

MACHINE DYNAMICS

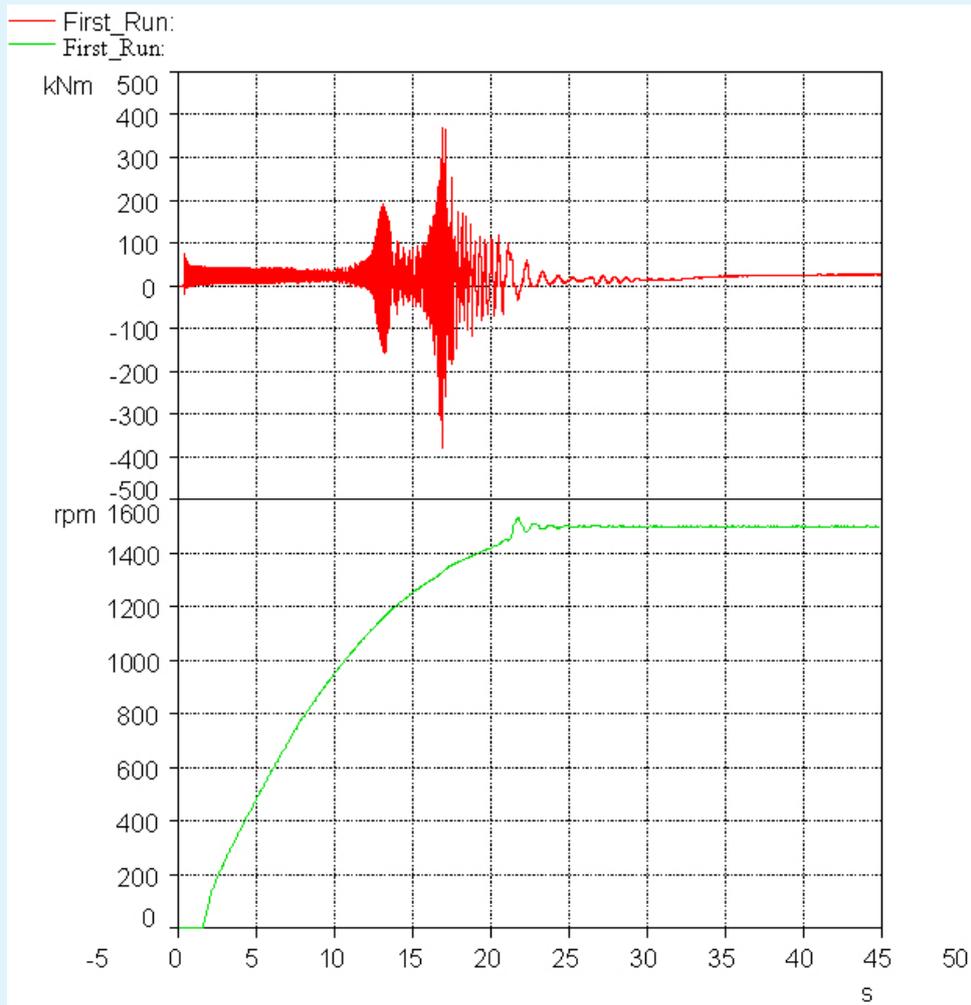
Torque measurement at a turbo compressor

At a 4-stage turbo compressor the thrust collar broke 4 times at a gear wheel. KÖTTER Consulting Engineers was asked to analyse the situation. The torque at the drive shaft between motor and gear was measured during start-up by means of strain gauges. To transfer the torque signal, a battery operated radio-telemetry was used.

The recorded data (figure 1) showed a strong alternating torque of up to ± 380 kNm at a speed of 1,150 min⁻¹. The maximum static drive moment was only 27 kNm.

For the design of a thrust collar, it is absolutely necessary to consider the alternating torques arising during the pressure process of a torsional natural frequency. After modifying the thrust collar accordingly, no more damages occurred.

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Torque curve and speed during start-up of a turbo compressor



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