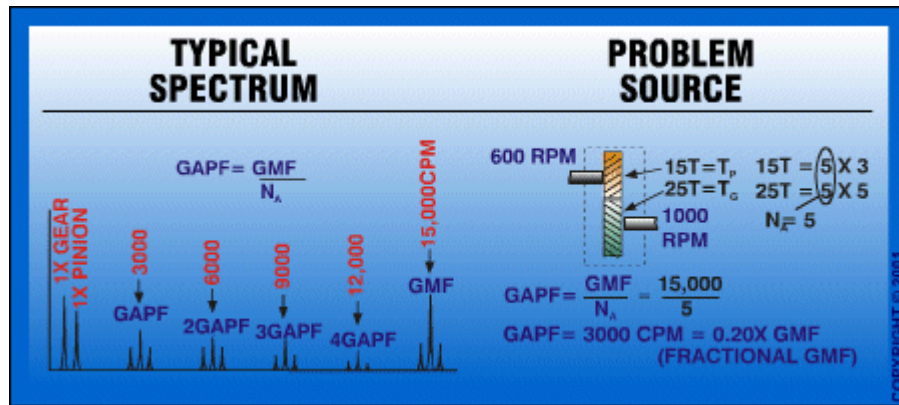


Technical Associates of Charlotte
TIP OF THE WEEK #31

GEARS - ASSEMBLY PHASE PROBLEMS

Extracted from: [INTERACTIVE VIBRATION DIAGNOSTIC CHART](#)



Gear Assembly Phase Frequency (GAPF) can result in Fractional Gear Mesh Frequencies (if $N_A > 1$). It literally means (T_G/N_A) gear teeth will contact (T_P/N_A) pinion teeth and will generate N_A wear patterns, where N_A in a given tooth combination equals the product of prime factors common to the number of teeth on the gear and pinion ($N_A =$ Assembly Phase Factor). GAPF (or harmonics) can show up right from the beginning if there were manufacturing problems. Also, its sudden appearance in a periodic survey spectrum can indicate damage if contaminate particles pass through the mesh, resulting in damage to the teeth in mesh at the time of ingestion just as they enter and leave meshing or that gears have been reoriented.