IFREMER and the Office of Naval Research (ONR) will organise a Workshop on

Durability of composites in a marine environment

On August 23rd, 24th 2012

At the IFREMER Centre in Nantes

First Announcement

Friday 24th August

Including durability in design

Integrating durability in marine composite certification (Plenary)
Professor A. Echtermeyer (NTNU Trondheim)
- Life prediction of composite materials under complex loading
Professor D. Perreux, University of Franche Comté
- Design of racing yachts for durability
Dr. H. Devaux, HDS, France

Specific marine loadings

Fatigue of marine composites (Plenary)
Professor RA Shenoi, University of Southampton
- Seawater aging of carbon fibre reinforced vinylester
Professor LA Carlsson, Florida Atlantic University, Dr C. Berggreen, DTU
- Durability of composites for underwater applications
D. Choqueuse, IFREMER Brest

In-service experience

In-service experience at DCNS
Speaker to be confirmed
Service Experience and Life-time Prediction of Naval Composites
J. Dalzel-Job, Qinetiq, Rosyth

Discussion, Round Table,
(ONR, Ifremer + plenary speakers)

What further research is needed to improve the long term reliability of marine composites?
**Aim of the Workshop**

The main objective of the workshop is to give a state of the art overview of current research in Europe and the USA on the behavior of composite materials in a marine environment. This will be achieved by bringing together leading researchers in this field and providing invited lectures and discussion over two days. A round table discussion will focus on further research required to improve the long term reliability of composite marine structures.

**Importance of the subject**

Fibre reinforced polymer composites have been successfully used in marine applications for over 50 years (pleasure boats, military vessels, submarines), resulting in considerable service-based knowledge. However, design with respect to long term durability has been largely based on experience and safety factors are often high. In recent years both predictive modelling and experimental techniques have advanced significantly, and there are now tools available to assist designers in predicting service lifetimes.

In addition to the traditional marine boat and ship structures, there are two other areas in which composite materials are starting to provide key contributions. The first is the offshore industry which, despite several attempts over the past 20 years to integrate these materials, notably for drilling risers, is only now starting to realise the weight gain potential of high performance composites.

A second emerging area is renewable marine energy, which covers structures both above water such as floating wind turbines, and immersed systems such as tidal turbines. Guaranteeing the long term reliability of such devices is critical to limit maintenance and ensure economic viability. Understanding the long term behaviour of components such as composite turbine blades in a marine environment is one of the major challenges facing this industry. Several prototype blades have failed during trials and designing for long term durability is becoming a major issue.

Given both the traditional use of composites at sea and the exciting new applications on the horizon, it is therefore very timely today to propose a meeting place for those working in this area. The workshop proposed here is designed to provide a background to previous work, a forum for discussion of current projects in Europe and the USA, and a framework to prioritise future work and encourage the development of new collaborations.

The Workshop is organized around presentations by invited speakers. Non-speakers will be able to present a poster if they wish, which will be included in the abstract book.

Participation will be limited to 80 attendees, a registration fee of 250 Euros will be charged to cover lunch, coffee breaks, the book of abstracts, and an evening meal on the 23rd August. Registration is opened on the website (see below).

For more information contact:
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Registration on the website:
http://wwz.ifremer.fr/rdTechnologiques/A-la-
une/Workshop-Durability-of-composites-in-a-marine-
environment