

Zimbabwe Alloys: The First Fifty Years of Operation, Challenges, and Opportunities

J. Chirasha, N.R. Shoko, and M. Machikicho
Zimbabwe Alloys International, Gweru, Zimbabwe

Keywords: Pyrometallurgy, furnace, ferrochromium, alloys, Zimbabwe

Abstract – Zimbabwe Alloys was founded in 1949 by a consortium led by the John Brown Group. It was the first ferrochrome plant in Africa. The establishment of the refinery was necessitated by an increase in world stainless steel demand and the need to reduce cost by shipping alloy rather than chrome ore. The location of the refinery in Gweru was influenced by a number of factors, not least of which were the abundance of chrome ore deposits, access to inexpensive power from Kariba, the availability of reductant coke from Hwange, accessibility to ports (as the town was well served with rail and road networks second to none in the country), and of course cheaper labour costs.

The production of Low Carbon Ferrochrome (LCFeCr) was commissioned in 1953 and produced from an Open Arc Furnace with a Submerged Arc Furnace producing Ferrosilicon Chrome (FeSiCr) that is used as a reductant in the production of LCFeCr. An experimental furnace was commissioned in 1958 to help with efficiency and control on larger furnaces. A second Submerged Furnace was commissioned in 1963. Three other Submerged Arc Furnaces were built between 1967 and 1974. Several mines were acquired between 1974 and 1984, as a strategic move to ensure the growth of the refinery. A briquetting plant was commissioned in 1977, enabling the use of friable ores to enhance the capacity of ore supplies and ore cost management. A plant to recover alloy from slag was established in 1994 to capitalize on market demand without large capital outlay that would be required to build other furnaces to increase capacity.

Zimbabwe Alloys has created employment opportunities throughout the years. There have been direct employment opportunities at both the refinery and the mining divisions. With time, indirect employment was realised both upstream and downstream of the refining process, enhancing the livelihood of numerous people. Zimbabwe Alloys' involvement with various labour skills has, of necessity, enabled it to develop a culture of safety at work, home, and play. Zimbabwe Alloys has contributed to society by participating and funding various local initiatives primarily to impact positively on societal needs. The latest development was in 1996, when Zimbabwe Alloys entered into a Technical Transfer Agreement with Japan Metals and Chemicals to improve the efficiencies and hence the profitability of the LCFeCr production process. A significant quantity of various alloys has been produced since inception, and significant foreign currency has been earned for the country. This was in spite of challenges that included the cyclic nature of market prices, the upheavals of sanctions affecting the macro-economic environment, and the challenges related to the deteriorating grade of chrome ore and reductant coke.

