



SHIJIAZHUANG IRON & STEEL COMPANY LIMITED

Nitrogen Flow Meters, Leak Survey and Repair

SUMMARY OF THE OPTION

Shijiazhuang Iron & Steel Co., Ltd. (“Shigang”) is a state-owned integrated steel plant located in Shijiazhuang city, the capital of Hebei province in China and produces 2 million tons of carbon structural round steel per year.

The converter furnace uses 16000 m³ nitrogen per hour and is very expensive. During the *assessment* of the plant, the Team observed that (1) the flow meter of supplier Liyuan only measures the nitrogen flow to the “Instruments Loop” so misses 85% and that no nitrogen balance was calculated; (2) nitrogen is used instead of the cheaper compressed air at several applications, such as the bag filters and all pneumatic cylinders and instruments; (3) nitrogen leaks existed.

The Team put forward some options, which are as follows:

- Establish a mass balance for nitrogen use at the converter plant. Measure/calculate the amount of nitrogen used for other purposes. Study the piping network and identify locations where additional flow meters will need to be installed. Check the calibration of the existing flow meters.
- Identify feasibility of using compressed air instead of the more expensive nitrogen
- Conduct a nitrogen pipe work leak survey and repair all leaks.

The Company adopted these low cost options and implemented them in June 2004. Based on estimations, through the implementation of this project, annual savings were about US\$ 150 thousand, annual nitrogen consumption reduction was 3.7 million m³, annual electricity savings 150 thousand kWh and CO₂ emission reduction was 115 tons.

KEY WORDS

China, Iron and Steel, Furnaces and refractories, Electricity, Nitrogen, Leaks

FOR MORE INFORMATION

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