

# TECHNOLOGY

## Brewing & Malting

Chapter 11 co-written by  
Dr. H.-J. Manger

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5<sup>th</sup> revised English edition

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Wolfgang Kunze

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4 weeks of maturation time

1 experienced glance

Harald Biewer  
Master brewer

0,0 compromise

Combining the best raw materials and the dedication of our brew masters results in the high quality of Bitburger Premium Beer, Germany's # 1 selling draft beer.

*Bitte ein Bit*



## Introduction to the 5<sup>th</sup> English edition of “Technology Brewing and Malting”



In 2012, around 1.95 billion hectolitres of beer were brewed and drunk in the five continents of the world, and the trend is increasing. Descriptions of the production of beer can be traced back 5000 years. This means that beer is a cultural asset, which has found friends the world over and as a connective element, provides vitality and enjoyment. At the same time, beer is beneficial to mind and body. Medical research has in the meantime irrevocably proven that moderate beer consumption has a positive impact on human health.

All of this means that we brewers have the duty to place high demands on the quality of raw materials, plants, processes, and last but not least, the qualifications of the employees. In Germany, with its approximate 1300 breweries and 5000 beer brands, brewing science and brewing education have always been very important. Brewing specific research and development – inter alia at the universities of Weihenstephan and Berlin – has led to significant progress. And last but not least, the German Reinheitsgebot restricting the ingredients to natural raw materials, water, hops, malt and yeast, has inspired the creativity of our brewers and engineers.

The resulting extensive knowledge summarised in the current volume of “Technol-

ogy Brewing and Malting”. Since the first edition in 1961, about 55000 copies have been sold. With translations into Hungarian, Polish, English, Serbo-Croatian, Chinese, Russian and Spanish, the original German edition has become integral to the practice of brewing the world over.

Knowledge is dynamic. Research and development occur continuously, in the brewing industry too of course. This is reflected in the new 5<sup>th</sup> English edition of “Technology Brewing and Malting” which has been revised in a lot of details and has been upgraded with a new and modern layout.

With numerous diagrams and his inimitable didactic style, the author has again succeeded in presenting complex processes in a clear manner. This latest edition thus demonstrates the reputation of “Technology Brewing and Malting” as the globally leading standard work for professional brewers and maltsters.

A handwritten signature in blue ink, appearing to read 'Axel Th. Simon', with a stylized flourish at the end.

Dr. Ing. Axel Th. Simon  
President  
VLB Berlin e.V.

## Introduction by the Author



This book was originally conceived as a textbook for the training of brewers and maltsters and has served this aim well for decades. It has in the meantime become an important source of information and object of study for a considerably larger market. Since the publication of the first edition of this book in 1961, more than a half a century has passed. During this time there have been revolutionary changes in technical expertise and technology in beer and malt production. This is expressed in the many editions of this book in many languages that have appeared over the years.

Such a comprehensive book of course has many kind helpers. I would like to thank my friends of many years, Professor Dr. Gerolf Annemüller and Dr. Hans Manger for the many references and good advice, as well as the marvellous support from many employees at VLB, my alma mater, in particular Professor Dr. Reinhold Schildbach, Professor Dr. Frank Rath, Dr. Roland Pahl and Dr. Roland Folz. Particular thanks go to Professor Dr. Werner Back and Prof. Dr. Martin Krottenthaler in Freising-Weihenstephan. Special thanks are also extended to representatives of the brewery machinery and supply industries for the generous provision of documentation which I requested, in particular Dr. Hartmut Evers (KHS), Peter Gattermeyer (Krones), Klaus Wasmuth (Ziemann

International) and many other employees from companies I spoke to. Without their constructive support, this updated edition could never have appeared.

I would also like to particularly thank the management at VLB, and especially Olaf Hendel for his tremendous support in the preparation of the new edition. I would like to extend my particular gratitude to my graphic designer of many years, Ms. Anne Kulesa, who has constructively followed my at times very headstrong ideas regarding the layout of diagrams and, despite the ever increasing amount of graphical material, has given this edition a very pleasing appearance.

A handwritten signature in black ink, reading 'Wolfgang Kunze'. The signature is written in a cursive, somewhat stylized script.

Wolfgang Kunze

July 2014

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