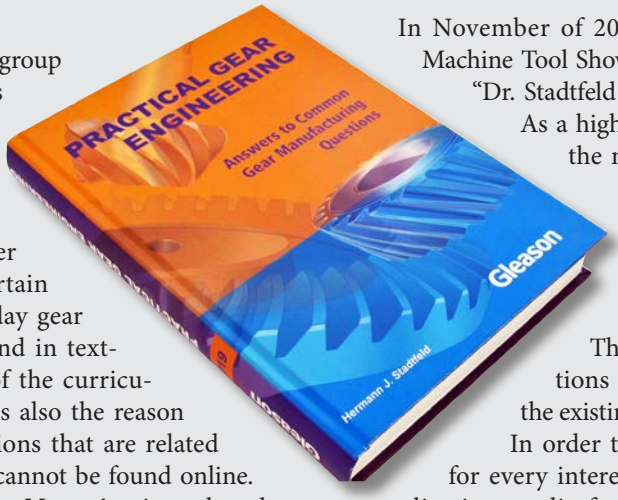
Practical Gear Engineering
Answers to Common Gear Manufacturing Questions

By Dr. Hermann J. Stadtfeld

New book from Gleason's Vice President Bevel Gear Technology will be exclusively excerpted in Gear Technology magazine, starting with the article beginning on page 61.

Foreword



Gear engineers, just like any other group of our society, like to find answers online if they have a technical question. Those professional experts mainly look for answers to either quite uncommon complex problems, or they are younger Engineers who haven't faced a certain task yet. Many solutions to everyday gear engineering problems are not found in textbooks and are not typically part of the curriculum in engineering colleges. This is also the reason why most of the answers to questions that are related to gear design and manufacturing cannot be found online. To fill this void, ***Gear Technology Magazine*** introduced a series which is called "Ask the Expert." Gear engineers and gear manufacturing technicians from all over the world post the question on their website. Unlike posting a question in an online forum and receiving some answers over several days, *Gear Technology Magazine* searches in their files of experts in different aspects of gear design and manufacturing, and asks one or several of their contacts to provide an answer to a specific question. If the topic seems relevant for a larger audience, then the answer(s) are published in their next printed and online issue. This also means that if the same or a similar question is asked online, the search engine will find the answer in the online issue of *Gear Technology Magazine (geartechnology.com)*. After some time, a library of frequently asked questions is available for the benefit of gear experts in manufacturing and academia.

I have been asked frequently by the magazine to provide answers for the "Ask the Expert" column, which made me think about how useful it would be if also some of the answers to the questions which I am asked daily by engineers worldwide would be available as a PowerPoint presentation or as a mini paper. Until now those answers only exist in the email responses — often with hand-drawn graphics — supporting the written explanations. About three years ago, I began to copy questions and my answers to all topics which might be relevant for a broader audience in a special folder. When a question was repeated, then I copied the text in a Word document and I created a "mini paper" addressing the topic. As this library of answers reached a volume of several hundred pages, the idea was born to compile all of the collected mini papers in a book with the title *Practical Gear Engineering*. An interesting aspect to this book idea was the fact that the topics would cover practical answers and guidelines for cylindrical and bevel gear technology questions.

In November of 2018, at the Japanese International Machine Tool Show JIMTOF in Tokyo, the traditional "Dr. Stadtfeld Day" was held for the fourth time. As a highlight of the seminar, a prototype of the new book was distributed as a preprint to all attendees of the seminar. The questions were asked to the audience "Do you find such a book useful?" and "Do you like to see additional topic to be covered?" The result was a list of 10 more questions whose answers had been added to the existing volume.

In order to make this book readily available for every interested gear engineer, the main publication media format is as an e-book. The e-book is available for purchase online. However, it is also possible to obtain the answers to specific questions on the Gleason website. For those with a fondness for having a bound book as reference on their office book shelf, a hard cover version of this book is available as well.

Practical Gear Engineering covers 41 topics on 395 pages, and has 325 figures — which provide a better understanding and easier memorization of the covered material. The chapters are not organized by cylindrical and bevel gears, but rather by general topic. The content is divided in 5 parts:

Part 1 — Gear Design and Drawings
Part 2 — Manufacturing of Gears
Part 3 — Optimization
Part 4 — Measurement & Testing
Part 5 — Prototyping

I would like to thank Mr. John J. Perrotti, President and CEO of the Gleason Corporation, for the support during the realization of this project. I am also thankful to the Publisher and the Editors of *Gear Technology Magazine* for inspiring this book.

For the support during the realization of this book with many discussions and valuable suggestions to the different technologies covered, I like to thank my team of experts in Research & Development at The Gleason Works.

My special thanks go to the people who acted as editors of this book. My wife Hedy K. Stadtfeld; Mr. Theodore J. Krenzer, Ret. Director Gear Theory; Mr. Robert L. McDowell, Senior Patent Agent; and Dr. Haris Ligata, Manager Process Development, who spent many hours to improve the clarity and readability of the book with painstaking attention to facts and details.

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