Virtual Engineering …

… Engineering Services for Compressor Drivelines
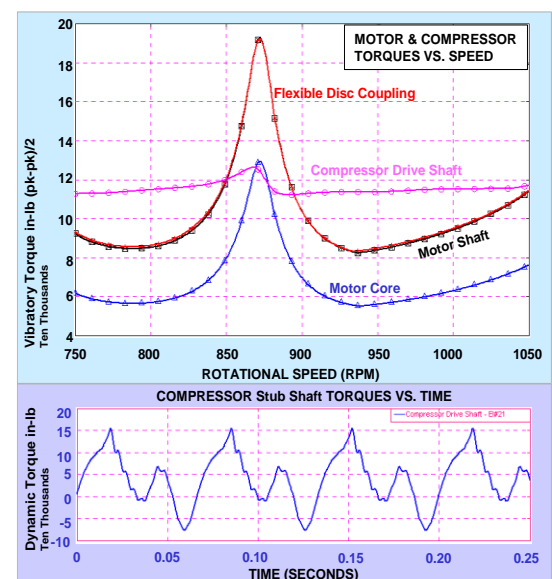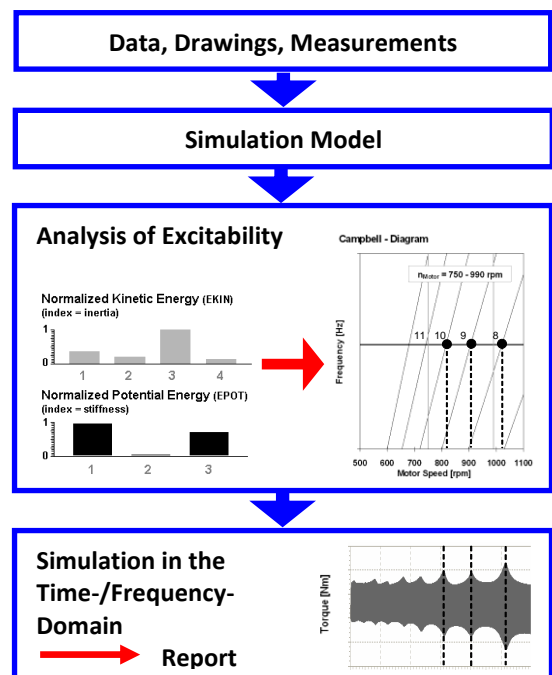
Application #1:
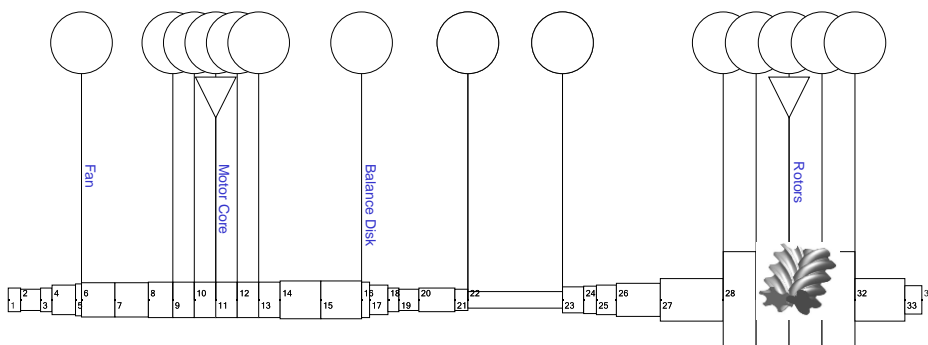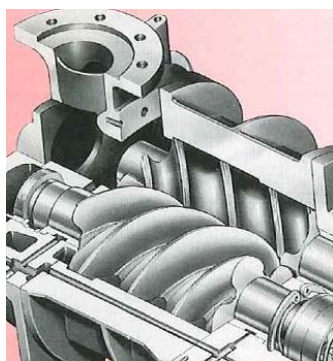## *Vibration Analysis of ==Reciprocating Compressor Drivelines==*

As part of the dynamic analysis of ==RECIPROCATING COM-PRESSOR SYSTEMS==, **Dr.-Ing. Andreas Laschet** provides a calculation service, which combines the computer-based **analysis of TORSIONAL VIBRATIONS** as well as optionally **LATERAL VIBRATIONS** of the complete driveline. The analysis corresponds to ==API 618== and also includes numerous extended features. According to these calculations possible critical resonances can already be detected in advance during the development and design phase. In case of machine diagnosis or the calculation of an existing installation respectively (e.g. in case of any reconstructions/revamps), the computer simulation can successfully be applied in order to determine disturbances, vibrations, and oscillations, as well as reasonable measurement locations. A realistic model validation is important for the optimal correlation between measurements and the calculations.

On the one hand the analysis of the <u>natural behavior</u> is performed (i.e. calculation of **natural frequencies** and **vibration modes** including the **CAMPBELL diagram** containing all relevant excitation orders). On the other hand the <u>dynamic behavior</u> is calculated and rated including the **visualization and analysis of all relevant torques** and also **power loss in elastic couplings**. Alternative driveline configurations (i.e. concerning electric motor or gas engine, coupling, flywheel, gearbox) are considered in order to find an optimized dynamic behavior of the complete driveline.

On the basis of long and extensive experiences in torsional & lateral vibration simulations my professional **CAE engineering services** can be used by the customer quickly and practice-oriented. This analysis service in particular is qualified for the associated support of measurements.

Application #2:
Vibration Analysis of <mark>Screw Compressor Drivelines</mark>

As part of the dynamic analysis of <mark>SCREW COMPRESSOR SYSTEMS</mark>, **Dr.-Ing. Andreas Laschet** provides a calculation service, which combines the computer-based **analysis of TORSIONAL VIBRATIONS** as well as optionally **LATERAL VIBRATIONS** of the complete driveline – including the rotors (lobes) and any gear stages between. This analysis corresponds to <mark>API 619</mark> und may be even exceeded. The computational investigations enable a prognosis of critical vibrations and should be carried out at an early stage of development and design. Realistic modelling is necessary to achieve the best possible correlation between measurement and calculation.

On the one hand the analysis of the natural behavior is performed (i.e. calculation of **natural frequencies** and **vibration modes** including the CAMPBELL **diagram** containing all relevant excitation orders). On the other hand the dynamic behavior is calculated and rated including the **visualization and analysis of all relevant torques**. Alternative configurations of the drive elements are considered in order to find an optimized dynamic behavior of the complete driveline.
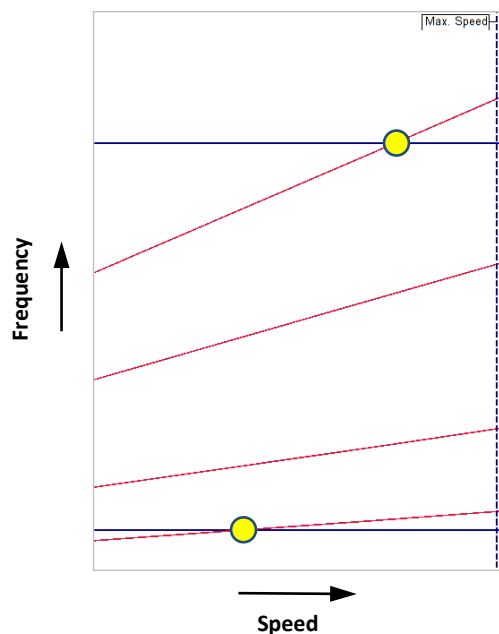
Dr.-Ing. Andreas Laschet is an experienced specialist and provides support to understand and minimize vibrations in **all types of compressor systems** like reciprocating compressors (API 618), screw compressors (API 619), turbo/centrifugal compressors (API 617) concerning both **TORSIONAL** and **optionally LATERAL VIBRATIONS** of the drive systems. This kind of engineering analysis may be also integrated in a more complex complete **ROTOR-DYNAMIC ANALYSIS**.

My **Engineering Services** are always performed in close and confident cooperation with well-known compressor manufacturers, packagers, and plant manufacturers/operators.

I have a lot of expertise in the evaluation of torsional and lateral vibrations in complete drive systems worldwide. Concerning these engineering services I also cooperate very closely with external partners (above all with measurement service providers) even in the event of urgent **troubleshooting**. Further information: https://www.laschet.com/

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