

Content of the Handbook

Handbook on Biomass Gasification consist of the following chapters:

1. Introduction
2. Success stories
3. Gasification and combustion kinetics of biomass chars
4. Standardisation and continuous on-line tar measurement
5. Waste to energy through gasification
6. A review of syngas cleaning technologies
7. Gasification of biomass derived intermediates in entrained flow gasifiers
8. Entrained Flow Gasification of Bio-Oil for Syngas
9. Biomass gasification in supercritical water
10. BioSNG - A renewable substitute for natural gas
11. Waste to energy through gasification
12. Permitting and utility interconnect of biomass gasification systems - perspective from the United States
13. Multiple-stage gasification - tar cracking gasifiers
14. Field monitoring results in developing countries
15. Health, safety and environmental aspects of biomass gasification
16. Legal requirements towards HSE for biomass gasification plants
17. Theoretical Aspects of Risk Assessment
18. Potential hazards and good design principles
19. Improving the public perception of bioenergy
20. Status of Thermochemical Gasification of Biomass in Germany
21. Status of Thermochemical Gasification of Biomass in China



Handbook Biomass Gasification - Second Edition

Biomass gasification is the thermal conversion of a heterogeneous solid material into a gaseous fuel intermediate, consisting mainly of carbonmonoxide and hydrogen, that can be used for heating, power production, liquid fuels production and chemicals. The use of biomass for the production of energy, fuels, chemicals and materials is a key issue of sustainable development. Biomass gasification has the potential to offer a major contribution to meeting the international targets for CO₂ mitigation.

The technology of biomass gasification is under pressure because it does not fully comply with the high expectations of the last decades. Since the publication of the first Handbook Biomass Gasification in 2005, quite some technical progress has been made in the development of biomass gasification, but from a commercial perspective the success is rather limited. The current interest in establishing a biobased economy could give another boost to gasification. Its therefore of importance to review the state of technology again and describe the latest Success Stories in biomass gasification.

Following the first edition, this Handbook is the successor. It contains updates of earlier topics, but also new chapters which hopefully are of interest to the gasification community. This second edition is intended to be a useful guide both to newcomers and to persons already involved in research and technology development, and active in industry, policy development, as well as investors and end-users.

The preparation of the Handbook is made possible by the voluntary contribution of respected international experts regarding various aspects of biomass gasification. Hopefully this book will become a valuable tool in disseminating knowledge and helping develop biomass gasification further to an efficient and sustainable commercial technology.

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