



# Service For Engineers

## Special Application: Simulation of Vibrations in Reciprocating Compressors

In connection with the analysis of the dynamic behavior of compressor systems, ARLA provides a calculation service, which combines the computer-based **simulation of torsional vibrations** as well as **lateral vibrations** of the complete driveline. The analysis corresponds to API standards (API 618) and also includes numerous **further features**. According to these calculations possible weak spots or dangerous 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), 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 basis of long and extensive experiences in torsional & lateral vibration simulations ARLA's professional engineering service can be used by the customer in a quick and practice-oriented way. This analysis service in particular is qualified for the associated support of measurements. 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 and stresses. The calculation of the maximum loads as maximum torques are also performed. Alternative driveline configurations (electric motors or gas engines, couplings, gearboxes, flywheels, etc.) are considered in order to find an optimized dynamic behavior of the complete driveline.

ARLA is an experienced company and supports the customer to understand and to minimize the expected vibrations of the total drive system. **ARLA® Engineering Services** are performed in close and confident cooperation with well-known compressor manufacturers and packagers. ARLA is also the official distributor of RBTS concerning the rotordynamics and fluid-film bearings software **ARMD™** in Europe with good contacts also to the Middle-East, North & South America, Asia, and Australia.

