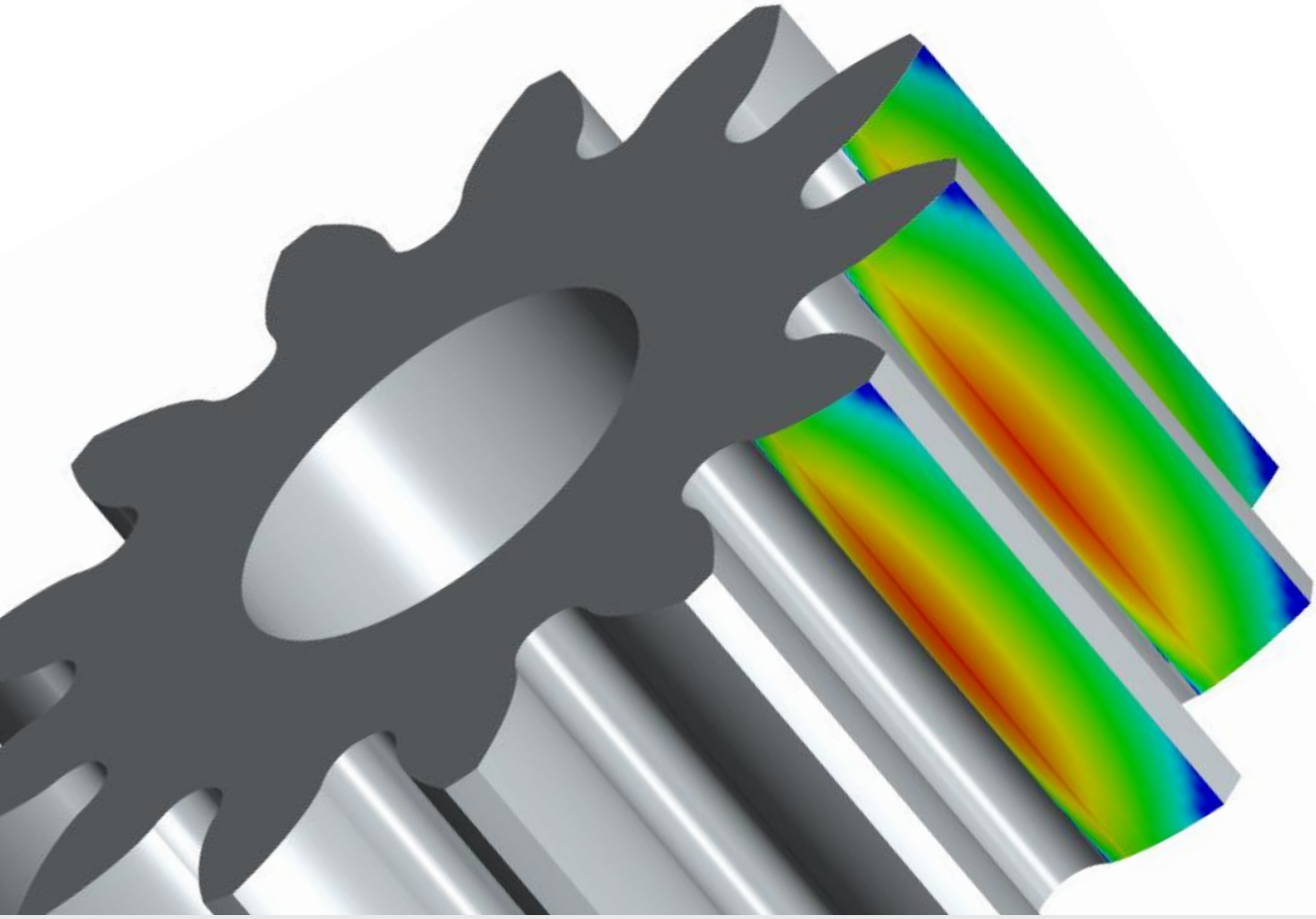
Drivetrain Design Solutions KISSsoft

KISSsoft Live Stream Training

Special: Contact Analysis for Cylindrical Gears, Bevel Gears and Planetary Systems

December 6-8, 2022



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Sharing Knowledge

The below schedule is shown in time zone CET 02:00 pm – 06:00 pm (Brussels)

Session 1: December 6, 2022

02:00 – 02:10	Welcome
02:10 – 04:00	Face load factor according to ISO 6336-1 (Method C, Annex E) part 1
04:00 – 04:20	Break
04:20 – 06:00	Face load factor according to ISO 6336-1 (Method C, Annex E) part 2

Session 2: December 7, 2022

02:00 – 02:10	Day 1 recap
02:10 – 04:00	Contact analysis: Theory of contact stiffness calculation; interpretation of results, KISSsoft UI, part 1
04:00 – 04:20	Break
04:20 – 06:00	Contact analysis: Theory of contact stiffness calculation; interpretation of results, KISSsoft UI, part 2

Session 3: December 8, 2022

02:00 – 02:10	Day 2 recap
02:10 – 04:00	Contact analysis: more results, specialties, planetary gears, bevel gears; part 1
04:00 – 04:20	Break
04:20 – 06:00	Contact analysis: more results, specialties, planetary gears, bevel gears; part 2

Topics in the "Theory" Part

Introduction to the Theory of Face Load Calculation

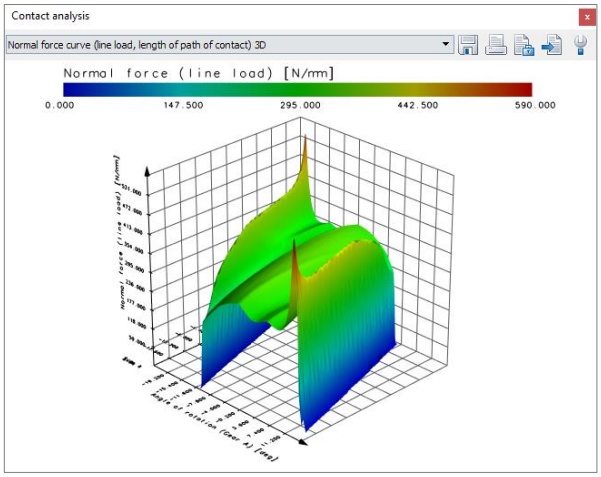
- Face load factor KHβ according to ISO 6336-1, Appendix E
- Taking into account manufacturing allowances in KHβ calculation according to ISO 6336-1, Appendix E
- Importance of tooth pair spring stiffness
- Characteristics of tooth pair spring stiffness according to ISO 6336-1
- Use of face load factors in load spectrum calculation

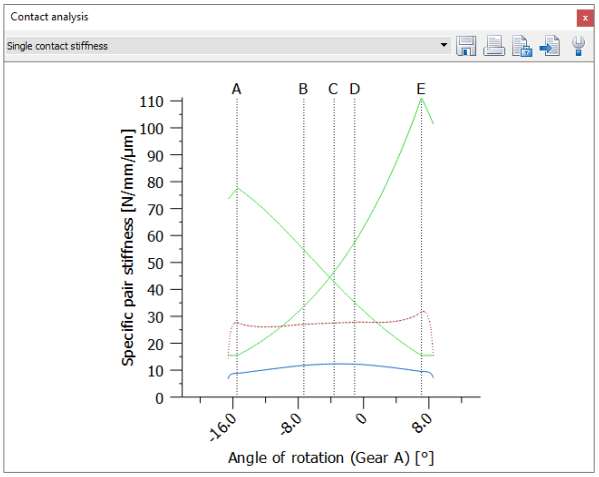
Theory of Stiffness Calculation

- Tooth pair spring stiffness according to the Weber/Banaschek analytical method
- Importance of system, tangent and secant stiffness
- Possible methods for calculating contact stiffness
- Importance of the correction coefficient for Hertzian stiffness
- Differences to the FE approach and comparison with other programs commonly used in Germany
- Defining the slice coupling factor
- Approximation and effects of helical gear teeth
- Defining the border weakening factor and its consequences on the buttressing effect

Interpretation of the most important Results

- Importance and interpretation of the transmission error
- Effect of transverse contact ratio and overlap ratio on the transmission error
- Identification of entry and exit impact
- Meaning of change of normal angle at the beginning of the profile modification
- How to identify and resolve numerical problems
- Importance and interpretation of the progressions of normal force, stress and kinematics





Topics in the "Extended Contact Analysis, Planetary Systems, Sizing and Optimization" Part

Extended Contact Analysis

- Defining the gear/planetary gear unit coordinate systems
- Defining the shaft coordinate system
- Importance of the inclination/deviation error of axis
- Taking the shaft calculation into account
- Problems of consistency in the shaft calculation
- KISSsys as an effective data management tool for designing/analyzing entire multi-stage drives

Contact Analysis with Planetary Gear Units

- Analytical model for planetary gear unit calculation
- Options and limits of planetary gear unit calculation
- Importance of calculating iterative load distribution
- Importance and correct configuration of axis alignment

Contact Analysis with Bevel Gear Units

- Analytical model for bevel gear unit calculation

Interpretation of the most important Results for Planetary Gear Units

- Meaning and interpretation of planetary stage transmission error
- Load distribution for planets

Sizing and Optimization of Modifications

- Defining profile and tooth trace modifications and their effects
- Sizing and optimizing modifications manually
- Sizing and optimizing modifications for load spectra
- How to use modification sizing effectively
- How to use iterative wear calculation