

Developments in the Wet and Dry Processing of Lower Grade Magnetite Ores

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Abstract

Since the presentation of a dry Super-fine Crushing / Planar Magnetic Separation, option for the concentration of lower grade magnetite ores, at Iron Ore 2017, IMP Technologies Pty. Ltd. (IMPTEC) and Cyclomag Pty.Ltd. have experienced increasing demand for laboratory testing of a variety of magnetite ores from prospective developers in Australia and the USA. The laboratory test work has also included an ongoing optimization programme focused on the design and operating responses of both the Super-fine Crusher (SFC) and the Planar Magnetic Separator (PMS). IMPTEC and Cyclomag have also recently entered into a collaborative development programme with an Australian producer and developer for the design, manufacture, installation and testing of a wet commercial scale Low Intensity Planar Magnetic Separator, with a view to retrofitting a wet processing plant for the production of premium grade DRI feed. A similar collaborative development programme is being arranged with the same producer and developer for the design, manufacture installation and testing of a stand alone 75 to 100 t/h SFC/PMS dry processing module, with a view to providing a simplified low cost alternative for the development of lower grade magnetite deposits in arid and remote regions of Australia. A novel feature of this programme is a two stage (Mine Site / Port Site) processing option which further addresses, concentrate transportation and waste disposal issues, water and power availability issues, environmental impact, and financial risk mitigation. This presentation reports on progress made on each of these development programmes.

Key words – dry processing, wet retrofitting, Laboratory optimization, novel approach