

TEXAS SUCCESS STORY

REVISING CONSUMPTION FACTORS AND INVENTORY CONTROL LEADS TO COST SAVINGS

ABOUT VINTON STEEL LLC. Vinton Steel, LLC is a leading player in the steel manufacturing industry, specializing in the production of high-quality steel products using advanced Electric Arc Furnace (EAF) technology. Committed to sustainability and resource efficiency, Vinton Steel converts ferrous scrap into new steel products, supporting a circular economy. The company operates a comprehensive steelmaking facility that includes two electric arc furnaces, a continuous casting and rolling mill, and scrap processing facilities. This integrated operation allows the company to recycle and process over 250,000 tons of ferrous scrap each year, significantly contributing to environmental sustainability. Vinton Steel sources scrap materials from various origins, including automobiles, major household appliances, industrial scrap, and salvaged steel from different industries. This dedication to recycling minimizes waste and conserves valuable resources. Vinton Steel's product range is designed to meet the requirements of the industrial, construction, and mining sectors. Their focus lies in producing three main product categories:

Reinforcing Steel Bars Grinding Steel Balls Smooth Steel Rounds

THE CHALLENGE. Vinton Steel faced a significant challenge in its steel production process, impacting cost efficiency, material management, and product quality throughout its operations. At the core of this challenge was the accuracy of consumption factors for crucial alloying elements, such as ferrosilicon, ferromanganese, ferrochrome, and ferrovanadium. The central issue troubling Vinton Steel was the dependence on consumption factors that were not only outdated but, more importantly, inaccurate.

The consequences of this challenge were multifaceted and far-reaching. They involved more than just minor discrepancies; they were losing significant amounts of money due to the overconsumption or underconsumption of alloying elements. Inaccurate calculations resulted in overspending on raw materials, especially ferro alloys. Vinton Steel repeatedly found itself revising its monthly requirements as it worked to correct these inaccuracies. Additionally, the Excel file they used to determine the monthly requirements did not provide the specifications for all sizes and grades. For certain grades, it only offered generalized requirements. Moreover, there was no provision for obtaining the requirements of refractory materials (CPT).

MEP CENTER'S ROLE. In response to the pressing challenge of inaccurate consumption factors, the team gathered the most recent preliminary sample data to gain insights into the existing compound compositions of the scrap materials. Additionally, updated specifications, including the chemical composition for each steel grade, were sourced from the process engineering department. This critical data served as the foundation for precise calculations based on the equations outlined in the plant's Standard Operating Procedures (SOP). These calculations were instrumental in determining the exact quantities of additional elements required to meet the desired specifications. As a pivotal part of this solution, an advanced Excel file was meticulously developed. This Excel tool featured comprehensive consumption factors for all necessary raw materials, including ferroalloys, which are crucial for steel





Cost savings of **\$155K** per month / \$1.8M per year



Cost avoidance due to unnecessary excess purchases

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production. Furthermore, an innovative provision was integrated into the file the consumption factor for refractories (CPT). This addition not only provided Vinton Steel with the ability to determine its monthly refractory requirements but also alleviated the previous dependency on third-party sources through these strategic steps.

"We extend heartfelt thanks to TMAC for the outstanding support on the Vinton Steel project. Your team's dedication, professionalism, and attention to detail have made a significant impact. The collaboration has not only ensured project success but has also added value to our operations. We appreciate your commitment to excellence and look forward to future collaborations."

-Guillermo Fernandez, General Manager MeltShop Operations & Production Planning

