TOPOLOGICAL GRINDING

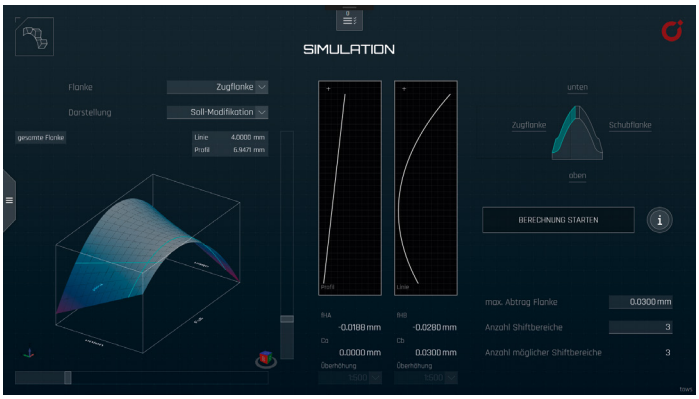
generating and profile grinding

KAPP NILES

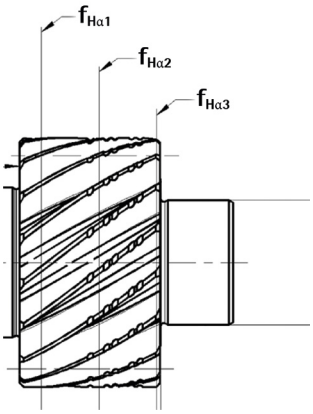
With the continued development of gears with respect to load capacity and NVH behaviour, the topology of the tooth flank as a whole is increasingly at the centre of attention. Avoiding or even intentionally influencing of process-dependent bias presents a tough challenge for the production of gears.

In order to apply topological generating and profile grinding in serial production, KAPP NILES focused primarily on an operator-friendly user interface and the calculation of all necessary data, as well as the dressing and grinding paths in the machine.

After entering the gear data, an editor with graphical interface allows modifications of profile, flank and bias. The machine operator decides between topological generating or profile grinding depending on the type of tool. In this way, the machine control has all the necessary data in order to subsequently calculate the dressing and grinding paths for the corresponding process. The operator is then able to assess the processing results with the help of a process simulation generated by the machine control, and subsequently execute the grinding process.



3D-simulation

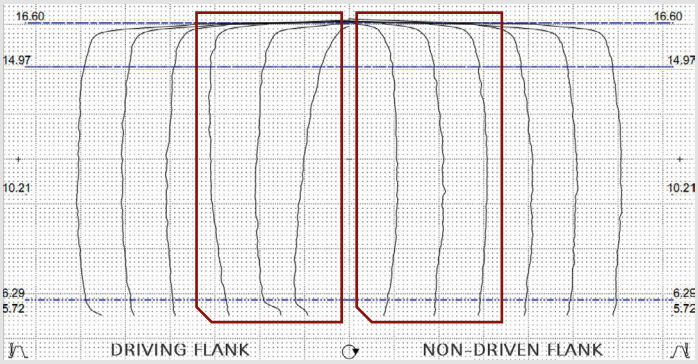


gear modification

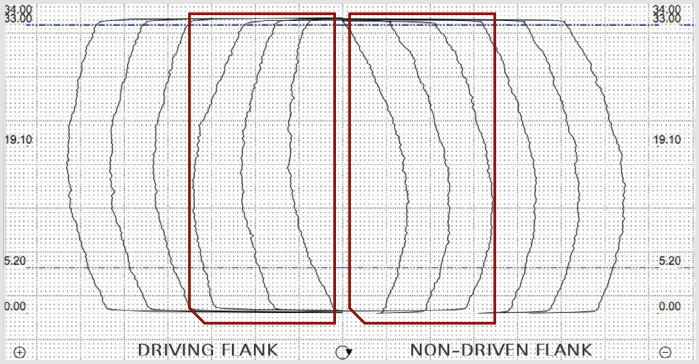
Topological profile grinding can be effected with a three, four or five-axis interpolation. The number of the axes involved in the processing can be influenced by the machine operator. Both, single-flank and double-flank processing is possible. This technology allows to generate all conventional gear modifications.

In the case of **topological generating grinding**, the required modifications are produced in part by the grinding worm geometry and partly by the grinding process itself. Using a multi-axial interpolation between dressing tool and grinding worm during a two-flank dressing process, the grinding worm is modified. This allows the grinding worm to produce crowning and bias by moving simultaneously in the direction of the tooth width as well as in the direction of its rotational axis during the grinding process.

Machining example: Helical gear | Driving flank with defined bias | Non-driven flank bias free



Profile measurement



Lead measurement

IFD_100_Topologisches_Schleifen_en Stand: 21.04.2022 | 07.22.

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