KISSsoft Advanced Training

Gearbox Design and Analysis

3 Days

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Sharing Knowledge
Day 1

Objectives of the Day

- Setup of the KISSsys model
- Dimensioning of the gears
- Modelling of shafts and bearings
- Calculation of shaft strength

KISSsys

- Kinematic structure in KISSsys
- Several ways to setup KISSsys models

Gears

- Sizing of gears with KISSsys

Shaft Calculation

- Modelling of coaxial shafts
- Shaft strength calculation according to DIN 743

KISSsys

- 3D View and positioning of shafts
- User interface and samples for simple programming code

Day 2

Objectives of the Day

- Optimisation of gears
- Rating of gears according to several criteria
- Cylindrical and bevel gears
- Bearings lifetime
- Contact analysis

Cylindrical Gears

- Basic data and reference profile
- Pre-manufacturing and finishing
- Required safeties
- Calculation of root and flank strength safeties
- Other criteria like tooth flank fracture and scuffing
- Optimisation of macro geometry
- Rough and fine sizing
Bearing Lifetime

- Bearing service life according to classical method or inner geometry according to ISO 281
- Bearing service life according to ISO/TS 16281
- Modified service life considering influence of lubricant

Bevel Gears

- Conventional cutting methods
- Cone types of bevel and hypoid gears
- Geometry calculation, virtual cylindrical gear
- Rating according to several standards
- Strength calculation, different standards
- Rough and fine sizing
- Typical parameters for dimensioning
- Optimisation of macro geometry
- 3D models and geometry options
- Determination of EPG displacements with KISSsys
- Contact analysis

Day 3

Objectives of the Day

- Contact analysis
- System calculations
- Efficiency
- Load spectra
- Calculation of housing deformation (using GPK model)

Contact Analysis of Cylindrical Gears

- Face load distribution according to ISO 6336-1, Annex E
- Contact analysis under load
- Flank and profile modifications
- Noise and strength optimization
- Face load distribution in planetary stage gearboxes
- Planet carrier deformation with FE

System Based Calculations

- Efficiency calculation and thermal rating according to ISO/TR 14179
- Load spectra calculation, damages to gears, shafts and bearings
- Reliability calculation
- Modal analysis and Forced Response
- Housing deformation (with GPK model)