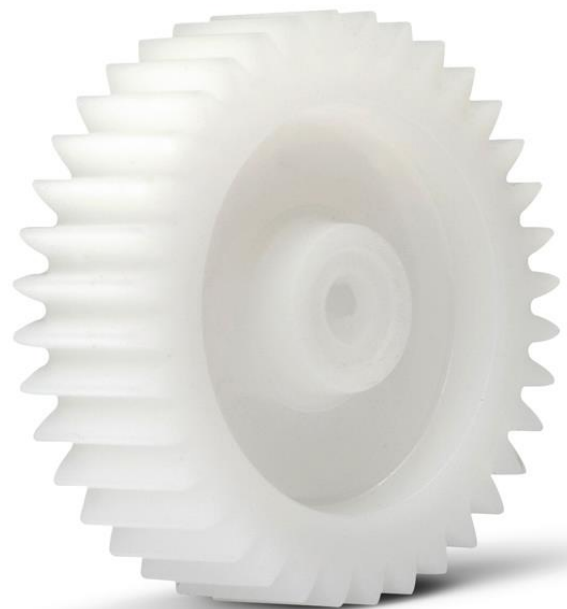


# KISSsoft Live Stream Training

Special: Fine Pitch Gears in Plastic or Sinter Material

May 9-12, 2022



<b>Session 1:</b>	<b>May 9, 2022</b>
02:00 – 02:15	Introduction
02:15 – 03:40	Strength calculation
03:40 – 04:00	Break
04:00 – 06:00	Strength calculation
<b>Exercises</b>	<b>“Plastic gear pair” (approx. 30 min)</b>

<b>Session 2:</b>	<b>May 10, 2022</b>
02:00 – 02:10	Exercise follow up
02:10 – 03:40	Strength calculation
03:40 – 04:00	Break
04:00 – 06:00	Wear calculation
<b>Exercises</b>	<b>“Plastic gear pair” (approx. 30 min)</b>

<b>Session 3:</b>	<b>May 11, 2022</b>
02:00 – 02:10	Exercise follow up
02:10 – 03:40	Backlash calculation
03:40 – 04:00	Break
04:00 – 06:00	Tooth form calculation
<b>Exercises</b>	<b>“Mold calculation” (approx. 30 min)</b>

<b>Session 4:</b>	<b>May 12, 2022</b>
02:00 – 02:10	Exercise follow up
02:10 – 03:40	Crossed helical gears
03:40 – 04:00	Break
04:00 – 06:00	Various topics
<b>Exercises</b>	<b>“Crossed helical gear” (approx. 30 min)</b>

## 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 from a .dxf format