

LOWEST COST LIQUID STEEL



**TAKING SCRAP MANAGEMENT
TO A NEW LEVEL**

GenBlend+[®]

OptiMiser[®]

TMS International takes scrap management to a new level with its Scrap OptiMiser® and GenBlend+® optimization software programs. These sophisticated, proprietary purchasing and melt-chemistry optimization programs determine the optimal scrap mix for every heat melt order. Our programs ensure the lowest cost liquid steel and are designed to help you save money by producing the lowest cost liquid steel!

Front cover: photograph lower left, Electric Arc Furnace (EAF) with a charge bucket above it, Courtesy of Siemens.

THE SCRAP OPTIMISER SYSTEM FOR BOF AND ELECTRIC ARC FURNACE SHOPS

TMS International Unique Scrap Management System

The system is comprised of two main software components and a team of Customer Service Technicians.

The first software component is the Scrap OptiMiser®. This program is a simulation model that performs least-cost monthly scrap optimization calculations in a user-friendly environment, while providing the most sophisticated logic available on the market.

The second software component of the Scrap OptiMiser® System is the real-time process control GenBlend+® program. This software runs on the shop floor and assures least-cost steel is produced with every heat.

These two components work hand in hand and are the primary tools of the TMS International optimization team.

The GenBlend+® program can also be configured to work strictly as a data collection tool for sites that need reliable information from their scrap yard operations but are not in the position to take full advantage of the Scrap OptiMiser® System.



Scrap OptiMiser® Monthly Scrap Purchase Optimization

The Scrap OptiMiser® was conceived by steelmakers in collaboration with metallurgical and purchasing experts to consider all aspects of the steelmaking process as it relates to costs, as well as metallurgical and operational constraints. In today's competitive steelmaking market it is essential that your scrap purchase be optimized to the lowest cost, not the lowest scrap purchased cost, but to the *lowest liquid steel cost*.

The model calculates the lowest cost to produce a specified number of steel heats. The production run is divided into groups of heats based on target chemistries. The model makes use of an extensive library of scrap types and shop specific parameters to predict liquid steel chemistry. The scrap data has been accumulated and refined through years of analysis and experience working with scraps of all types and from different regions.

The model optimizes the campaign's scrap requirements, taking into account the production schedule and the scrap value relative to the current market.

How the Scrap OptiMiser® Works

Market information is entered as blocks of available scrap offers by

scrap type. The program selects the scrap blocks that will give the lowest production costs based upon the constraints of chemistry and shop operating practices.

TMS International maintains the physical and chemical characteristics of each scrap grade. Scrap grades can be further defined by region and or individual supplier characteristics. The model uses this database to perform a complete heat (energy) and mass (yield) balance. This database of scrap characteristics will be maintained and reviewed on a regular basis and tuned through analysis by a TMS International Customer Service Representative.

The program is currently being used in several different countries and can be easily switched from working in either English or Metric units.

GenBlend+® Maintains Purchase Savings in Scrap Loading

GenBlend+® is a sophisticated proprietary melt chemistry optimization computer model developed by TMS International that produces the

lowest-cost liquid steel. GenBlend+® generates real-time scrap charges based on grade chemistries, shop constraints, current scrap availability and cost. Optimal use of the scrap

available ensures lowest cost liquid steel. Computers are located in the scrap yard, either in the cranes themselves or a central location. Operators select a melt order from a list of scheduled steel orders. In a matter of seconds, GenBlend+® will determine and then display, the lowest-cost scrap recipe that meets the chemistry and volume requirements of the selected order using only scraps that are available to the operator.

GenBlend+® can be configured to generate dynamic scrap charges or follow fixed menu scrap charges depending on melt shop preferences.

The GenBlend+® system interfaces with the mill computer systems and scales in order to gather all scrap process related information. This data is used to monitor and tune system performance and provide a database for analysis. The interface with the mill computers and the crane operator are customized to provide the most efficient mode of operation.

Logistics are a crucial part of the Scrap OptiMiser® System because the money saved in melting more

cost effective scrap will evaporate if the scrap charge cannot be marshaled without delaying the furnace.

TMS International is a world leader in scrap and material handling and can provide help with scrap yard logistics and engineering.

Scrap Optimization Software Implementation

Our process specialists work with melt shop personnel to study shop logistics and unique process requirements. This information is used to customize GenBlend+® to emulate shop operations.

Our software engineers work with mill process control personnel to determine where and how mill internal computer systems are gathering information. Data flow is a critical ingredient to the overall process. The TMS International system receives grade-specific information from the shop computers and provides results of the scrap loading procedure the moment loading is complete.

Through optimization of the scrap buy and controlling your process in the scrap yard, savings of hundreds of thousands of dollars per month are possible.



Scrap OptiMiser® Purchasing Program

GenBlend+® Process Control Program

Scrap OptiMiser® System

For more information contact:

TMS International

833 West Lincoln Highway
Suite 310W
Scherverville, IN 46375

219-864-0044

website: tmsinternational.com
ScrapOptimization1@tmsinternational.com

- Scrap purchasing, planning program
- Developed and improved upon by steel mill purchasing and operating personnel
- Operated by TMS International Customer Service Representatives
- Utilizes linear-based Solver technology
- Ongoing validation against actual mill process data
- Improves control of purchasing process
- Reacts to scrap market changes
- Considers operating parameters, residual levels and scrap costs
- Based on full consideration of charge metallic
- Ability to separate suppliers within a grade
- Purchases based on offers of scrap
- Allows for smaller, more efficient inventory
- Adapts to dynamic operational parameters
- Supervised by customer personnel
- Process Control Model
- Genetic algorithm
- Steel-grade specific
- Streamlined communications
- Simple touch screen control
- Variable or fixed menu control
- No limit to steel grade specifications
- Based on real-time scrap availability
- Matches scrap to individual grade specification
- Warns if solution is not adequate based on scrap availability
- Maintains a data warehouse for analysis
- Customized for individual melt shops
- Remote support 24/7/365
- Monitors chemistries and generates alarms in real time
- Interfaces directly with shop computer systems
- Scrap loaded in an orderly fashion
- Timely charge box/bucket turnaround
- Reduces inventory carrying costs
- Maintains planned schedule
- Creates and maintains a database for analysis
- Improved control of chemistry performance
- Continuous improvement built in

LOWEST COST LIQUID STEEL