CONVERTER PRODUCTION OF STEEL
THEORY, TECHNOLOGY, QUALITY OF STEEL,
THE FACILITIES' DESIGN, RECIRCULATION OF MATERIALS
AND ENVIRONMENTAL PROTECTION

Approved of by Ministry of science
and education of Ukraine as a textbook
for students of higher educational
establishments of “Iron and steel
metallurgy” speciality.

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The interaction between blasts of oxidizing gases and molten converter pool at various methods of blowing was investigated from the point of view of modern science. Described were the oxidizing processes in the interaction area, the dynamics of decontamination processes during the converter redistribution as well as slag formation and iron scrap melting in the pool and heat processes occurring during metal blowing inside the converter. The essence of modern modifications of the bottom and combined oxygen blowing were described. Also described were methods of increasing the quality of metal. Considered was the design of converters, refractory lining service and auxiliary facilities.

The problem of purification of outgoing converter gases and utilization of their heat was described. Also described were the facilities of modern steel-making shops, their units and process decisions, regarding recirculation of materials and environmental protection.

The textbook may be useful for students of institutes and departments of metallurgy as well as for iron and steel engineers, machine builders and workers of research and design institutes.

The textbook was approved of by the Ministry of science and education of Ukraine as a textbook for students of higher educational establishments on 23.10.2003, No14/18.2-1707.
FOREWORD

More than half of century has passed since production of steel oxygen converters was launched. The specialists consider that these principally new technologies have now become quite mature and periods of their furious development have now turned into the stage of relatively quiet perfection of some major elements of the process and the facilities. The complex: external treatment of cast iron-converter-out of furnace steel treatment-continuous casting, with close links between these components possesses unlimited possibilities for solving the most important tasks of our time-drastic improvement of the quality of metal and environmental protection, such capabilities out of the question for open-hearth production of steel and production of steel in electric steel smelting shops. Various scientists from Ukraine made a great contribution into the converter method of steel production, including the authors of this textbook, professors B.M. Boychenko, V.B. Okhotskiy and P.S. Khurashin, who are distinguished specialists in this field of knowledge. National academy of metallurgy of Ukraine and Priazovskiy state technical university are in the front lines of training engineers and scientists for metallurgy. One of the examples of the enormous work that these higher educational establishments pursue is the textbook:"Converter steel production: theory, technology, quality of steel, the facilities’ design, materials recirculation and environmental protection", prepared for publishing. The previous textbook on the theory and practice of converter processes, written by V.I. Baptizmanskiy, M. Y. Medzhibozhskiy and B.V. Okhotskiy 20 years ago did well for training of qualified steel smelters and won a wide recognition in the country and abroad.

The new textbook combines quite well the modern theory and practice, the chapters, describing numerous up-to-date converter processes were enriched with new materials that include their optimization, control etc. The authors are renowned leaders in development of such processes. I believe that the issue of the new textbook will promote training of highly qualified engineers-metallurgists and would like to wish the authors new successes in their creative labour.

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