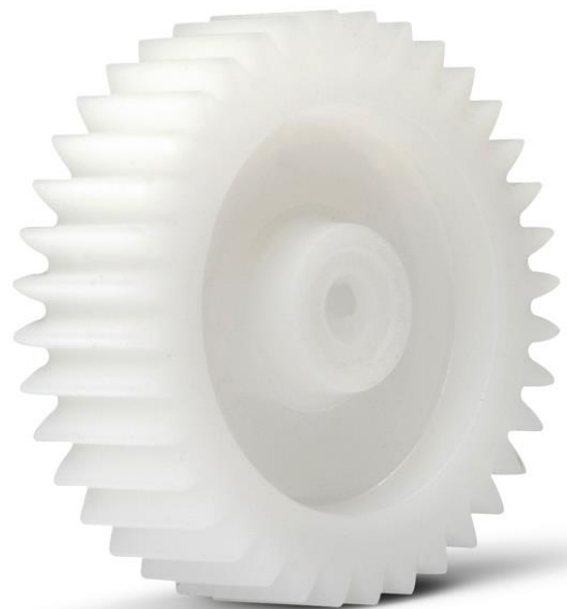


KISSsoft Live Stream Training

Special: Fine Pitch Gears in Plastic and Sintered Material

May 8-11, 2023



The below schedule is shown in time zone CEST 2:00 pm – 6:00 pm (Brussels)

Session 1: May 8, 2023

2:00 – 2:15 pm	Introduction
2:15 – 3:40 pm	Strength calculation
3:40 – 4:00 pm	Break
4:00 – 6:00 pm	Strength calculation
Exercises	Plastic gear pair (approx. 30 min)

Session 2: May 9, 2023

2:00 – 2:10 pm	Exercise follow up
2:10 – 3:40 pm	Strength calculation
3:40 – 4:00 pm	Break
4:00 – 6:00 pm	Wear calculation
Exercises	Plastic gear pair (approx. 30 min)

Session3: May 10, 2023

2:00 – 2:10 pm	Exercise follow up
2:10 – 3:40 pm	Backlash calculation
3:40 – 4:00 pm	Break
4:00 – 6:00 pm	Tooth form calculation
Exercises	Mold calculation (approx. 30 min)

Session 4: May 11, 2023

2:00 – 2:10 pm	Exercise follow up
2:10 – 3:40 pm	Crossed helical gears
3:40 – 4:00 pm	Break
4:00 – 6:00 pm	Various topics
Exercises	Crossed helical gear (approx. 30 min)

General Topics

- General and tribological properties of plastic and sintered materials
- Typical failure modes of cylindrical and crossed helical gears
- Overview of materials implemented in KISSsoft
- Sizing functions in KISSsoft: rough, fine sizing and sizing of modifications
- Overview of calculation methods, differences VDI 2736 and old VDI 2545
- S-N curves (Woehler lines) for plastics and sinters: measurement and implementation into KISSsoft
- Safety factors: general recommendation, procedure to design plastic gears

Cylindrical Gear Calculation

- Strength calculation: static strength and lifetime calculations, load spectrum calculation, evaluation of results and reports
- Temperature calculation: theoretical background, measurement possibilities
- Wear calculation: theoretical background, methods in KISSsoft
- Contact analysis: background, general overview, result evaluation
- Noise optimization: main sources of noise, possible optimization procedures
- Operating backlash optimization: general inputs, interpretation of the results
- Tooth form calculation: tolerances, special tooth form modifications for small gears

Crossed Helical Gear Calculation

- Basic geometry and forces, differences between globoidal and cylindrical worm wheel
- Efficiency calculations, self-locking gear pairs
- Strength calculation: static and lifetime calculations, Tooth thickness optimization
- Wear calculation: method according to Pech and its limits
- Graphical contact analysis: visualization with 3D skin model

Calculating the Injection Mold

The theoretical tooth form, which has been optimized as described above, is calculated using the mid-value of the tooth thickness deviations. The result is the required tooth form, which can be transferred to a CAD program via the DXF or IGES interface. In further calculations, you can also consider the manufacturing processes:

- Modifying the injection mold to compensate for shrinkage/expansion
- Display the eroding wire / spark gap
- Monitoring the wire diameter during erosion process

Plastics Manager

- General overview
- How to measure gear fatigue data on a test rig
- Statistical evaluation of measured data

Various

- Asymmetric gears: design possibilities, advantages and limitations
- Non-circular gears: design possibilities, advantages and limitations
- Importing tooth form from a .dxf format