

Application of Cold Bonding Technology to High Grade Iron Ore Concentrate

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ABSTRACT

In a world where decarbonisation is becoming a major concern for the global steelmaking industry, turning towards new technologies aimed at carbon footprint reduction is the next apparent step for this industry which on its own accounts for approximately 9% of total global emissions.

A lot of efforts are currently being deployed to decarbonise the reduction portion of steelmaking through the use of hydrogen and more efficient reduction processes while little efforts being deployed to decarbonise the agglomeration process which will remain essential to iron making regardless of the chosen route, whether direct reduction and electric arc furnace (EAF) or blast furnace (BF) and basic oxygen furnace (BOF).

Quebec Iron Ore (QIO), a subsidiary of Champion Iron Limited (Champion), has established itself as a reliable producer of high-grade iron ore concentrate since the restart of operations at the Bloom Lake mine site and is currently completing an expansion to double its capacity to 15 million tons per annum. QIO already produces a concentrate with a low carbon footprint and wish to offer an agglomerated product while maintaining GHG generation to a minimum.

Binding Solutions Limited (BSL) has developed a novel, cold-binding technology to provide a cleaner, more cost-effective alternative to induration. BSL's process uses smaller amounts of binder to create a high-value pellet, meeting traditional international standards. The technology allows miners and steel producers to reduce Capex by c.80% and reduce energy consumption and CO2 emissions by c.90%.

QIO and BSL have partnered to adapt the disruptive cold binding technology developed by BSL to QIO's concentrate to produce a high-quality low emissions iron ore agglomerate.

This paper will describe the efforts taken to further develop BSL's cold binding technology and its application to QIO's high grade iron ore concentrate in order to produce a cold bonded extrudate showing comparable performances to fired pellets.