Abstract

Luossavaara Kirunavaara Aktie Bolag (LKAB) supplies customized iron ore products for blast furnaces and direct reduction processes. The products are mainly pellets and LKAB today operates five pelletizing plants located in Malmberget and Kiruna, Sweden. A sixth plant will be in operation during 2008.

MEFOS – Metallurgical Research Institute AB (MEFOS) is a non-profit R&D company situated in Luleå, Sweden. MEFOS creates, refines, supplies and transfers new findings from applied metallurgical research into industrial use with the objective of generating industrial growth.

In 2005 LKAB and MEFOS initiated a research programme focusing on CFD modelling of the iron ore pellet induration process. The general objectives are to improve the process efficiency and gain a deeper understanding of the pelletizing process. The modelling platform is the commercial code “Fluent”.

A bed model has been developed including important features such as; pressure loss, heat transfer, drying and magnetite oxidation in order to predict the time-temperature history and pellet properties. Examples from the Grate-Kiln and Straight-Grate process will be presented. An application of the model in an ongoing process-integration project will be discussed, where the focus is to decrease emissions and increase energy utilisation.