

## Oil whip: A problem in slide bearings

Shaft vibrations are observed with a frequency of about 50% of rotational speed. This is caused by the so called “Oil Whip”. The shaft is “rolling” in the bearing and oscillating with certain amplitudes, depending on the speed, the size of the bearing, oil gap and oil viscosity. Amplitude and frequency gives the vibration velocity ( $v = 2 \cdot a \cdot \pi \cdot f$ ).

Most Babbitt lined slide bearings can withstand vibrations up to a velocity of 8 mm/s. Depending on the static load it can be less. In any case, it strongly influences the lifetime of the bearing.

There are some measures possible to be taken to prevent an “Oil Whip”:

- Modification of bearing clearance
- change of oil viscosity
- increase bearing temperature
- modification of surface geometry
- change of the load on the bearing, etc.

In any case, the measures to be taken depend on the design, load and operation conditions of the bearing and shall be suggested by ZELLER ENGINEERING.

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