



## Virtual Engineering ... ... Engineering Services for the Shipbuilding Industry

### Computer Simulation of Drive Systems & Powertrains in Shipbuilding & Marine Applications

#### Customer-Dedicated Engineering Services

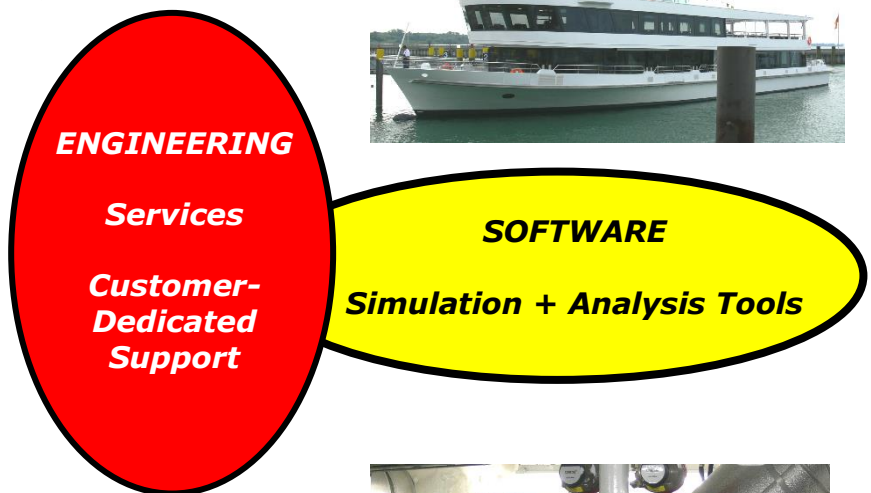
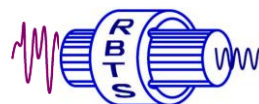
Application and Distribution  
of User-Friendly Software  
for PCs (Windows 7 / 8 / 8.1 / 10)

Laschet Consulting is specialist in computer simulation technology. Due to longterm experiences in the simulation of complete drive systems, we offer a professional customer **CAE Service for Engineers** worldwide including consultation, analysis, and computer simulation concerning the **DYNAMIC BEHAVIOR IN DRIVELINES OF SHIPS** (torsional & lateral vibration analyses):

- **Analysis of gear dynamics** (with all backlashes in the gear stages)
- **Special effects in marine applications** (like: crash-stop, dredging effects)
- **Multi-parameter analysis of excitability** (natural behavior, vibration modes, Campbell diagrams)
- **Interdependences of engine & transmission & P.T.O.**
- **Steady-state simulation for absorber & damper design**
- **Considering typical non-linear effects** (clutch, joint discs, dampers; angle or velocity dependent elasticities in rubber/soft couplings, dampers and friction elements)
- **Overall engine analysis with all auxiliary drives; special analysis of test rig design**
- **Customer solutions** (special software modules and engineering tasks)

Our **CAE Service** provides the customer with a project-oriented analysis and interpretation of vibrations caused by external or internal excitation or parametrically excited disturbances. Nonlinear characteristics like backlash or torque-angle-hystereses can be taken into account, too. In order to meet all customers' requirements, **Laschet Consulting** uses and distributes high-sophisticated simulation software in close cooperations with software & engineering companies like RBTS, Inc., USA with the rotordynamic software **ARMD** ([www.rbts.com](http://www.rbts.com)).

We present "**Service for Engineers**" regularly at international conferences and exhibitions: ASME, POWER-GEN, SAE, IMechE, VDI, HdT, EFRC, etc. Please also visit our **International Rotordynamic Seminars** in close cooperation with our partner RBTS, Inc., USA.

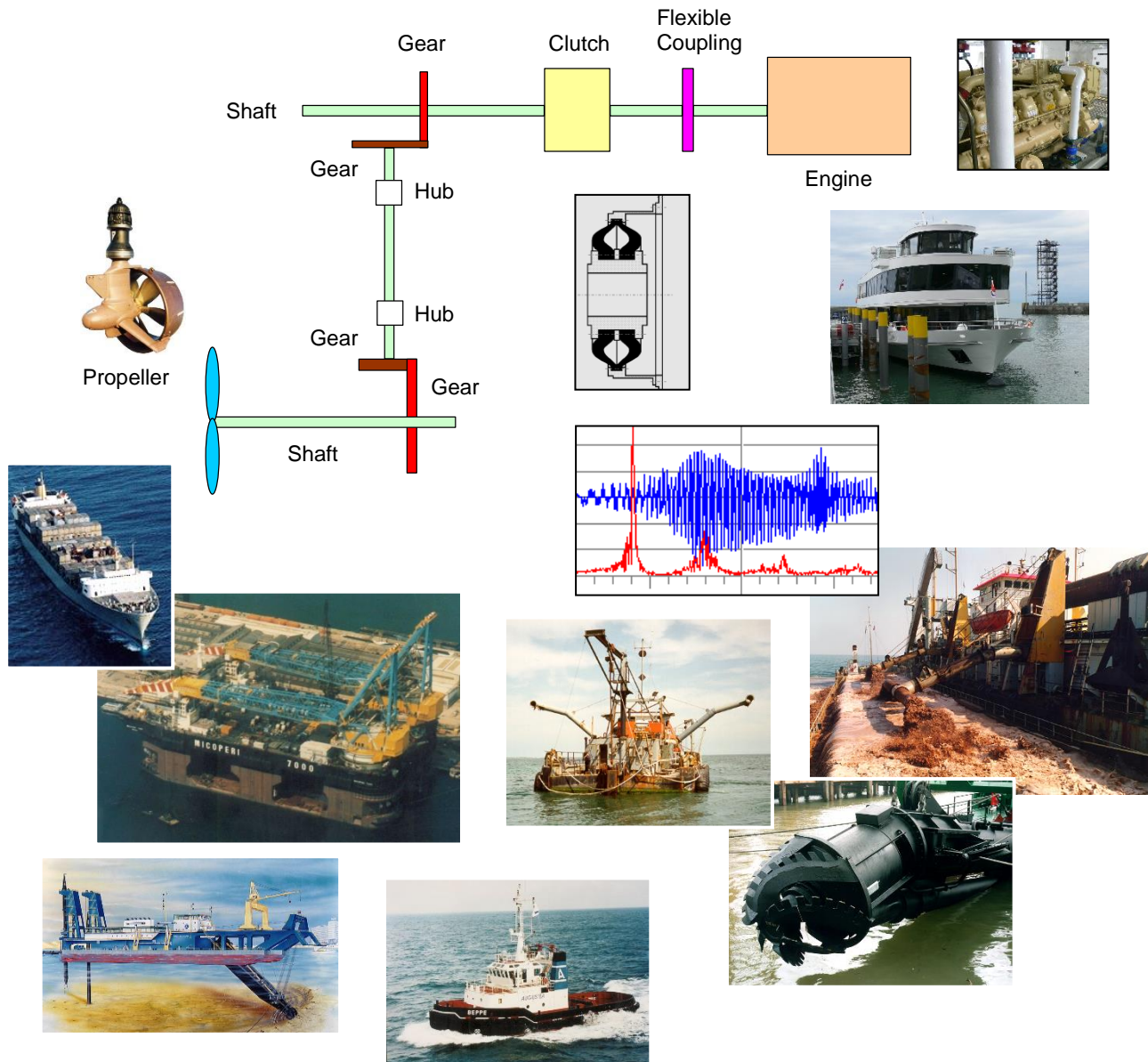




# Virtual Engineering for the Shipbuilding Industry

## The professional Engineering Service ...

... supported by RBTS' simulation software ARMD 5.8 / 6.0 and other simulation tools



**Measurements and on-site testings** are done via our cooperative partners worldwide. In all these cases we join the engineering results and provide a complete customer engineering solution including the CAE and test results.

**Laschet Consulting** – your partner to analyze torsional vibrations in complete ship drivelines and also to solve and prevent driveline problems.