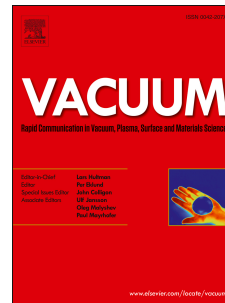


Accepted Manuscript

Circulation flow rate and decarburization in the RH degasser under low atmospheric pressure

Gujun Chen, Shengping He



PII: S0042-207X(18)30423-8

DOI: [10.1016/j.vacuum.2018.04.007](https://doi.org/10.1016/j.vacuum.2018.04.007)

Reference: VAC 7912

To appear in: *Vacuum*

Received Date: 19 March 2018

Revised Date: 28 March 2018

Accepted Date: 4 April 2018

Please cite this article as: Chen G, He S, Circulation flow rate and decarburization in the RH degasser under low atmospheric pressure, *Vacuum* (2018), doi: 10.1016/j.vacuum.2018.04.007.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Circulation Flow Rate and Decarburization in the RH Degasser under Low Atmospheric Pressure

Gujun Chen*, Shengping He

Gujun Chen* (*corresponding author*), Lecturer, chengujun90@163.com, College of Mechanical and Electrical Engineering, Yangtze Normal University, China, zip code: 408100;

Shengping He, Associate Professor, heshp@cqu.edu.cn, College of Materials Science and Engineering, Chongqing University, China, zip code: 400044;

Abstract: The pressure difference between the atmosphere and vacuum vessel is the driving force to make the molten steel to be suctioned into the RH vacuum vessel where decarburization occurs. The circulation flow rate of molten steel has a decisive influence on the decarburization efficiency. In this work, a VOF–DPM coupled model has been developed to investigate the multiphase flow in the RH degasser, and a decarburization model has been built to predict the variation of [C] in molten steel during degassing. Based on the created models, the influence of atmospheric pressure and snorkel immersed depth on circulation flow rate and decarburization has been clarified. The calculated circulation flow rate and decarburization rate agree well with the measured results. The result indicates that the decarburization of the RH degasser under low atmospheric pressure at high altitude will be significantly weakened due to that the drop of atmospheric pressure will remarkably decrease the circulation flow rate of molten steel. The snorkel immersed depth is suggested to be increased from 0.5 to 0.75 m to increase the circulation flow rate from 90.5 to 120.9 ton/min and thereby decrease the [C] in molten steel after degassing from 0.002–0.0023 to 0.0014–0.0017 wt%.

Key words: RH, VOF–DPM, atmospheric pressure, decarburization, circulation flow rate

Download English Version:

<https://daneshyari.com/en/article/8044260>

Download Persian Version:

<https://daneshyari.com/article/8044260>

[Daneshyari.com](https://daneshyari.com)