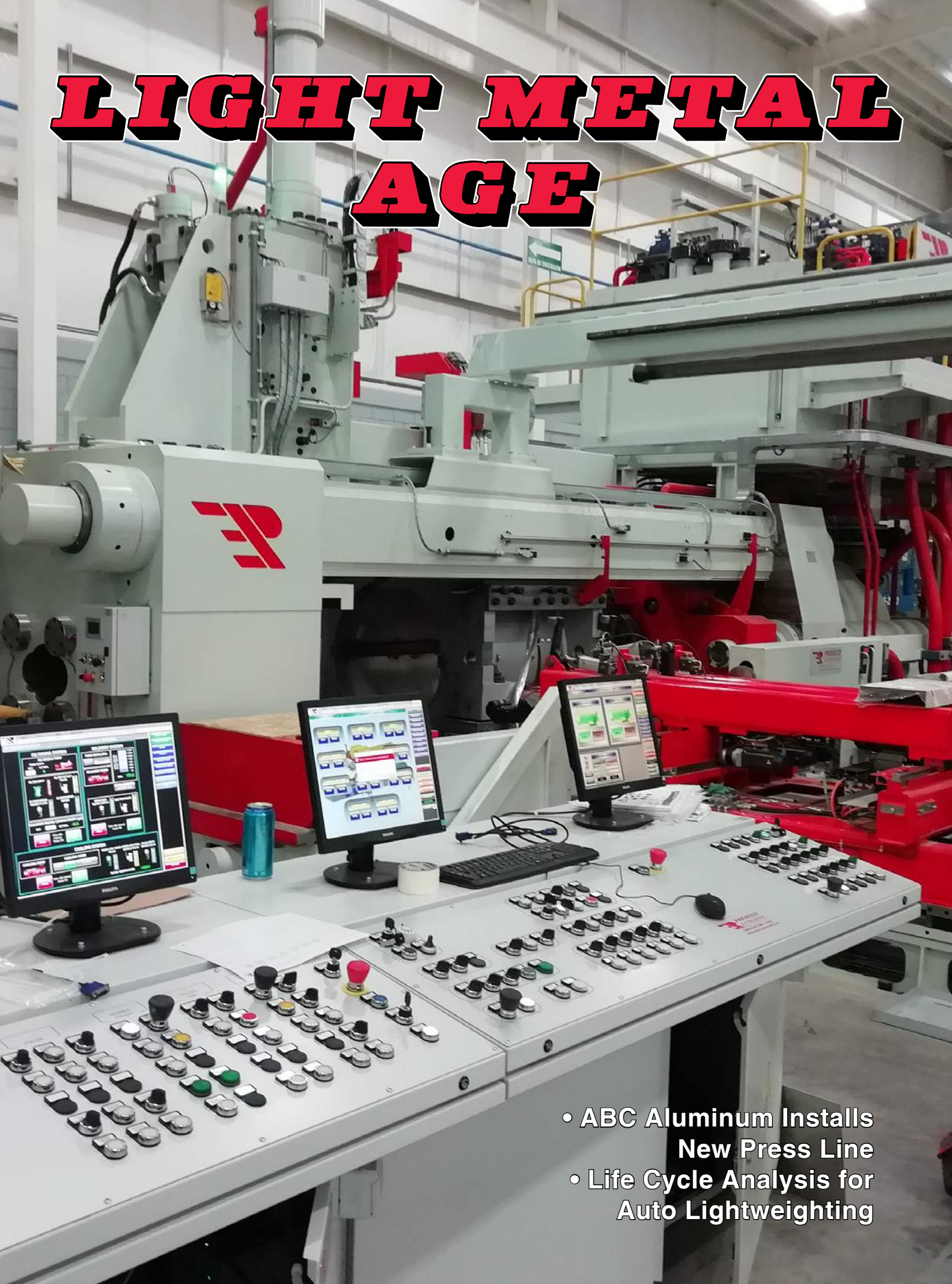
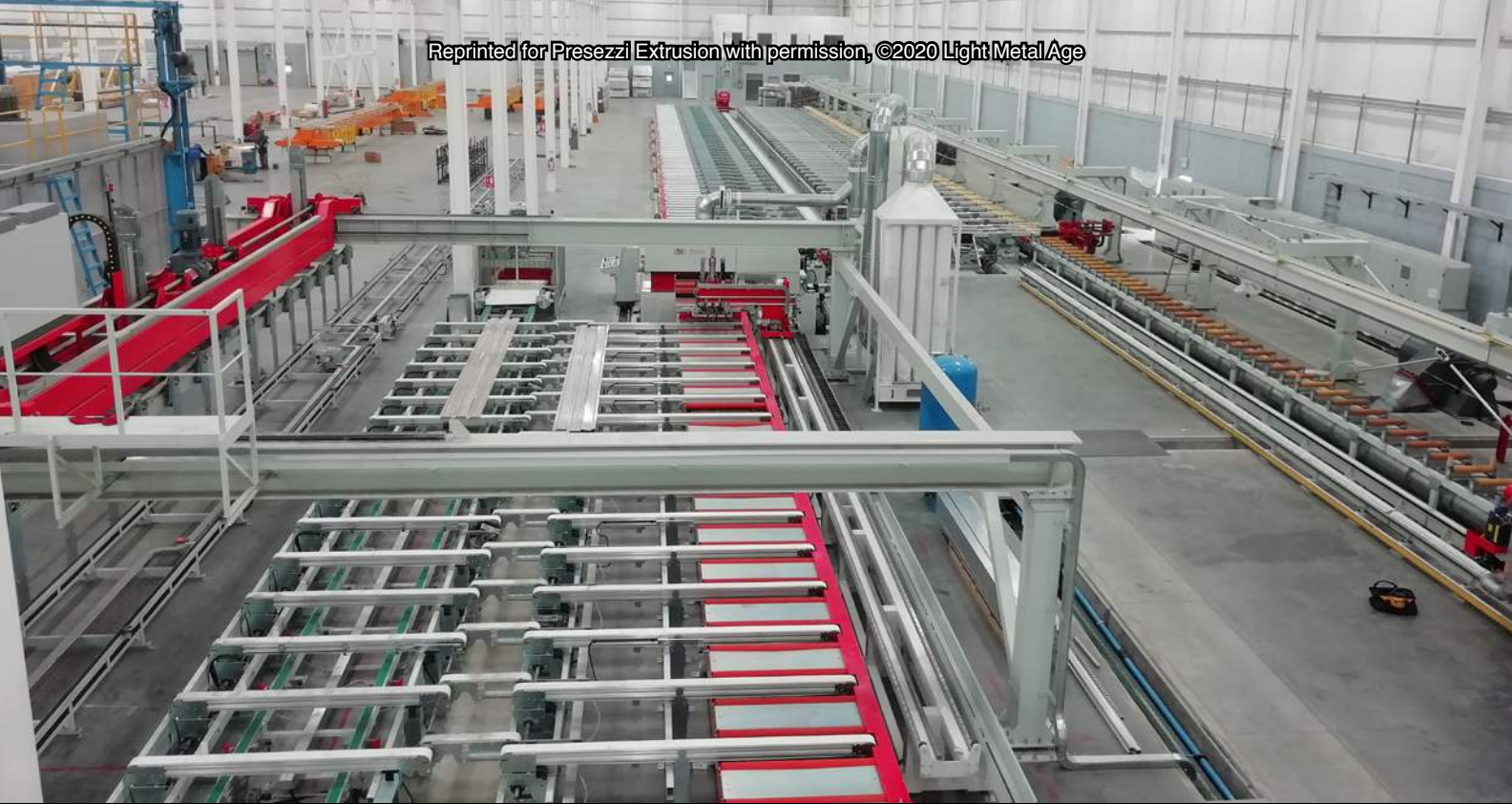


# **LIGHT METAL AGE**



- ABC Aluminum Installs New Press Line
- Life Cycle Analysis for Auto Lightweighting





ABC Aluminum installed a new 10 inch press line that expands its capabilities.

## ABC Aluminum Installs Advanced Extrusion Line *Reimagining Tijuana Through Industrialized Growth*

By Andrea Svendsen, Managing Editor

**T**ijuana, in the state of Baja, Mexico, has a less-than-stellar reputation. News stories and popular media have painted a portrait of the city as an unsafe place full of crime. However, the reality is more complex. ABC Aluminum Solutions, which is headquartered in San Diego, CA, and has its manufacturing operations in Tijuana, is working to redefine the city by providing an industrial hub for the production of aluminum extrusions and value-added components.

“Tijuana gets a bad rap,” said Wadih Kuri (Figure 1), president and CEO of ABC. “I am from Tijuana, and I’m betting on my city. We’re trailblazers here in Tijuana. The aluminum industry is new in this part of Mexico, but we see it growing. We are very transparent about what we do here at ABC, and I think there’s a lot of trust in what we do. We just need to clean up that Tijuana name.”

ABC has been investing heavily in its Tijuana manufacturing facility, having grown its capabilities exponentially over recent years. Most recently, the company has installed a state-of-the-art extrusion press that provides new capabilities and enables the company to further expand the markets it serves.



Figure 1. Wadih Kuri, president and CEO.

### Company Profile

The extrusion operation was present in Tijuana since 1990, manufacturing components for CRT monitors for

the local area. After the company went bankrupt in 1994, the Kuri family acquired the operations, which included two presses (6 inch and 7 inch) and an anodizing line. The company was renamed ABC, which stands for Aluminio de Baja California.

Since ABC first started operation, it has grown exponentially. The company now has about 500,000 sq ft of operations, with about 7 million lbs of extruded products being invoiced per month. The company considers itself a complete manufacturing company, providing not only extrusions, but also coating, anodizing, fabrication, and other value-added operations, such as kitting and tailored product lines. Around 51% of the company’s profiles are sold to the architectural sector, with 28% going to solar and the remaining 21% to other industrial sectors, such as truck trailers and automotive. Logistically speaking, the company is ideally situated to serve the U.S. market—which represents around 90% of its sales. Of the remaining 10%, around 8% is delivered to Canada and 2% within Mexico.

ABC is ISO 9001:2008, Qualicoat, and AAMA certified, as well as having C-TPAT approval, which supports the company’s cross-border shipments. In addition, the company is a member of the Aluminum Extruders Council (AEC), which they find valuable in terms of benchmarking their operations against other major players in the industry.

Currently, the company has almost 2,000 employees, many of whom were not experienced in extrusion manufacturing when they began working, so courses and education are provided. “The people that we bring in are often seeing aluminum for the first time,” said Kuri. “We have to educate them as much as possible about the process of aluminum manufacturing, so that they understand



how to run the equipment properly, the overall safety of the equipment, and generally what to watch for on the shop floor. We're building a new facility for human resources, specifically for training, since this is something we believe will help us grow and continue to be a better company." ABC also supports its workers by providing an on-site healthcare facility and a profit sharing program that provides bonuses for every employee at set times throughout the year.

### Massive Growth

In the time since ABC was acquired by the current owners, the company has grown from a two press operation with around 400 employees to an eight press operation with almost 2,000 employees. "We've been heavily investing for the past six years, and we haven't stopped," said Kuri. "It's been an ongoing process, and we're still growing."

One of the challenges for this growth has been the landscape. Tijuana is a hilly city with very little flat land. As a result, ABC has needed to shape the landscape to its needs in order to support each new stage of growth. This involved carving off the top of the hill at the site and using the soil to infill depressions. In addition, the company was faced with infrastructure challenges. "Tijuana is not an industrialized city," said Kuri. "We've been adapting the existing infrastructure to industrial capabilities. We're also working to make it more and more industrialized."

The company made its first expansion in 2012, with the installation of a 10 inch press line, which increased their capabilities significantly. Next to the press are fabrication capabilities, such as cut-to-length and punching.

In 2013, they followed up with the purchase of a used press line from Bonnell in Indiana. Although the company kept the handling equipment, the press was too old for effective operation, so they bought an 8 inch, 2,600 ton press from Presezzi Extrusion. The new press was a low cost press designed with a shorter container that was capable of operating efficiently with the older handling equipment.

ABC constructed a new foundation and building in 2016, designed to house two new 8 inch press lines. Both press lines were fully supplied by Kautek, including the aging ovens. However, the die ovens were supplied by Castool. Automation in the line is limited, with profiles stacked by hand for loading into the aging ovens.

This was followed up with the installation of their seventh press in 2019, a 7 inch from Mei Ruey Industrial in Taiwan. This press feeds ABC's finished goods area (Figure 2), which includes cut-to-length, fabrication, punching,

and assembly operations. This is mainly for do-it-yourself finished goods that are delivered directly to stores, such as Home Depot and Lowes.

The company also operates a die maintenance facility to support its extrusion operations. The company is starting to explore the potential of producing its own dies in-house. However, for the moment, most of the dies are still purchased from outside vendors, including EXCO, Idamex, and Compes.

In addition to expanding its extrusion capabilities over the years, the company has also expanded its surface treatment operations, with the installation of horizontal and vertical powder coating lines from Trevisan. They also have Decoral wood grain finish capabilities for handrails, siding, and other architectural applications. A new four-tank anodizing line was installed in 2015 (Figure 3), mostly to serve the solar market. The automated anodizing operations can be programmed for the shape, length, and color required, with the only manual work being the racking and unranking of profiles.



Figure 3. The anodizing line primarily processes profiles for the solar market.

Additional fabrication capabilities were added in 2019, primarily to serve the automotive industry. The company is currently working on achieving certification to produce automotive components, which is a year-long process. "Hopefully by the end of this year, we will be certified to sell into the automotive industry," said Kuri. "We're already selling to automotive, but the certification has to go hand in hand with the start of production. Basically, we're working with one of our customers to get certification."

### New Extrusion Press

ABC commissioned and started up its eighth and most recent extrusion press line in early 2020. Following their long time partnership on previous extrusion presses and other equipment, ABC selected Presezzi Extrusion for the supply of the state-of-the-art extrusion line, with die ovens from Thermika and aging ovens from Mei Ruey Industrial. The new line is designed with a high level of automation, providing the ability to produce longer, thicker gauge profiles for a wider range of industries. According to Presezzi, this is the largest and most modern extrusion line in Central and South America in the last ten years.



Figure 2. In the finished goods area, profiles are cut, fabricated, assembled, and packaged to be shipped directly to finished goods suppliers.

“Investing in advanced technologies and achieving high efficiency is something that’s important for us to be competitive in the market,” said Kuri. “We need to know that we’re putting our best foot forward. Presezzi brings the best possible technology and automation to their equipment, with the highest level of efficiency.”

The centerpiece of the new extrusion line is a 10 inch, 4,000 ton, front-loading press (Figure 4), which can extrude billet up to 56 inches long. The press, which features a modern energy saving system with variable speed drives, is capable of saving energy by up to 40% compared to the other presses installed at ABC. It includes an advanced human-machine interface, which sets up the appropriate recipe for each production run and stores the parameters for future use. The press has been designed to extrude profiles for a variety of industries, including architectural and industrial (which ABC already serves), as well as in markets that the company is looking to grow, such as automotive and aerospace.

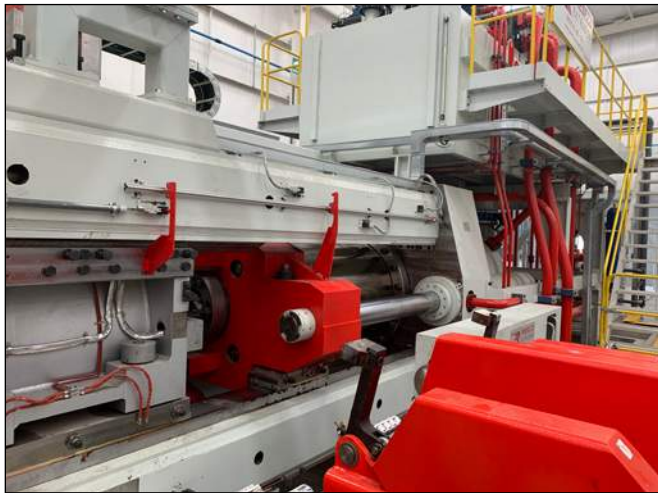


Figure 4. The new 10 inch, front-loading extrusion press.

The billet heater, supplied by COIM (a division of Presezzi), is able to process a maximum of 12,000 lbs/hr of aluminum billet. It provides tapered billet heating up to 120°F, while maintaining a consistent temperature tolerance between the billet skin and core of around  $\pm 9^\circ\text{F}$ . Both capabilities are considered essential in meeting the requirements to serve a variety of diverse markets. The heater is also able to capture and recover fumes, which are then reused during the heating process to improve overall efficiency by over 85%. In addition, it features low maintenance requirements and costs.

A multi-zone quenching system (Figure 5) has been implemented to ensure the mechanical properties of the profiles and prevent distortions. The 25 ft HECS combined water/air system includes 12 water zones with 500 nozzles providing high water pressure. Each zone is capable of being set to work independently in order to achieve the best cooling rate possible, based on the thickness and shape of the profile. The six air zones feature independent set ups and are able to cool the profiles to around 360°F. Following the main quench, a second semi-intensive air cooling system, combined with an intensive table cooling system under the 200 ft runout table can be implemented for those alloys that do not require water quenching. The longer runout table and air cooling ensure less deformation of the parts.

The handling system includes a double puller and flying cut saw, a 150 ton stretcher (Figure 6), a cut-to-length saw, and an automated handling system for profiles up to 55 ft in length. The stacker has been designed



Figure 5. A multi-zone quench provides both air and water cooling.



Figure 6. The 150 ton, fully automated stretcher.

to be able to handle heavy profiles for the truck and trailer market. Underneath the sawing area, a space has been prepared to install a conveyor for the collection and transport of chips and scrap.

The entire press line is automated—from the billet loader to the loading of baskets (Figure 7). Once the production recipe has been loaded into the system, the automation system will select the correct die and alloy for production of the desired profile. The line can be operated by as few as three people. The only manual operation is that of a crane to maneuver the empty baskets onto the line for loading, and then removing the loaded baskets from the line and stacking them for processing in the Mei Ruey aging ovens (Figure 8).

### No Sign of Slowing Down

Although the North American extrusion industry slowed slightly in 2019, ABC’s business grew by around 16% in the same period. “Aluminum is getting a lot of buzz on the market, especially compared to other materials like plastic,” said Kuri. “We see it as a great industry to be in, as it’s a metal that is being used in more and more products. In the architectural sector, we expect to see a shift away from PVC windows and curtain wall systems to the increased use of aluminum. With cities growing vertically, we see that all going into aluminum.”

With this expected demand, ABC aims to continue its growth pattern. The building that houses the new





Figure 7. The automated stacking system moves profiles from the table and loads them into baskets for aging.



Figure 8. Aging ovens heat treat profiles to meet customer specifications.

Presezzi press has already been laid out to allow for the future installation of a ninth press at the facility. In addition, the company is currently completing the installation of a remelt plant, which also has been designed with room for a second line. A new anodizing and paint plant is also expected to be on the way within the next year or so, with the groundwork for the new building already prepared.

The expansion being done at ABC Aluminum Solutions is impressive in its scale, which is being driven

forward by the company and its employees' dedication to quality and efficiency. ABC paints a different picture of Tijuana, as a city growing through business and industrialization. "There are more than 500 world-class companies that operate here. Not all of them are industrialized, but we're a region that's trying to make things," said Kuri. "With the aluminum industry and the people we have working here, we're trying to spread the word that Tijuana is more than just drugs, beer, and tacos. Although, we do have very good tacos." ■