

## IRON ROAD CONCENTRATE OUTPERFORMS IN CHINESE STEEL MILL USAGE TEST WORK PROGRAM

### Highlights

- Very positive results from an extensive test programme on Iron Road concentrate by the prestigious Beijing based China Iron & Steel Research Institute Group (CISRI).
- Test work verifies that Central Eyre Iron Project (CEIP) magnetite concentrate performs well in both sintering and pelletising.
- Sinter test results confirm that CEIP can be readily substituted for Brazilian and Pilbara fines as well as Chinese domestic concentrates.
- In replacing Pilbara fines, CEIP concentrate lowered the fuel level required contributing to cost savings in the sintering process.
- Very encouraging pelletising tests, providing a potential alternative use for CEIP concentrate demonstrating added product versatility.
- Results confirm and enhance the attractiveness of CEIP concentrate to the Chinese steel industry and will enhance ongoing marketing and partnership initiatives as the CEIP definitive feasibility study continues.
- The CEIP is South Australia's largest resources project since Olympic Dam. A definitive feasibility study is underway examining a long life operation, producing 20Mtpa of high quality 67% iron concentrates at a relatively coarse size distribution of 80% passing 106µm (106µm p80).

**Iron Road Limited** (Iron Road, ASX: IRD) is pleased to announce that the China Iron & Steel Research Institute Group (CISRI), based in Beijing, has completed an extensive suite of test work over several months on a bulk sample comprising 840kg of typical CEIP iron concentrate. The test work programme was designed to establish the performance of CEIP concentrate across potential uses in the Chinese steel industry.

The work commissioned by Iron Road primarily examined the performance of expected typical 67% iron (106 micron p80) CEIP concentrate as a substitute for either Brazilian or Pilbara fines in a typical sinter plant blend for coastal and southern Chinese plants, and also as a substitute for high grade Chinese domestic concentrates in blends typically used at inland and Northern Chinese sinter plants.

An alternate testing stream examined the viability of using CEIP typical (106 micron p80) concentrate as a replacement feedstock for pellet plants in ratios ranging from 10-100%, without further grinding.

Positive results were achieved in each series of tests, validating the use of CEIP concentrate as a value enhancing feedstock in sinter plants, or as an amenable substitute in pellet plants.

Results were particularly encouraging when replacing Pilbara fines in typical sintering blends used in coastal and southern Chinese operations, with the higher iron content and low impurities of CEIP concentrate leading to lower solid fuel use and improved plant productivity for steel mills.

Iron Road's Managing Director, Mr Andrew Stocks, welcomed the test results and the ready acceptance that CEIP concentrate should receive, particularly in the Chinese market.

"These results confirm that CEIP product will be attractive to the Chinese steel industry, and likely to command a predicted quality differential of 15% over Pilbara fines pricing.

"Importantly these tests, which replicate commercial scale sintering and pelletising, were conducted in China by a well-recognised steel institute, according to national Chinese standards and with familiarity of the latest steel making operating practices," said Mr Stocks.

### **CISRI Sintering Test Results on CEIP Concentrate**

CISRI tests on the sintering plant characteristics of CEIP concentrate examined three broad scenarios:

1. Replacing **Brazilian fines** in varying amounts for a typical sinter plant feed mix for a Southern or coastal Chinese mill;
2. Replacing **Pilbara fines** in varying amounts for a typical sinter plant feed mix for a Southern or coastal Chinese mill; and
3. Replacing **high grade domestic Chinese concentrate** in varying amounts for a typical sinter plant feed mix for a Northern or inland Chinese mill.

Each scenario returned overall positive results for the use of CEIP concentrate in typical Chinese mill feeds. When replacing Brazilian fines results show a decrease in the solid fuel requirement for sintering and similar productivity for mill operations. Softening and melting properties of the resulting sinter were improved with the use of CEIP concentrate.

Results when replacing Pilbara fines showed the best returns for potential Chinese customers with reduced solid fuel use per tonne of sinter produced. Moreover, greater productivity is achievable as a result of being able to load more feed into the same sintering pallet. Softening and melting properties of the resulting sinter were again improved with the use of CEIP concentrate.

Results when replacing high grade domestic Chinese concentrate were consistent, with sintering performance of the CEIP concentrate being nearly identical to high grade Chinese concentrate, demonstrating the similarity of the two products.

All results pointed to the CEIP concentrate having beneficial characteristics compared to competitive iron products, with particular advantages when substituting for Pilbara fines products.

### **CISRI Pelletising Test Results on CEIP Concentrate**

Whilst the CEIP concentrate product has been expressly designed and targeted for use in sinter plants, Iron Road also commissioned CISRI to examine the performance of CEIP concentrate as a pellet plant feedstock. CISRI examined:

1. Substituting between 10% to 30% of the usual high quality Chinese magnetite concentrate for CEIP concentrate; and
2. Creating a pellet product completely (ie. 100%) from CEIP concentrate.

When substituting CEIP concentrate for between 10-30% of Chinese concentrate, pellets were readily produced with similar performance characteristics and firing temperatures to pellets produced using 100% Chinese product.

When using 100% CEIP concentrate for pellet feedstock, resulting pellets more than satisfied all minimum criteria, producing a competent pellet with a mildly increased firing temperature and an increase in the usage of bentonite binder.

The flexibility of CEIP concentrate product to be readily usable as a feedstock in either sintering or pellet plant operations is expected to increase the attractiveness of the product to large Chinese steel making concerns, which operate both sintering and pellet plant capacity. However, the much larger sintering plant market remains Iron Road's core target for CEIP concentrate.

### **Chinese Sinter Plant market versus Pellet Plant opportunities**

Unlike most Australian magnetite operations, Iron Road has chosen to target the much larger sinter feed market in China, rather than relying on the requirement for pellet plants. This strategy is possible due to the unusual nature of the iron gneiss at the CEIP, with a coarse grained concentrate readily able to be produced, similar to the high grade domestic Chinese concentrates.

A sinter plant is an interim stage in the steel making process, producing a sinter lump suitable for feed into a blast furnace. Most large scale Chinese steel making concerns operate sinter plants in conjunction with blast furnaces. Mills near the coast or in Southern China tend to feed sinter plants with a mix of Brazilian fine products and various Pilbara fines, with minimal or no domestic concentrates. Mills located inland or in Northern China generally use less Brazilian and Pilbara product, in preference to increased amounts of domestic concentrates.

Pellet plants are also an interim stage in the steel making process and require specific feedstock to create pellets for feed into blast furnaces or other steel making processes. The installed pellet plant capacity in China is much smaller than sintering plant capacity and is subject to rapid suspension in times of lower demand or unavailability of suitable feedstock.

### **About CISRI**

CISRI was founded in 2006 under the approval of the State-owned Assets Supervision and Administration Commission of the State Council (SASAC), with assets totalling 6.6 billion Yuan RMB (in 2006). As one of the first 103 pilot innovative enterprises in China, CISRI has been serving as the R&D base for metal materials, the innovation base for key technology in the metallurgical industries and the authoritative agency for metallurgical analysis and testing. CISRI boasts more than 5000 scientific research achievements and 783 granted patents.

### **About Iron Road Limited**

Iron Road's principal project is the Central Eyre Iron Project (CEIP) in South Australia. A prefeasibility study has demonstrated the viability of a mining and beneficiation operation initially producing 12.4Mtpa of premium iron concentrate for export. A definitive feasibility study is currently assessing production of 20Mtpa of iron concentrates.

Metallurgical test work indicates that a coarse-grained, high grade, blast furnace quality concentrate may be produced at a grind size of -106µm grading 67% iron with low impurities.

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