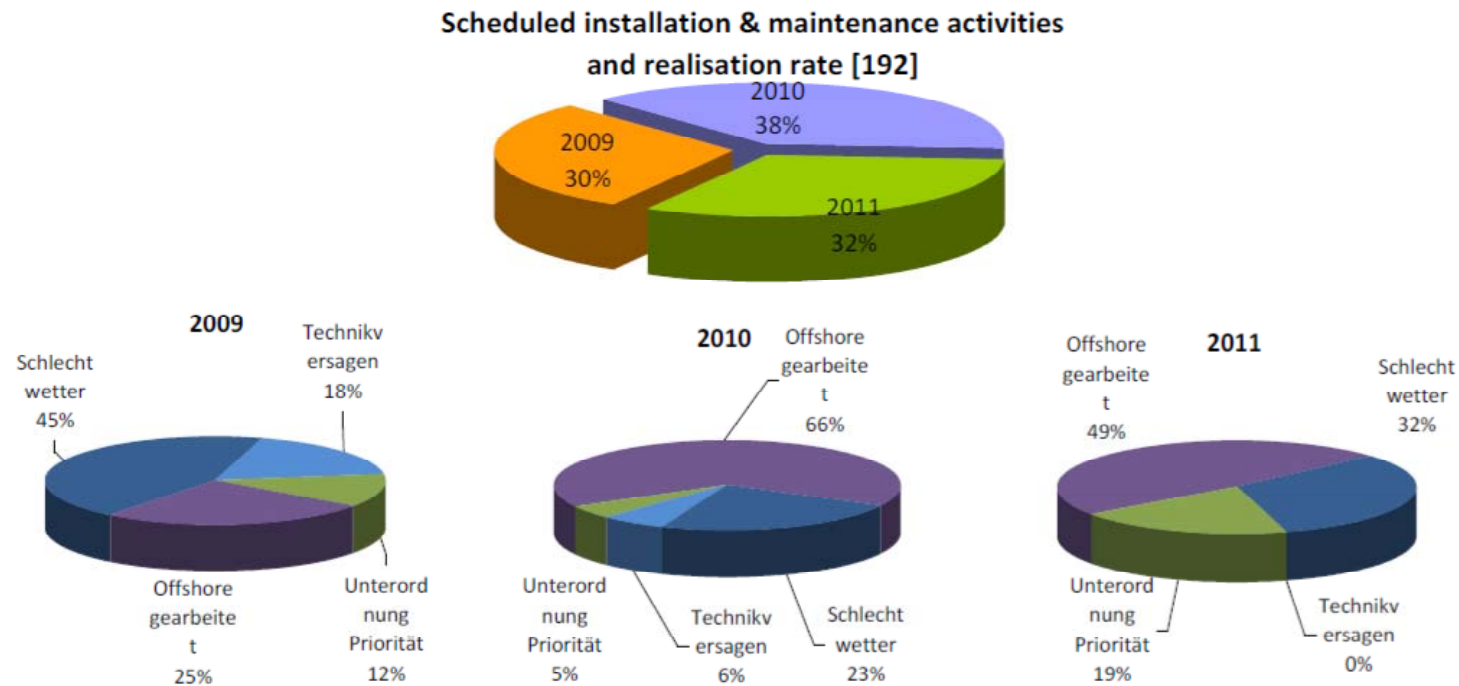
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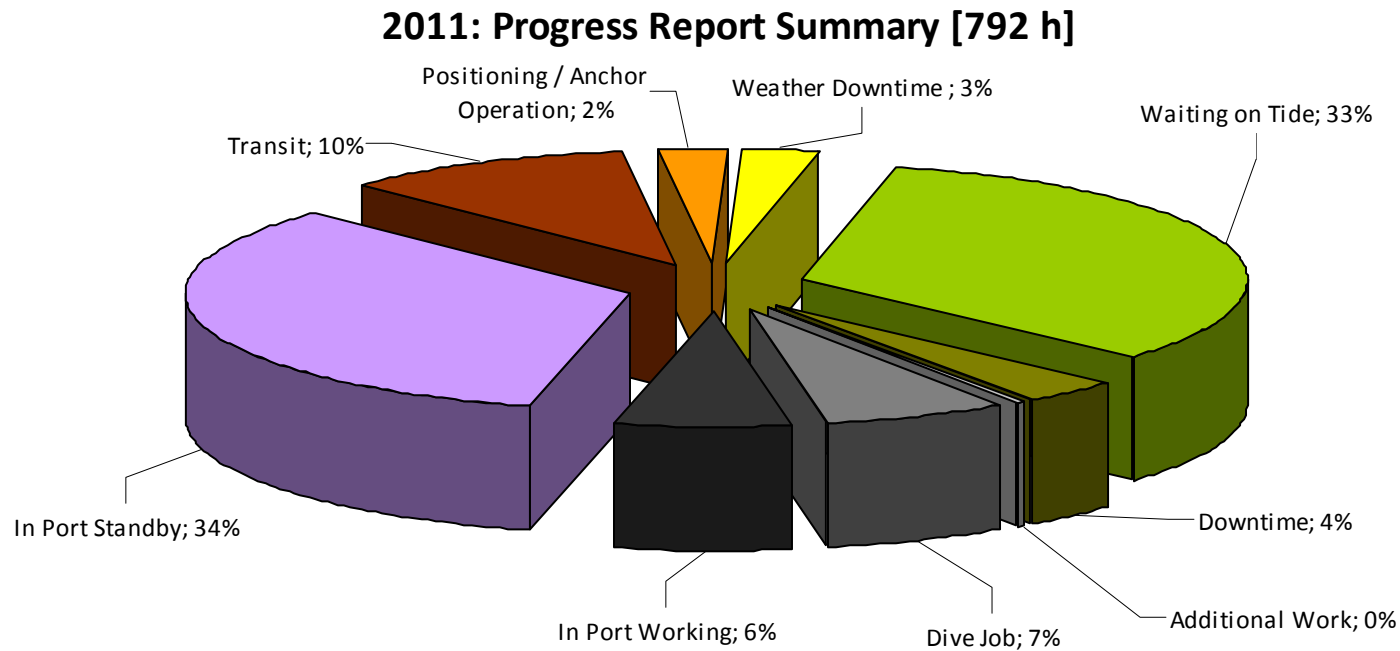
Major bottlenecks and hurdles for R&D logistics

R&D logistic ops alpha ventus – realisation rate



Major bottlenecks and hurdles for R&D logistics

R&D logistic ops alpha ventus – diving campaign



Major bottlenecks and hurdles for R&D logistics

Main issues

- Weather and port restrictions
- PAX capacity bottlenecks on vessels and helicopters
- Prioritisation of other offshore wind farm activities
- Unforeseen technical problems with the WTGs and logistic vehicles
- Staff limitation of wind farm operator or manufacturer to provide representatives for the operating control of the WTG
- Insufficient HSE instruction and training of the R&D staff
- Competition of different R&D projects about the labour for the specific project leading to later realisation (time consuming offshore work vs. limited R&D labour)



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Final Remarks

- Maximum pre-installation onshore/ more 'plug'n'play' configurations to reduce offshore effort
- Cost / Capacity balance for the transfer in order to realise a good logistic availability by reasonable costs (split work vs. campaigns)
- Finding a good balance between the level of wind turbine/ farm completion and start of R&D installation activities to avoid additional delays & extra work
- Good communication and arrangement with the operator of the offshore wind farm, to minimise extra effort in incorrect planning



Renewable energy consultants

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Thank you!

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