

Abstract for British Gear Association's Gears 2021 Nov 16-18, 2021, Online "Hard Finishing with In-Process Gear Inspection"

*Dr. Antoine Türich
Director Product Management, Hard Finishing Solutions
Gleason Corporation*

*Klaus Deininger
International Sales Manager
Gleason Metrology Systems*

Hard Finishing Cell with In-Process Gear Inspection for e-Drive Gears

In conventional gear manufacturing quality control is carried out randomly, with only a few parts actually inspected. This is mainly due to the significantly longer measuring times in comparison to the actual production time, and limited overall measuring capacity to cope with increased inspection demands. In order to guarantee process reliability, statistics are instead used to validate the process, resulting in a significant reduction of the manufacturing tolerance in comparison to the drawing tolerance. In addition, constantly increasing power density requirements and the growing importance of excellent noise behavior of transmissions, especially in new e-drive concepts, has resulted in very tight tolerances. Relying on statistical evaluation makes the production of such gears more challenging and expensive.

A new inspection concept developed by Gleason and called the GRSL (Gear Rolling System with Integrated Laser Technology) features a combination of double flank roll testing and laser scanning. With this completely new approach inspection now can be performed without adding to the time required for the hard finishing operation. As a result, 100% in-process inspection has become a reality, eliminating the need for statistical process evaluation and allowing for the use of the actual drawing tolerances for process evaluation.

Furthermore, Gleason has integrated this new inspection technology with its latest hard finishing machine to create the HFC (Hard Finishing Cell) which features an automated Closed Loop correction system.

What is new?

This paper will present a revolutionary concept for the hard finishing of gears including 100% in-process inspection. The inspection of gears within the required hard finishing time opens up completely new possibilities for process control.

Publications:

Türich, A.: *Inside the Hard Finishing Cell*, Gear Technology May 2020

Türich, A.: *Verzähnen inklusive 100%-Prüfung*, WB Werkstatt und Betrieb, 5/2020