



Vibration Analysis ...

... Extended Engineering Services for Rotating Machinery

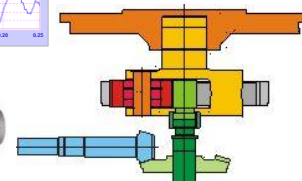
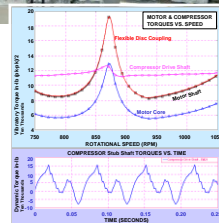
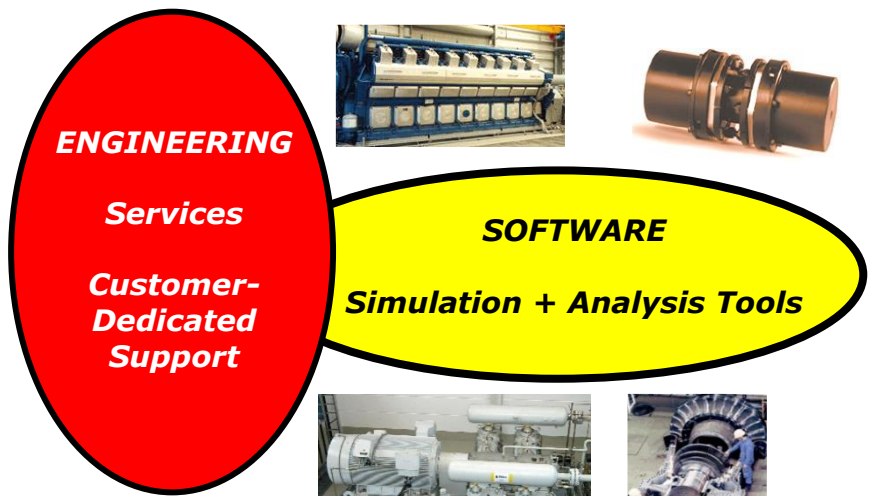
Computer Simulation of Drive Systems (Drivelines) in Rotating Machinery Applications

... dedicated to **Industry, Marine, Oil & Gas, Power Generation, etc.** – with the main focus on:

DEVELOPMENT & DESIGN, SYSTEM RELIABILITY, CONDITION MONITORING, TROUBLESHOOTING, FAILURE ANALYSIS

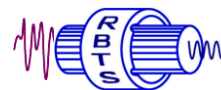
Laschet Consulting is specialist in computer simulation technology. Due to longterm experiences in the simulation of complete drive systems, we offer a professional customer **CAE Service for Engineers** worldwide including consultation, analysis, troubleshooting supported by computer simulation of **TORSIONAL & LATERAL VIBRATIONS IN ROTATING MACHINERY**:

- **Turbomachinery**
- **Compressors**
(reciprocating, screw, turbo compressors)
- **Pumps, Fans/Blowers/Ventilators, Generator Drives**
- **Vehicle and Ship Drivelines** (with E-drives or all types of engines)
- **Drive Systems in Aviation & Aerospace Applications**
- **Drives with Couplings, Clutches, Gear Stages, Universal Shafts, E-Motors, Reciprocating Engines**
- **Test Rig Optimization** considering dynamic effects
- **Driveline Matching** crucial for design & troubleshooting (considering measurements, field testings, and machine diagnosis)



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 cooperation with software & engineering companies like RBTS, Inc., USA with the rotordynamic software **ARMD** (www.rbts.com).

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



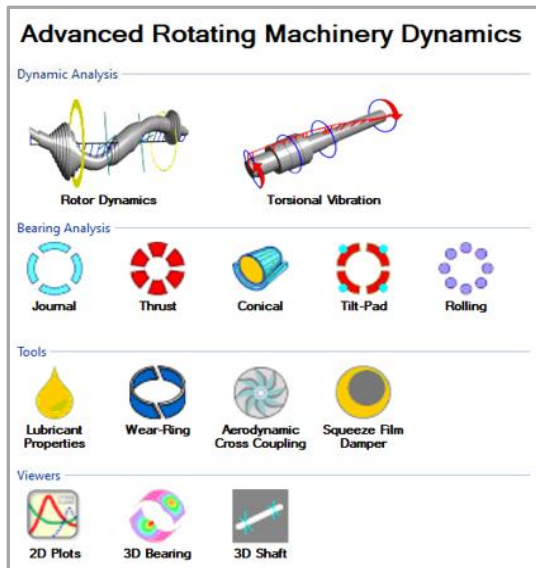
October 10-13, 2022
Leonardo Hotel Cologne (Germany)

Measurements and field 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 CAE and test results.



The Professional Engineering Service ...

... supported by RBTS' simulation software **ARMD 6.1** – software & service available by **Laschet Consulting**

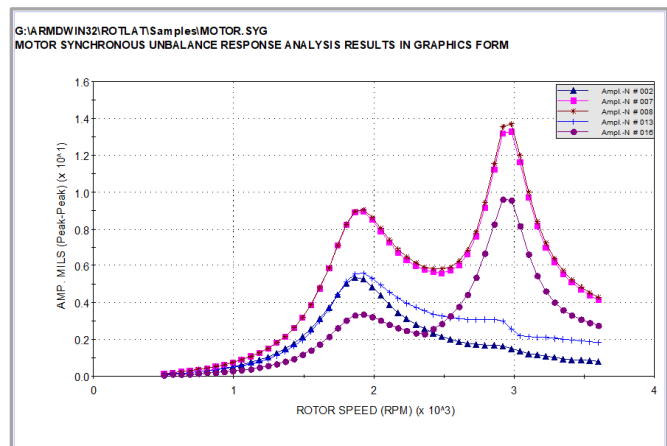
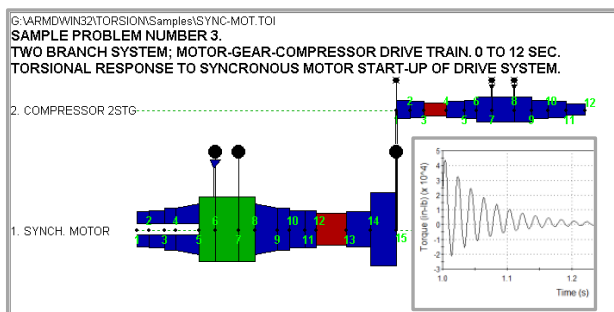
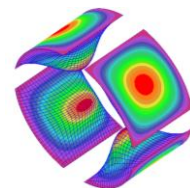
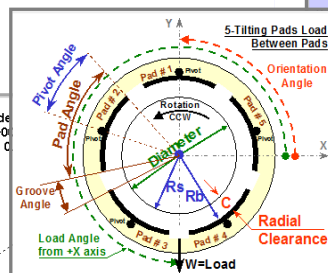
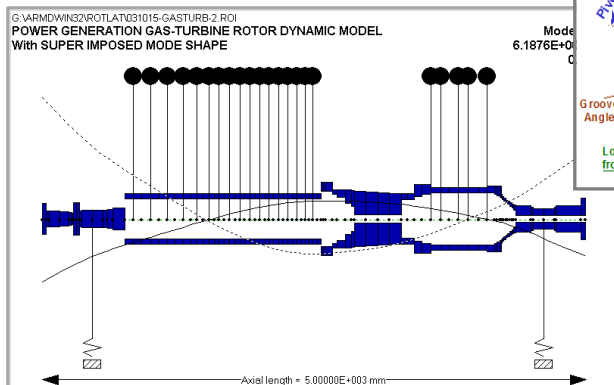
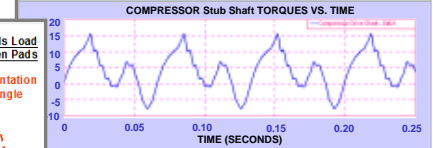
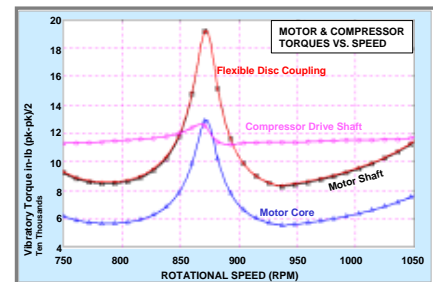
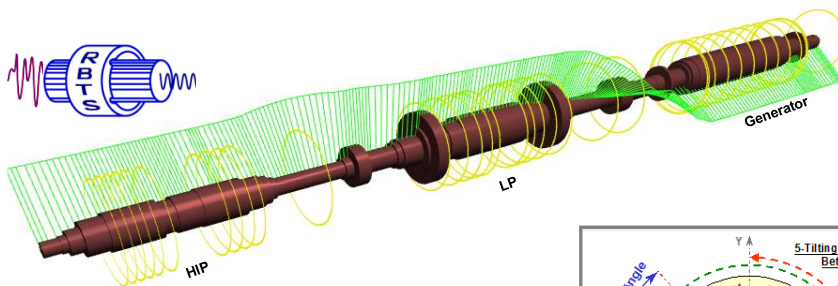


ARMD consists of 4 main modules:

- Rotor Dynamics
- Torsional Vibration
- Bearing Analysis
- Lubricant Performance

... with a variety of features, including:

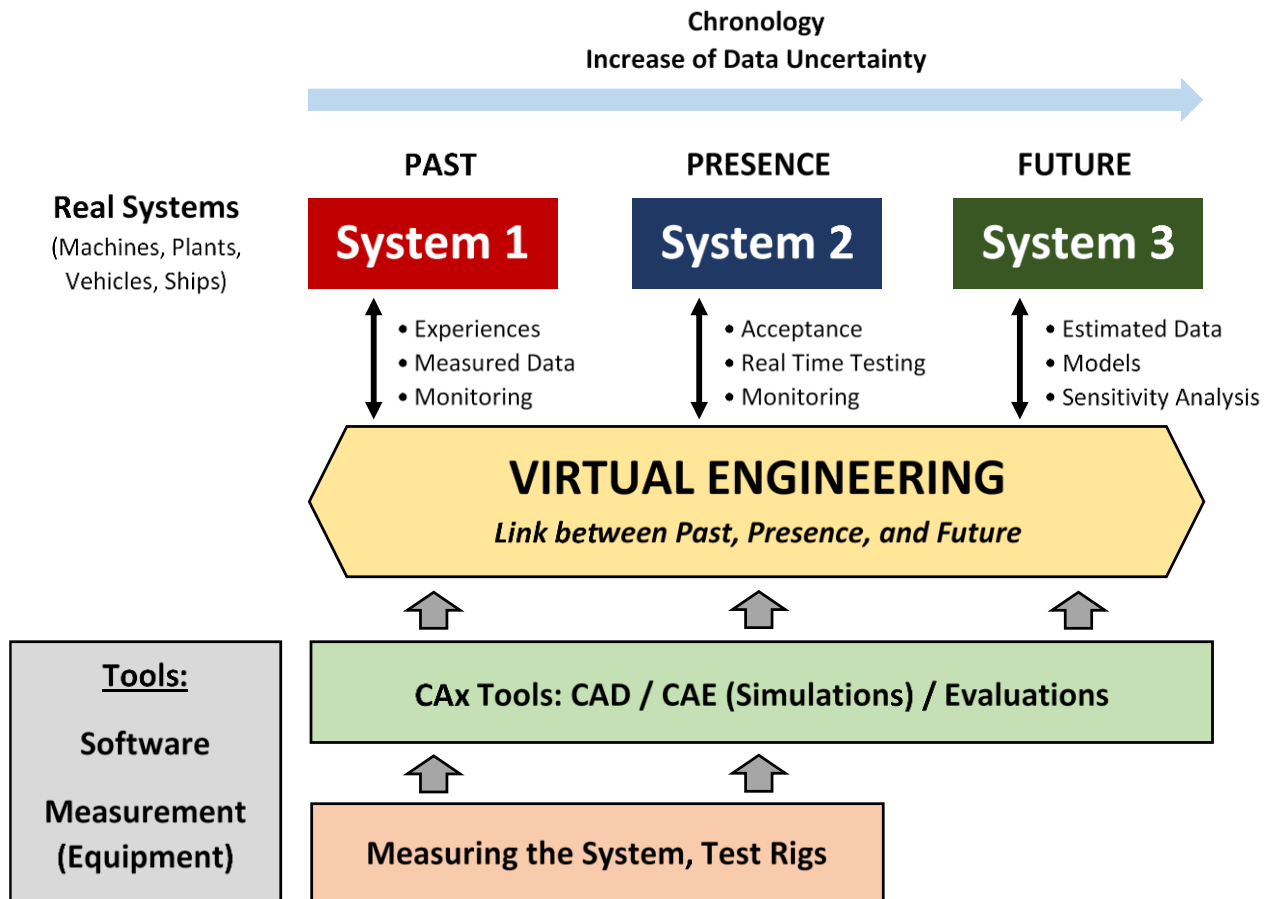
- user-friendly interface
- project and file management system
- 2D/3D graphics capabilities
- intermodule communication and data exchange
- powerful help tools & model templates





The Strategy to Minimize Vibrations in Drivelines ...

... Supported by Powerful CAE Tools & Laschet's Engineering Services



• Support of the R & D Process

- early detection of possible **critical speeds** and **resonance problems**
- evaluation of **different powertrain configurations** to determine the “best” set-up
- significant **quality improvement** with simultaneous **reduction of development time**

• Support of Commissioning, Predictive Maintenance, Machine Diagnosis

- understanding **field testing** during **commissioning** using **vibration simulation tools**
- fine tuning of the CAE model, improved **machine diagnosis & conditioning monitoring**

• Support of Troubleshooting, Failure Analysis, Root Cause Analysis

- improved **troubleshooting & root cause analysis** considering existing measurements
- **measurement and computer simulation “in dialogue”** for **fast problem solving**



Invitation

Rotordynamics & Bearings

Basics & Theory / Practical Applications & Case Studies

14th INTERNATIONAL SEMINAR & SHORT COURSE

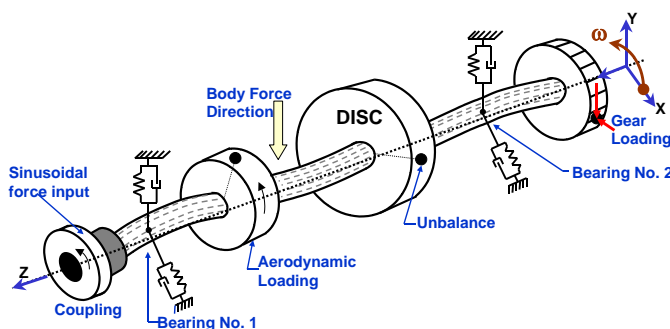
10 - 13 October 2022 – Leonardo Hotel Köln, Cologne / GERMANY

A cooperation between RBTS, USA & LASCHET CONSULTING, Germany

This **INTERNATIONAL SEMINAR & SHORT COURSE** is dedicated to engineers and technical managers who are involved in **ROTATING MACHINERY DYNAMICS** design, operation, maintenance, diagnosis, and trouble shooting, with emphasis on machinery rotor dynamics (**LATERAL VIBRATION Analysis**), drive train dynamics (**TORSIONAL VIBRATION Analysis**), and bearing systems (**FLUID-FILM BEARINGS**). Course coverage of the field is illustrated by the presentation of real life case histories and the application of advanced technologies for the modeling, analyses, and trouble shooting real life bearings and vibration problems.

This seminar is not an ARMD software user training but a **TECHNOLOGY TRANSFER** and is therefore dedicated to all engineers interested in the dynamics of rotating machinery, independent of the use of a specific software tool. No previous experiences are required – just register and come to the seminar to understand the world of vibrations, and above all how to solve and avoid vibration problems in rotating machinery.

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|----------------------------|--------------------------------|---|---|
| 1st Day: | 10 Oct 2022 (Monday) | Seminar | "FLUID-FILM BEARINGS" (Technology & Applications) |
| 2nd Day: | 11 Oct 2022 (Tuesday) | Seminar | "ROTOR DYNAMICS" (Part 1: Basics & Technology) |
| 3rd Day: | 12 Oct 2022 (Wednesday) | Seminar | "ROTOR DYNAMICS" (Part 2: Applications & Case Studies) |
| 4th Day: | 13 Oct 2022 (Thursday) | <u>Choice of TWO (2) parallel sessions:</u> | |
| | | Seminar | "TORSIONAL VIBRATIONS" (Basics & Applications) |
| | | Workshop | "ARMD SOFTWARE APPLICATIONS" |



Please use our **ONLINE REGISTRATION** form:
<https://www.laschet.com/en/seminars/>.

The detailed **SEMINAR BROCHURE** is available as download from this web site including price and hotel information.

Furthermore, we offer **CUSTOMER TRAININGS** and (free) **WEBINARS**. We are happy to keep in contact with you.

Your contact partner: *Dr. Andreas Laschet*

More information: www.laschet.com