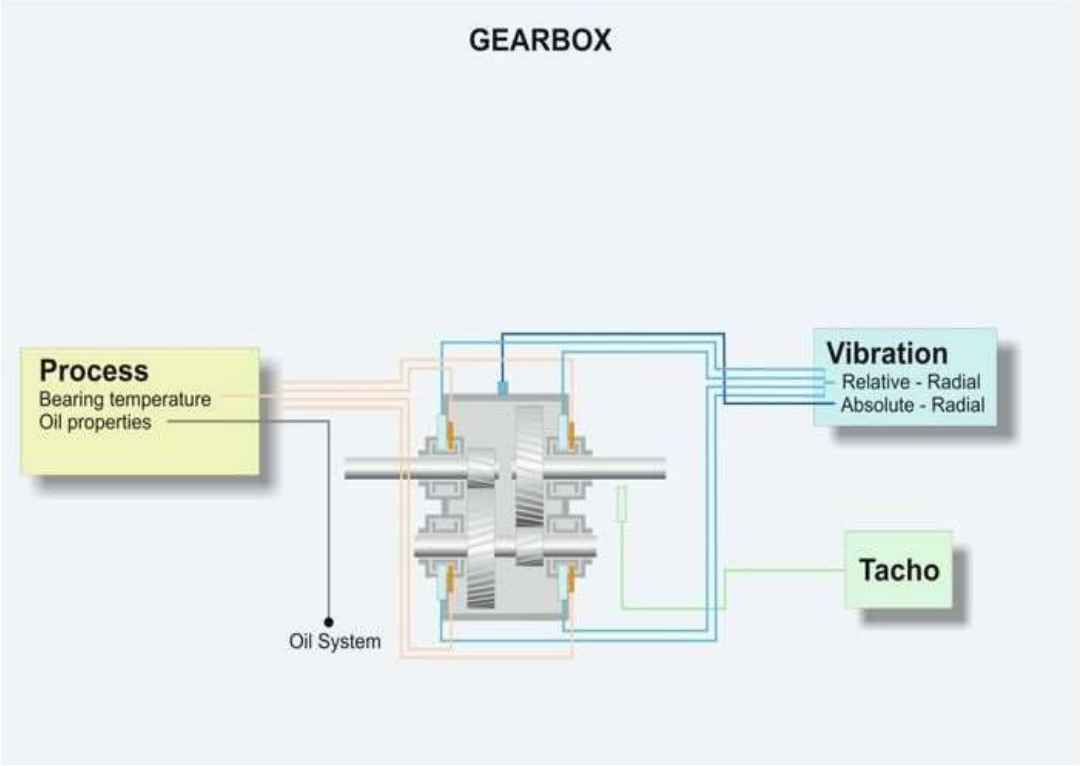
Brüel & Kjær Vibro
A member of the NSK Group

MONITORING STRATEGY OF LNG PLANT MACHINERY

GEARBOX

The gearbox is not a machine in itself, but a machine component for converting the rotational energy of the prime mover at one speed to the driven machine at another speed. The gearbox is extensively used in many industrial processes, and the specific monitoring strategy used depends on the application. The monitoring strategy example described in the images below is for the end flash compressor train gearbox.



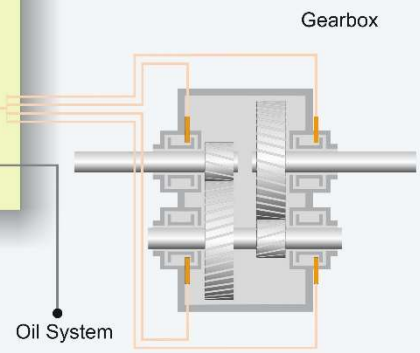
PROCESS MEASUREMENTS

Measurements

Process parameters
Support measurements to vibration monitoring.
Different types of sensors used.
Typical measurements:

Oil analysis — DC

Oil pressure and temp. — DC



Faults Detected

- Oil analysis and bearing temperature used for detecting bearing and gear tooth wear
- and damage
  Lubrication system faults

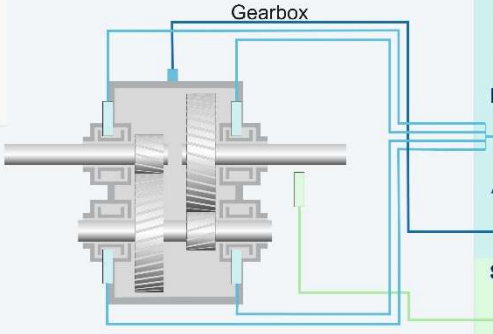
Other purposes for process measurements

- Correlation purposes with vibration.
- Triggering for more detailed analysis

VIBRATION MEASUREMENTS

Machine Faults

- Lack of lubrication
- Overheating
- Wear, looseness, rub, overloaded bearings
- Rotor misalignment, unbalance, bent rotor
- Rotor stiffness dissymetry
- Faulty oil, cooling system
- Broken rotor bar, broken end ring



Continuous Measurements

Relative Vibration
Radial — Smax — µm

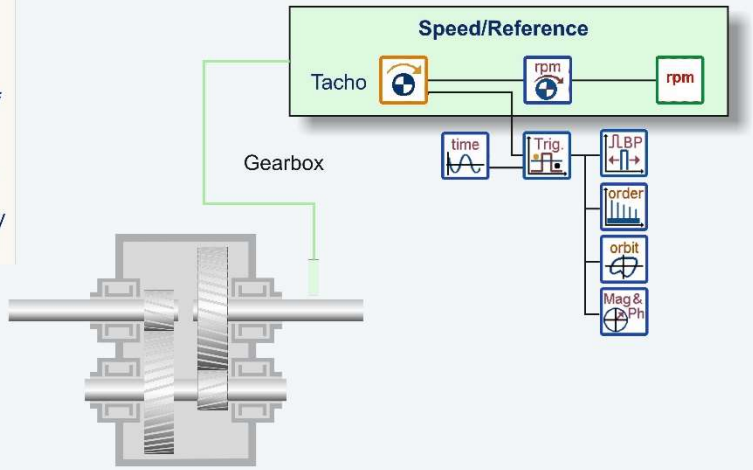
Absolute Vibration
Radial — BP — mm/s

Speed/Reference
Tacho — rpm — rpm

TACHO MEASUREMENT (SPEED, PHASE REFERENCE)

Purpose

- Measure speed
- Defining Machine states
- Trigger for starting all types of measurements
- Phase reference for dual vibration measurements, etc.
- Tracking for vectors and many other types of measurements



FAULT	VIBRATION	PROCESS (Machine)
Unbalance	x	
Misalignment	x	
Rotor rub	x	
Worn, damaged bearings	x	x
Mechanical looseness	x	
Oil and lubrication faults		x
Cracked shaft	x	
Leaky seals		x
Cracked, worn teeth	x	
Eccentricity	x	

For more information, visit **www.bkvibro.com**