

CHAPTER 6

CONCLUSIONS

The aim of the present work was the development of secondary steelmaking for treating the crude steel from the electric arc furnace using scrap and direct reduced iron as raw materials. The removal of undesired elements in the liquid steel were carried out in ladle heating furnace and vacuum oxygen decarburization unit.

In this investigation, the secondary steel treatment model for the production of ultra low carbon and extra low carbon steels was developed by using fundamentals of secondary metallurgy and principle calculation with suitable assumptions as well as practical experience in the steel plant of Dilliger Huette GTS, Germany.

To produce ELC the given crude steel, desulfurization and denitrogenization had to be performed in the VOD unit. For ULC, decarburization was performed before desulfurization and denitrogenization steps.

In comparison to the steel plant data, the desulfurization, denitrogenization and decarburization practice as well as the temperature control for the production of ELC and ULC steel grades were reliable and applicable. Furthermore, all important informations and operation were generalized to basic treatments for ELC and ULC production by the route of EAF-LHF-VOD.