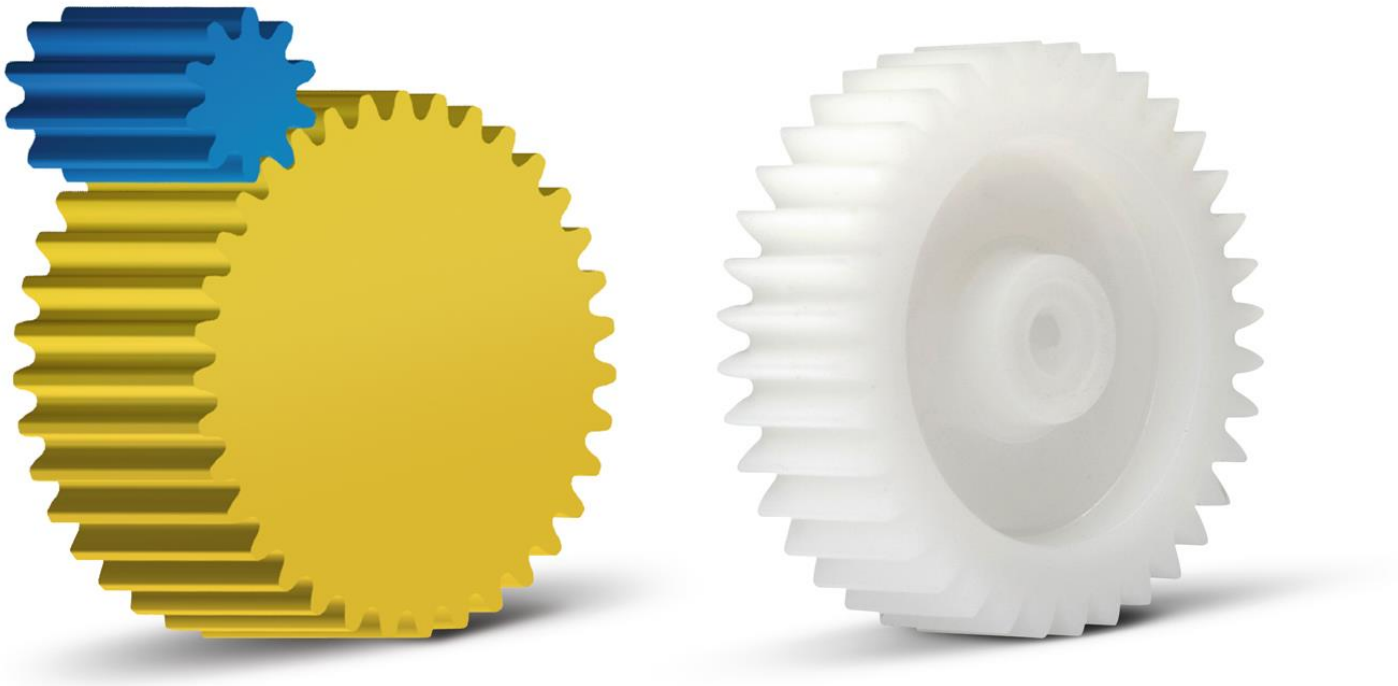
Drivetrain Design Solutions KISSsoft

KISSsoft Live Stream Training

Fine Pitch Gears in Plastic or Sinter Material (Special)

November 22-25, 2021



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Sharing Knowledge

Day 1 - November 22, 2021

08:30 – 08:45	Introduction
08:45 – 10:10	Strength calculation
10:10 – 10:30	Break
10:30 – 12:00	Strength calculation
Exercises	**“Plastic gear pair”**
16:00 – 17:00	Questions

Day 2 - November 23, 2021

08:30 – 08:40	Exercise follow up
08:40 – 10:10	Strength calculation
10:10 – 10:30	Break
10:30 – 12:00	Wear calculation
Exercises	**“Plastic gear pair”**
16:00 – 17:00	Questions

Day 3 - November 24, 2021

08:30 – 08:40	Exercise follow up
08:40 – 10:10	Backlash calculation
10:10 – 10:30	Break
10:30 – 12:00	Tooth form calculation
Exercises	**“Mold calculation”**
16:00 – 17:00	Questions

Day 4 - November 25, 2021

08:30 – 08:40	Exercise follow up
08:40 – 10:10	Crossed helical gears
10:10 – 10:30	Break
10:30 – 12:00	Various topics

General Topics

- General and tribological properties of plastic and sinter 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 as a .dxf