

# Creative Solutions through Customer Partnerships



**Leading Technology**

**Economical Solutions**

**Environmental Solutions**

**Advanced Supply  
and Service Capabilities**

*Carmeuse is dedicated to excellence in providing high quality lime products, lime related technology, and customer service and technical support for the production of steel.*

## **Lime, the Proven Solution!**



Photograph, courtesy Dofasco, Inc.



Carmeuse North America  
11 Stanwix Street, 11th Floor  
Pittsburgh, PA 15222

Phone: 866-243-0965 / 866-780-0974  
Fax: 412-995-5515  
E-mail: [salesinfo@carmeusena.com](mailto:salesinfo@carmeusena.com)  
Internet: [www.carmeusena.com](http://www.carmeusena.com)

## Leading Technology

### Blended "Flow-aided" Systems

In typical pro-active methodology, the Carmeuse Technology Center joined forces through a strong customer partnership with a leading steel producer to develop a specialty product designed to improve slag chemistry control in a QBOP operation.

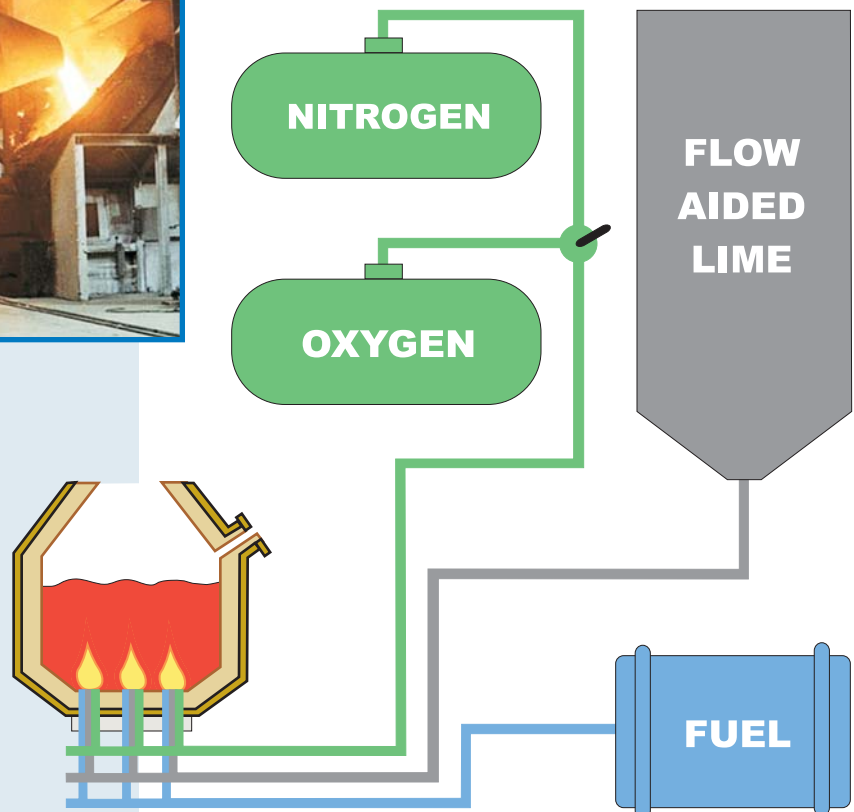
Specialty "Flow-aided" blends of pulverized high calcium and dolomitic lime engineered for injection technology are made possible with controlled specialized blending systems at the lime plant.

### Benefits:

- Reduced operating costs in the steel making process.
- Customized flux chemistry with the engineered blending process.
- Consistency in product quality.
- Dedicated, technical support from Carmeuse Lime.

### Flow-aided System for QBOP

Bottom Blown



## Solving Problems

### Briquette Systems to Reduce Operating Costs

Typical material handling systems at steel plants generate additional fine particles of lime through mechanical degradation. The Carmeuse Technology Center and Steel Marketing Team have created a solution through customer partnerships in providing support to solve this issue.



By providing resources to the customer to witness first hand the briquetting process at a Carmeuse Lime plant and the relative technical assistance from key alliance partners, Nucor Berkeley, South Carolina, is the first to incorporate the new briquetting method in its operation.

K.R. Komarek, Inc., manufacturers of state-of-the-art briquetting systems, provides the equipment and expertise needed for this practice. Komarek's semi-automatic equipment practically runs by itself making it easy to use and maintain. The solid density formation of the briquettes make them easy to handle onsite and is an effective method to increase the lime yield for the steel maker.

#### Benefits:

- Improved lime yield for cost reductions.
- Improved housekeeping and environmental performance.

### Komarek Model B400 Briquetting Machine



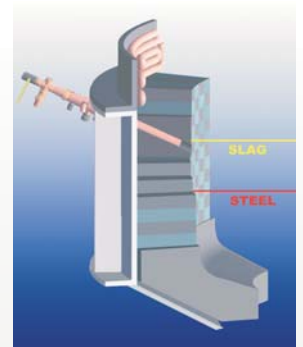
Photograph, courtesy K.R. Komarek, Inc.

## New Product Development

### Injection Technology for Quality Steel Making.

InjectoLime® represents the latest in Carmeuse Lime technology for Electric Arc Furnaces (EAF) operations typically used by mini-mill producers and specialty steel producers. InjectoLime®, applied through proper injection technology, allows for lime injection in proximity to the slag for optimum induction without interference to other burner technology. This method provides additional flexibility in controlling slag chemistry during the heat when conditions are volatile, allowing for faster dissolution of lime into the slag during the melting period. The results are an ability to maintain optimum foaming and optimum slag chemistry.

Carmeuse Lime joined forces with leading injection technology manufacturers to provide a creative solution through customer partnerships for improving slag conditions throughout the melting process and reduce the cost of steel making. Carmeuse Lime facilitated trials at five leading steel plants including Nucor Auburn, Nucor Birmingham, Gerdau-Ameristeel, Gallatin Steel, and North American Stainless. Improvements in lime yield of 10% or higher, reduced electrical consumption, and improved housekeeping were realized during these trials.



During the trial phase, Carmeuse maintains a strong presence at the steel plant in order to provide substantial technical support and offer expert technical advice on performance data and slag analysis. Additional, remote support is available through the Carmeuse Technology Center in Pittsburgh, PA. This service is invaluable since injection practices can vary at different steel plants depending on their particular operation and needs. Finally, Carmeuse Lime with the leading injection equipment manufacturers help provide the best choices for the steel maker's decision making process in meeting the requirements for their specific plant design.



#### Benefits:

- Improving slag foaming characteristics.
- Flexibility in steel making practices.
- Reduction in lime content of emissions systems.
- Improved cost of operating parameters.

# Solutions for a Cleaner Environment

## Helping the Industry Reduce CO<sub>2</sub> Emissions

As regulated by the “Clear Sky Initiative” of the Bush Administration, the lime industry faces environmental challenges to reduce greenhouse gases from its manufacturing processes including the reduction of carbon dioxide (CO<sub>2</sub>) by 8% before 2012. Integral to the reduction of CO<sub>2</sub> emissions is the use of a pre-heater kiln (as shown in the photo to the right) with the end result producing a high sulfur lime to be used in steel making. This process is a reliable and feasible solution that maintains high quality steel production standards and minimizes potential cost increases to the end users. Carmeuse has worked closely with its customers in introducing the high sulfur lime to test and prove its usefulness in the industry.

Along with these strong customer relations, Carmeuse also collaborated with the *National Lime Association* and the *American Iron and Steel Institute* during the testing period which resulted in successful trials at BOF shops at AK Steel in Ashland, KY and Middletown, OH; EAF shops at Gallatin Steel in Ghent, KY and V&M Star Steel, Youngstown, OH; and a LMF at Nucor Berkeley, SC.



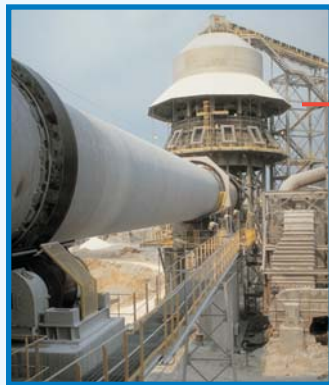
Acceptance has been assured at these plants that will benefit from the following attributes:

- No negative impact on steel plant emissions.
- No increase in flux cost.
- No negative impact on steel quality.
- Reliable supply of lime for the future.

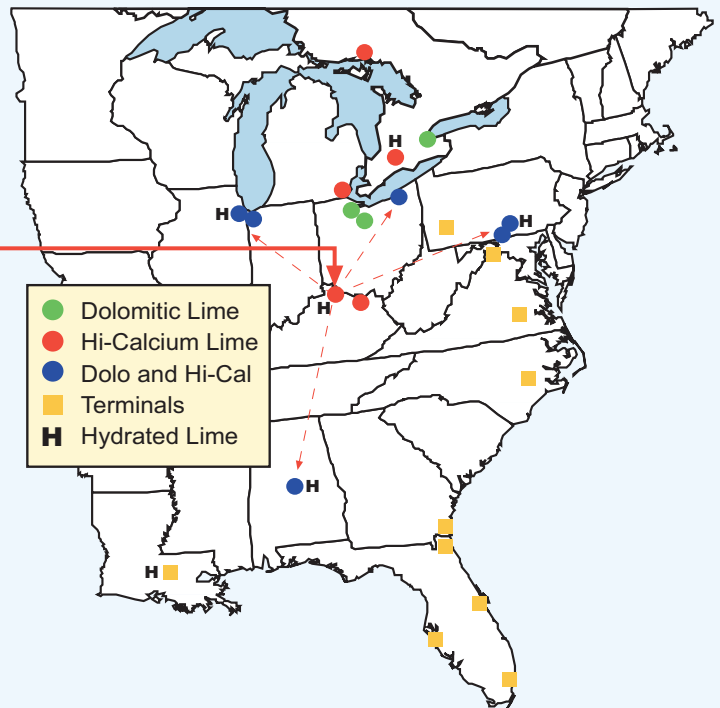
## Meeting Customer Demands

### More Lime Product On-line

Carmeuse is responding to lime capacity demands set by the steel industry. The steel industry is the greatest consumer of lime in a multi-faceted industrial sector. In order to meet the needs of its customers, Carmeuse will strategically expand production capabilities at its largest manufacturing facility. The Carmeuse Lime Operation, Black River, KY, which is centrally located in the network of Carmeuse lime plants, will be substantially upgraded by the installation of a new straight rotary kiln for the production of high calcium lime in order to provide maximum product flexibility and capability within the Carmeuse network of plants including:



- Systematic market distribution of an increased volume of high calcium lime and the network flexibility to produce additional dolomitic lime.
- Expanded capability to cost effectively reach a broader geographic range in the steel market.
- More product capacity and availability for the end-user.



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Fax: 412-995-5515  
E-mail: [salesinfo@carmeusena.com](mailto:salesinfo@carmeusena.com)  
Internet: [www.carmeusena.com](http://www.carmeusena.com)