



## ZEBRA CASE STUDY

### Major Latin American Steel Producer Improves Processes with Bar Codes

#### Challenge

The Guayana region in Eastern Venezuela has abundant reserves in raw materials such as high-quality bauxite and iron ore. For example, the Cerro Bolívar iron mine, which mines shipping-quality iron ore, is one of the largest open iron ore mines in the world. The region has an estimated 1.7 billion tons of proven iron ore reserves and 13 billion tons of total reserves.

The combination of enormous mineral reserves, the availability of cheap hydroelectric power, and the presence of a well-developed infrastructure makes the region attractive for metal-industry projects. Several mineral, aluminum and steel manufacturers have located near the confluence of the Orinoco and Caroní rivers. Among them is Orinoco Steelworks (Siderúrgica del Orinoco)—better known by its Spanish acronym, SIDOR ([www.sidor.com](http://www.sidor.com)).

SIDOR is the largest supplier of steel in Venezuela and the Andean Community of Nations. It is also the fourth largest steel producer in Latin America and the largest exporter of finished steel products in the Americas. The majority of the company's shares are held by four important Latin American steel companies: Hylsamex (Mexico), the Techint Group (through its affiliate companies Siderar from Argentina and Tamsa from Mexico), Usiminas (Brazil), and Sivensa (Venezuela).

SIDOR's integrated steel complex manufactures semi-finished and finished products using direct reduced technology, electric arc furnaces, and continuous casting. Its products range from pellets to long bars and wire rods and flat hot and cold rolled tin plates, and coils.

Because SIDOR's manufacturing process was manually based, company executives and managers faced several challenges with work-in-process and finished-products inventory data, resulting in shipping errors and client complaints. Among the issues: shipping labels and packages were often mismatched, products were inaccurately identified, and hand-written data, which was often hard to read, was manually entered into the system causing further errors.

#### Solution

For a global company like SIDOR, automatic identification, labeling, and tracking could greatly improve quality control processes, customer service, inventory management, and accurate and on-schedule shipments. Bar code technology, together with a suitable data collection technology, would allow for such automatic identification of steel products.

To help find and implement the right solution, SIDOR management brought in Corporacion Triadmor ([www.triadmor.com](http://www.triadmor.com)), a leading Andean region information technology and communication systems integrator located in Caracas, Venezuela, and Bogotá, Colombia, and with expertise in the metal processing industry.

From the start, Traidmor understood the new system for SIDOR had to include a radio frequency (RF) wireless network and bar code data capture and product identification technology.

As a large and sprawling steel mill complex extending over 5,430 acres (2,200 hectares), SIDOR's heavy-industrial environment, along with the presence of massive metal objects that interfere with radio frequency electromagnetic waves, required a reliable and stable RF network that could avoid interference.

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After evaluating several solutions for the RF wireless network by performing several site surveys, the team selected Symbol Technologies' Spectrum24 because of its frequency-hopping spread spectrum technology, which enhances data reception and is resistant to interference in the industrial sections of the plant. Symbol® solutions for data capture were adopted as well.

In addition, the SIDOR/Traidmor team also evaluated product identification technology. Bar coded labels from various providers were affixed to steel products and shipped around the world and then inspected at their point of destination for legibility, adherence, and weather resistance.

In the end, Zebra Technologies' rugged tabletop and mobile thermal transfer bar code labeling solutions showed superior performance within the steel industry's harsh manufacturing conditions and were compatible with the adopted wireless network infrastructure.

Zebra products would be used for printing product identification bar code labels for all the finished steel products being shipped to clients, and for automatically capturing product weight data and printing this information on the labels.

### Results

Today, by using mobile or tabletop printers, SIDOR's plant workers can automatically print or reprint labels on the spot at any point in the manufacturing and distribution process.

At warehousing facilities and packaging and shipping areas, operators carrying lightweight, rugged, wireless, thermal printers and scan-ready data terminals can read and capture the product ID and register online any changes in the location or status of that product.

As a result, SIDOR has improved productivity through faster and better operational processes. Now, its operations can be reported and/or controlled online. The transfer and shipping of finished products over both land and water has been optimized. Product weight is automatically captured and printed on the labels.

Recording and tracking warehouse inventory is done automatically, resulting in lower warehousing costs and reduced loss of materials. During the shipping process, the identity of packages and their outbound destinations are now automatically verified and controlled, optimizing SIDOR's maritime shipping operations and inventory management. Company executives can now access real-time cargo loading and shipping information.

Furthermore, the design of the company's labels has been unified, helping improve the corporate image SIDOR displays to customers. The steel company's distributors and clients have stopped complaining about illegible or absent product labels. Finally, SIDOR has improved its customer relations by providing clients with information regarding their shipment in a way that helps them load the shipment data easily into their management system.



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