

A MODERN MINI-MILL PROCESS FOR POWDER SHEET ROLLING

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ABSTRACT

A continuous mini-mill process is being developed for the production of sheet gauge steel coils by the use of the latest technology in direct reduction, powder metallurgy and process control systems. Although the majority of the pilot plant work done to date has been on low carbon steel, it is believed that the powder rolling process may be well suited to a variety of metals and alloys. In the case of steel sheet, the preferred feedstock is a direct reduced iron powder produced from hematite iron ore concentrate via a new UOP process. The metallurgical characteristics of the resulting product are nominally equivalent to those of conventional low carbon sheet steel and when the process is scaled up to a 200,000 ton/yr. mini-mill, it is economically viable, energy efficient and essentially pollution-free.

INTRODUCTION

In 1972 the American Can Company (ACC) began investigating alternate mill processing routes to determine if production costs of thin gauge steel sheet could be substantially reduced. The large volume of thin gauge steel that was consumed annually,