Introduction to OPTIMAT BLADES

L.G.J. (Bert) Janssen
Content

- General Information
- Objective
- Partners
- Project structure
- Objective of workshop
- Agenda of workshop
General information

- Full project title
  - Reliable Optimal Use of Materials for Wind Turbines Rotor Blades

- Acronym:
  - OPTIMAT BLADES

- Co-ordination:
  - Financial/administrative: ECN
  - Scientific/technical: KC-WMC
General Information

- **Project duration:** 52 months
  01-01-2002 until 30-04-2005

- **Budget**
  - Total budget: 4.4 M€
  - EU-contribution: 2.4 M€

- **Number of partners**
  At the start of project: 18, now 17.
  - R&D institutes: 10
  - Industries: 6, now 5
  - Certification bodies: 2
Objective

- Accurate design recommendations for optimised use of materials for rotor blades with an improved reliability.
- Based on a consistent set of material data including:
  - Variable amplitude loading
  - Complex stress states
  - Residual stresses/life
  - Extreme conditions
  - Thick laminates and
  - Repair techniques
Partners

R&D institutes

- ECN
- KC-WMC
- CCLRC
- RISØ
- CRES
- VUB
- UP
- VTT
- DEWI
- DLR

Industries

- LM
- Vestas
- GE-Wind
- Nordex
- Gamesa

Certification Bodies

- GL-Wind
- DNV
Some numbers on Optimat

- Number of
  - Person months: ~500
  - Specimens tested: ~2300*
  - Fatigue cycles: ~600 Milj*
  - Machine hours: ~30,000*
  - Reports: ~150*
  - Publications: ~25*

* Need to be updated
Objectives of Workshop

- Disseminate the knowledge gained to the European industry
- Discuss the proposed Design Recommendations
- Get feedback from the European industry on the proposed Design Recommendations.
Introduction to Optimat Blades
Recommendations of material tests
Determination of S-N lines
Fatigue life prediction
Biaxial stress state in blades
Biaxial Tests
Extreme conditions

Break
Agenda for the Workshop (2)

- Repair techniques & thick laminates
- Residual strength models
- OPTIDAT, the database of OPTIMAT
- Implementation of Technical Standards
- Panel discussion & input from industry
  - A new implementation of CLD

Finish: Workshop

- Presentation of UPWIND
  (6th framework Wind Project)