

Mexico's Extrusion Industry Well-Positioned to Compete Globally

By Al Kennedy, Kennedy Eurotech

Twenty-five years ago a U.S. extruder visiting his Mexican counterpart might have felt that he had stepped into the past. After all, protective tariffs and misguided economic policies had largely isolated the Mexican extrusion industry from the outside world and discouraged investment in new equipment. Older equipment and out-dated methods were commonplace. Visit almost any Mexican extruder today and you will find plants that equal or exceed U.S. extruders in terms of equipment, processes, skills, management, and quality control. What has caused this renaissance? Credit belongs to the resurgent Mexican economy; heavy investment, particularly in European technology; and, yes, to NAFTA.

The coming of the North American Free Trade Agreement (NAFTA) in the early 1990s spread fear among some U.S. extruders that lower cost Mexican profiles would flood their markets. Meanwhile the Mexican extruders feared that, with the elimination of import tariffs, U.S. competitors would take over their customers with their lower prices and production efficiencies. Fifteen years later it is clear that those fears were largely unfounded, and there has been little change in cross-border marketing of extrusions. Instead, both Mexico and the U.S. are more concerned with competition from China. Even if Mexican labor costs are less than in the U.S., Asian costs are significantly lower than either.

Conventional wisdom in the U.S. has held that lower environmental and safety standards for Mexican extruders would give them a cost advantage, but in fact they are actually approaching parity with the U.S. in terms of environment and safety. In fact, in some cases they are exceeding those of their Northern neighbors, for example, fume incinerators are standard in Mexico but not in the U.S. Today, a traveler from the U.S. to Mexico is immediately struck by the huge increase in commercial and residential building in recent years. Transportation—trucks, buses, commuter rail, and automobiles—reflect the economic boom. New factory buildings abound, and high-rise buildings sport gleaming curtain walls. While the current recession has impacted Mexico as well as the rest of the world, it is still evident that their recently booming economy has spurred demand for top quality extrusions.

In anticipation of increased competition due to NAFTA, Mexican extruders began to improve efficiency by introducing modern management models. Consultants—American and Mexican—have helped companies restructure and streamline as leaner, technically up-to-date organizations. A new generation of “black belt” managers are now in charge. Instead of playing catch-up to U.S. extruders, many companies sought out the best European equipment, methods, training, and even designs for windows and doors. Building methods in Mexico are more like Europe than the U.S., so these designs fit well. In Mexico, as in Europe, wood frame construction is practically unheard of. Buildings are masonry (brick, concrete blocks, concrete), which tend to last longer and are often remodeled. Instead of using standard dimension windows, they leave an opening and *carpenterias* come to measure and custom build a window to fit an opening. *Carpenterias*



Figure 1. Locations of major aluminum extrusion facilities in Mexico.

will take a contract to provide windows for a house, take the measurements, and build the windows according to the chosen window system. Today many extrusion plants operate with presses, handling systems, paint and anodizing lines, and die shops purchased from Europe.

The Mexican extrusion industry is composed of larger extruders (3-12 presses) with multiple locations and integrated facilities some of which cast their own billet and own their own value-added operations as well as smaller extruders with single-site facilities having two presses or less. This article presents a tour of some of the major extrusion companies in Mexico (Figure 1).

Larger Extrusion Operations

Cuprum: This is Mexico's largest and best-known extruder, which is now a division of Verzatec, formerly a part of Grupo Imsa. The main factory and headquarters is located in San Nicolas de los Garza (a Monterrey suburb). The second is located in Tlalnepantla, near Mexico City.

Cuprum (www.cuprumextrusions.com) was founded in 1948 in Monterrey with a single 170 ton press for copper profiles (hence the name Cuprum, which is Latin for copper). In the years since, the Monterrey plant continued to expand and add presses. A two press plant in Tlalnepantla was purchased in 1994 and in 1998 Alcomex, a former Alcoa plant, also located in Tlalnepantla, was added. (Once Alcomex was purchased, the two presses were moved from the smaller Tlalnepantla plant and it was closed down.)

Cuprum operates 12 extrusion presses ranging in size from 900 tons to 3,600 tons, with an annual production capacity of 154 million pounds of extrusions per year. All presses are modern: the newest two, from Danieli and Innse, are short-stroke designs with double length run-outs and state-of-the-art log shears, pullers, and handling systems. The older presses have been modernized with log shears, hydraulic systems, PLC controls, and one 2,750 ton press was converted to short-stroke. Profiles are

extruded up to 12" wide and 10 pounds per foot. Several presses are equipped with advanced water quenching tunnels to allow production of a full range of tempers. Cuprum's die shops are equipped with CAD/CAM systems to produce world-class dies, with an annual capacity of 5,600 dies. Billets are cast in state-of-the-art hot top casting systems at both extrusion plants, with modern melting and holding furnaces and reversing-flow homogenizing ovens.

A recently completed anodizing line at the Monterrey plant produces two-step electrocoloring in Class I and Class II specs. Lengths up to 24 feet may be anodized. A high capacity vertical paint line from Trevisan offers both liquid and powder coating, complying with Qualicoat, AAMA 2603.8 or AAMA 2605.2, with 2, 3, or 4-coat systems.¹ They are an approved applicator of PPG, Valspar, and Interpon paints. Profiles up to 24 feet may be painted. In 2005, Cuprum also installed a similar vertical powder paint line in Mexico City. Important projects using Cuprum's profiles include the medical center at the University of California, Davis; Terminal One at JFK Airport in New York; the Boston Federal Courthouse; the World Trade Center of Mexico City; Project MM21 at Shinjiko City, Japan; "Oficinas en el Parque" in Monterrey, Mexico (Figure 2); and recently, the Austonian luxury high-rise condominium tower in downtown Austin, TX.



Figure 2. Cuprum used 6063-T5 clear anodized aluminum for the curtain wall in the "Oficinas en el Parque" towers in Monterrey, Mexico.

Cuprum's main exports to the U.S. are aluminum and fiberglass ladders, including: step and extension ladders, step stools, attic-access ladders, and scaffolding products. Ladders are also marketed through U.S. subsidiaries Louisville Ladders and Davidson, and are sold through major hardware chains.

Ventanas Cuprum is the company division that manufactures windows and doors in a modern assembly plant located in Monterrey. These products are sold to builders and through retailers, in lines ranging from *Linea Basica* to *Eleganza*. Windows are offered with thermal breaks and the highest performance insulated glass. Profiles and hardware are also supplied through *Tiendas Cuprum* showrooms that sell profiles to carpenterias. Window designs include *Eurovent*, *Eurovent Premium*, and *Panorama*.

Indalum: Founded by Grupo LM in 1978 and located in the Monterrey suburb of San Nicolas de los Garza, Inda-

lum's extrusion presses are older but have been modernized. The company's other production facilities are state-of-the-art. Billets are cast in a modern foundry, which includes a SECO/Warwick homogenizing oven. Indalum (www.indalum.com.mx) has seven presses ranging from 1,650 tons (7" billets) to 2,500 tons (9" billets). All have gas-fired billet heaters and double pullers with PLC control. Annual capacity is 30,000 metric tons of profiles. A modern, highly automated anodizing line from Italtelco was installed in 2003 and is world class in every sense. In May 2008, a new vertical painting line from Trevisan was placed in service. Both lines can finish profiles up to 7 meters in length.

Products include profiles for doors and windows in their *Euroalum* design, sold by distributors throughout the country. Rigid aluminum electrical conduit is another important product, complementing the galvanized steel products of Indalum's parent company. Indalum attained certification to ISO 9001:200 and UL6A standards.

Grupo Valsa: Located in Chalco, this extruder has been producing aluminum products for the construction industry for 38 years. They operate four extrusion presses, ranging from 1,250 to 2,200 tons with 7-8" billet diameters. Two presses are recent GIA models, and all have modern handling systems, log shears, double pullers, one-man stretching, and PLC controls. Dies are produced in Valsa's (www.valsa.com.mx) own die shop with CAD/CAM. A new state-of-the-art anodizing plant was supplied by Autel (division of ATC) and is fully automated and computer controlled. A vertical powder painting line was supplied by Trevisan of Italy, and options include wood grain and marble finishes. A wide variety of colors are available in both paint and anodized finishes.

The company's major product lines include ladders (step, extension, and stools); conduit pipes and cable tray systems; hand rails, interior frames, windows and doors in the *Euro Valsa* line; as well as hurricane shutters and storm panels.

Industrias Nacobre: The Nacobre Group, owned by Carlos Slim Helú, acquired Almexa Tulpetlac, Aluminio Conesa Guadalajara, Aluder Veracruz (currently shut down), and Alumex Puebla in 1993-1994. Nacobre (www.nacobre.com.mx) has multiple divisions, which process different materials, including: copper and brass, PVC and other plastics, and aluminum extrusions.

The Conesa Guadalajara plant casts billet with a Wagstaff AirSlip™ system and uses Hertwich horizontal continuous casting and homogenizing equipment. They have four presses ranging from 1,200 to 3,500 tons, with billet diameters from 7-12". Presses have modernized PLCs and hydraulic systems. A second location in Guadalajara houses a state-of-the-art die shop, a profile fabrication shop with NC machines, and a Conform line. A retail showroom offers windows, doors, furniture, and profiles for window systems. The Puebla plant has three extrusion presses ranging from 1,800 to 2,500 tons and billet diameters from 7-8". A vertical powder coating line from Decoral can paint profiles up to 7 meters long. A second, horizontal paint line from ACF is a compact design. Both paint lines can feed three Decoral lines for applying wood grain and other exotic finishes to profiles. A two-step anodizing line accepts profiles up to 7.5 meters.



Extrusiones Metálicas



Indalum



Grupo Valsa



Industrias Nacobre

In addition to ladders, windows, and doors, Nacobre's Almexa plant provides window system profiles for residential and commercial applications. Heat sinks and precision fabricated parts for automotive applications are important products, and a sister company in Guadalajara produces die cast aluminum outdoor light fixtures.

Extrusiones Metálicas: Located in Veracruz, this modern plant has five European extrusion presses ranging from 1,500 to 2,200 tons. Their annual capacity is 25,000 metric tons of extrusions. Other facilities include a billet foundry; die shop; anodizing (60,000 amps and 8,000 metric tons per year capacity); and paint lines, both horizontal and vertical, with Kynar to AAMA 260 standards. The company specializes in the production of aluminum architectural profiles. Important product lines include the *Series 6500 PT* with polyamide thermal break, and the *Línea Española* window systems and curtain walls. Profiles are also offered in the wood effect finish. The Hotel ME in Cancun was built with profiles from Extrusiones Metálicas (www.extmet.com).

International Congress

Testimony to the expanding growth and modernization of the Mexican extrusion industry is the upcoming 1st International Aluminum Congress taking place June 10-13th in Puebla, Mexico organized by the Instituto Mexicano del Aluminio, or IMEDAL (www.imedal.com.mx). The organization has held aluminum panels for the past 16 years and in 2009 they've expanded to an international congress including both paper presentations and an exposition. Four plant visits are being offered during the congress, including a visit to Nacobre's Aluminio Conesa (as well as Conalum, CryoInfra, and Volkswagen).

Special themes for papers include techniques and processing for aluminum; extruders, sheet and plate plants, and foundries; the environment in the use and processing of aluminum; economic, financial, and foreign trade aspects of aluminum; uses and techniques in the automotive industry; finishes and coatings; and more. It is expected that Mexico's vibrant extrusion industry will be well represented at the 1st International Aluminum Congress.

References

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