SPECIAL REPORT ON MEXICO

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Mexico Chemicals: Building A Better Future

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INTRODUCTION

Recovery continues as structural reforms spur optimism

In the wake of Mexico's historic approval of structural reforms allowing for private investment in the hydrocarbons sector at the end of 2013, the Mexican market has been frenzied with optimism and growth projections. President Enrique Peña Nieto's success in pushing through this reform package is certainly one worth celebrating, and now that the reforms have been approved, the business community is more clearly evaluating its opportunities across sectors. For Mexico's chemical industry, the opening up of the country's oil and gas sector could be the game changer.

In decline since the 1990s, the Mexican chemical sector has struggled under the weight of Pemex and international competition. As Mexico's economy is the most closely linked to that of the United States, it has also been the most affected by the US recession. Yet, today Mexico has taken the lead in regional growth as its fellow Latin American powerhouse Brazil enters a recession. Upstream private investment spurred by the reforms could create downstream benefits to place the Mexican chemical market more firmly on the map. "Mexico has developed quite well since the crisis. We suffered perhaps the most in Latin America due to our proximity and close relationship with the United States, but this also helped our companies to make the most of our resources and become stronger," said Fernando Hernández, head of country services for Clariant.

In the context of the wider economy, the past two years have seen relatively slow growth in Mexico with a GDP growth of 1.1% in 2013 and preliminary data for 2014 showing growth of 2.5%. The forecast figures for 2015 were downgraded by the Bank of Mexico from 3%/4% to 2.5%/3.5% and from 3.2%/4.2% to 2.9%/3.9% in 2016. Compared to 2014, brighter prospects for the years ahead are being boosted by the country's strongest sectors which include automotive and food and beverage; both markets which are prime targets for chemical consumption.

Strong demographics, with over 52% of the population under 25, and a growing middle class present robust growth opportunities. "Mexico's GDP growth for 2015 is estimated to be around 3.8% in a market of 120 million inhabitants, with flourishing industries in many sectors," said Carlos Orbegozo, director of Merck Millipore Mexico.

Amidst the backdrop of relative economic growth, the Mexican chemical sector has posted encouraging numbers following nearly two decades of decline. Apparent domestic chemical consumption in Mexico has risen steadily from $33.7 billion in 2011 to $35.7 billion in 2012 and $37.1 billion in 2013. National production has not kept pace; however, after dips in 2011 and 2012, Mexico finally regained 2010 levels in 2013 with an output of $17.6 billion. "The past year was no doubt a difficult one for the chemical industry. The slow growth in the overall economy has had a fundamental effect on the chemical industry," said Roberto Ortiz, general director of Nynas Mexico, the local subsidiary of the global specialty oil producer. "While so far this year on a global level Nynas has seen positive trends in our business segments for naphthenics, the Mexican market has been challenging as a result of increased competition and slow growth in the context of the global reces-

A more competitive upstream sector will benefit Mexico's industrial development. Photo: Morelos petrochemical complex, courtesy of Pemex.

• Cover Photos courtesy of: Braskem Idesa (main), Grupo Beta (secondary), Clariant (tertiary).

Fernando Hernández, head of country services, Clariant

sion. Going forward, we are optimistic that the reforms will bring more opportunities for growth in the country's main markets and Nynas is looking forward to better results."

This incremental growth in chemical production has not been sufficient to stem the tide of Mexico's growing trade deficit. The chemical sector's trade balance hit a five-year low in 2013, with imports of $31.3 billion and exports of $11.8 billion. While exports have made a net increase over the last five years, this gain has not kept up with imports coming in to meet growing domestic demand.

"With over $30 billion of raw materials imported each year, the chemical sector is still active but is less integrated. Mexico's main export markets are in North America and Europe, which are the most effected by recession so Mexican exports have stayed at the same level," explained Gilberto Ortiz, vice president of energy within the chemical sector for industry association CANACINTRA and general director of law firm Gilberto Ortiz y Asociados.

With the promise of President Peña Nieto's approved structural reforms, the chemical sector is hoping for its recovery to accelerate. Expectations will have to be tempered, however, as investors remain in wait-and-see mode regarding downstream developments. A further challenge to the industry looms, as domestic producers must soon contend with chemical capacity expansions underway in the United States. Mexico's government will have to fine-tune its policies related to the chemical sector in order to ensure adequate incentives to lure international players to Mexico and bolster domestic companies. "With the coming of this new government we thought that there was going to be recovery, nevertheless, in the first year we have seen the opposite," said Juan Manuel Díaz, president of the chemical sector for CANACINTRA. "If there is no activation of the internal market, it will be very difficult for the industrial sector to maintain its position."

Chemical synthesis and blending manufacturing capabilities at Grupo Polak's Tlaxcala facilities. Photo courtesy of Grupo Polak.

CAN MEXICO'S STRUCTURAL REFORMS REVIVE CHEMICAL MANUFACTURING IN MEXICO?

Industry leaders are hanging their hopes on the reforms providing the much needed impetus to bring manufacturing back to Mexico. In the future, the opening of the energy sector is expected to have a twofold impact on chemical production in Mexico as manufacturers count on energy and feedstock prices decreasing. "The government reforms will bring Mexico back to the production levels witnessed during the late 1980s and early 1990s, when Mexico was the seventh largest petrochemical producer in the world. Although it may take five to ten years, reaching growth of 5.5% within the petrochemical industry is certainly possible for Mexico," predicted Miguel Benedetto, general director of Mexico's largest chemical association ANIQ.

Already, rising labor costs and increasingly strict environmental regulations in China have brought manufacturers back to North America. "Many companies that moved operations to China are now returning to North America. Mexico offers a viable option for businesses. The Mexican workforce is highly competitive in cost and quality compared to Asia. There are also significant logistical advantages in Mexico when serving the US market," said Herwig Bachmann, general director of Evonik Mexico.

Yet optimism remains cautious regarding the impact of the structural reforms. Industry leaders have voiced concerns that the downstream implications of the energy reforms are not well defined and international companies have yet to confirm investments in refining or petrochemical processing capacity in Mexico. "The only difference between promises of the past and this current plan for reform is that there is judicial reform accompanying these policies; however these reforms are still partial and are open to misinterpretation. The impact may not be as drastic as many people might imagine," said Gregory Polak, general director of Grupo Polak.

With a slew of cracking facilities slated to

come online in the United States starting in 2017, Mexican producers will have to cope with regional competition made fiercer by US shale gas prices. According to reports by Bloomberg, global chemical manufacturers are investing a record $72 billion in US facilities. "The new energy reform will help remedy some of the problems with Pemex, but there is a risk that this shakeup has come 20 years too late. Now that the United States is well on the path to becoming a major shale gas producer and petrochemical hub, there may be much lower demand for Mexican products," said Alfredo Ison, general director of chemical distributor Química Delta.

In this context, competitive reindustrialization is a top priority for the industry. "There is a list of about 3,000 products that are no longer manufactured in Mexico and we need to bring them back to the country," said Ortiz of CANACINTRA.

Through a CANACINTRA committee established to study Mexico's lost production chains, the association has determined the country has competitive potential to recover production in gas and natural gas derivatives, oil derivatives, and natural products. "Most importantly we need to develop refining capacity to develop oil derivatives to support downstream manufacturing. This would give us competitiveness again, but since there is an excess of refining capacity in the United States there is not short-term interest. We have hopes for more interest in refining in the longer term," said Ortiz of CANACINTRA.

Internal picture of a portion of Evonik's warehouse operation. Photo courtesy of Evonik Mexico.

As the impacts of the structural reforms will first need to trickle down from upstream developments, benefits to chemical companies will arrive in the medium to long term and have the potential to be diluted. "It is important for companies in the country not to rely on these reforms for increased business alone; they must continue to improve their standards so as to keep up with an evolving global market," counselled Hernández of Clariant.

MEXICO DEEPENS ITS TIES WITH THE GLOBAL ECONOMY

Mexico's trade advantages are only set to multiply as the structural reforms come to fruition. The chemical market has been radically affected by the 1994 signing of NAFTA, which brought a flood of foreign-made chemical products into the mar-

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Interview with Ing. Miguel Benedetto Alexanderson

General Director, ANIQ

Please tell us about ANIQ and the main milestones that have occurred since its inception?

ANIQ was founded in 1959 and has grown to 240 members that represent over 95% of the companies that produce and distribute chemicals in Mexico. ANIQ divides the chemical industry into 19 unique sectors and the largest of these sectors are synthetic resins, synthetic fibers, pigments and dyes, fertilizers, adhesives, and sealants.

The primary role of ANIQ is to lobby the federal government in order to increase competitiveness and contribute to the development of the industry. ANIQ also provides training to those involved in the chemical industry and trains between 4000 and 5000 people annually in areas such as safety, environment, energy, foreign trade, and union relationships. As the characteristics of the chemical industry are particular, ensuring safety is a primary objective for ANIQ.

Internally, ANIQ has the largest staff of any association in Mexico with over 80 employees and has three different sites that we operate from, including a training facility.

Since Global Business Reports last met with ANIQ in 2009, what have been the most significant changes in the chemical market in Mexico?

The most beneficial change that ANIQ has witnessed in Mexico is the increase in free-trade agreements. Mexico currently has 44 free-trade agreements (FTAs) with numerous countries all over the world and participates in FTAs with every Latin American country other than Brazil. Most recently Peru, Chile, and Colombia have entered into FTAs with Mexico and Mexico is currently in discussions with Turkey in order to build this relationship. These FTAs have opened up the market and allow the Mexican chemical industry to compete internationally on a much larger scale.

What effect will the government reforms have on Mexico's chemical industry?

The government reforms will bring Mexico back to the production levels witnessed during the late 1980s and early 1990s when Mexico was the seventh largest petrochemical producer in the world. Although it may take five to ten years, reaching growth of 5.5% within the petrochemical industry is certainly possible for Mexico.

This prospect of growth is possible thanks to three contributing factors: the availability of feedstocks, the price of feedstocks, and the geographic positioning of Mexico. Second only to the Middle East, Mexico has the most competitively priced feedstocks in the world. The availability and price of feedstocks paired with Mexico's ideal geographical location opens a world of possibilities for petrochemical producers and all those involved in the chemical industry.

In addition, the government reforms and the opening up of Pemex will allow for a large substitute of imports and a rapid development of technological capabilities. Currently, Mexico imports over 80% of its petrochemical requirements. National production will increase as a result of the reforms and the country will become less dependent on imports and become more self-sufficient. In addition, new international players that partner with Pemex will bring new technologies and capabilities, which will allow Mexico to exploit resources that until now have been left untouched.

ket. The facilitating of trade between the United States and Mexico put pressure on domestic chemical manufacturing, while also opening its borders with the largest global economy. "Twenty years ago we integrated our country into the global market and opened our borders to foreign trade by signing the North American Free Trade Agreement. Since that time, we have multiplied our exports by seven and FDI inflows have increased fourfold," said Ildefonso Guajardo, Mexico's secretary of the economy.

Mexico has gone on to further develop its trade links by signing numerous free trade agreements with other global trading powers. "Mexico currently has 44 free-trade agreements (FTAs) with numerous countries all over the world and participates in FTAs with every Latin American country other than Brazil. Most recently Peru, Chile, and Colombia have entered into FTAs with Mexico, and Mexico is currently in discussions with Turkey in order to build this relationship," said Benedetto of ANIQ.

In the wake of NAFTA, Mexican companies were quick to take advantage of trade partners to the north, although arguably at the cost of its trade ties with the rest of Latin America. With the 2012 signing of the Pacific Alliance, a trade bloc consisting of Mexico, Chile, Colombia, and Peru, Mexico is refocusing on synergies to its south. The group, which aims to integrate all of its respective trade agreements, agreed early on in negotiations to the immediate elimination of all tariff items for the chemical sector. "Mexico was very important in commercializing petrochemical products in South America, however, with NAFTA Mexico has shifted its trade focus. Now the government is taking steps to reestablish trade with South America with the Pacific Alliance to strengthen relations," said Ortiz of CANACINTRA. "Because Mexico is not a part of the Mercosur bloc, we have to gain more confidence in the Latin American market."

Looking across the Pacific, Mexico has also taken an active role in negotiating the Trans-Pacific Partnership, an initiative to sign a free trade agreement between countries in Asia Pacific and North and South America, including Canada, the United

States, Mexico, Chile, Peru, Australia, New Zealand, Malaysia, Singapore, Vietnam, Brunei and Japan. ANIQ has participated in these talks, lobbying on behalf of the industry for the proposed elimination of tariffs between member countries for manufactured products including chemicals, plastics, scientific instruments and electrical machinery.

PETROCHEMICALS

Unlike oil and gas exploration and extraction, petrochemical manufacturing in Mexico has already been opened to the private sector. Private sector involvement has been limited to secondary processing, however, with basic and intermediate production being handled by state entities. Despite the open market, which has led to a Unigel-Pemex petrochemical partnership and now a massive Braskem Idesa ethylene joint venture, foreign companies have been wary of surety of supply over the years. "The difficulty before was that foreign petrochemical companies were not totally confident that Pemex would be able to supply them with raw materials," said Ison of Química Delta. "Now we hope that the predicted heavy investment upstream will help boost confidence and attract investment further downstream. Mexico needs this new capacity because the country currently relies overly on imports to meet domestic demand for gasoline."

MEXICO'S FIRST MAJOR PETROCHEMICAL INVESTMENT IN 20 YEARS ADVANCES

With over 60% of the requirements needed for petrochemicals production currently being imported into Mexico, the decision by Brazilian petrochemical player Braskem and Mexican chemical company Grupo Idesa to invest in a $4.5 billion polyethylene facility is a much-needed step towards correcting Mexico's raw material deficit. "As of today, Mexico is importing 1.3 million mt/y of polyethylene. The production capacity of the Braskem Idesa plant, Etileno XXI, will be 1.05 million mt/y, which will help Mexico to substitute its imports with local production, particularly imports coming from North America.

This is convenient for local customers, who are able to have closer technical support and rely less on inventory," said José Luis Uriegas, general director of Grupo Idesa.

The Etileno XXI project will need secure access to competitive raw materials, a risk which Braskem Idesa has managed to mitigate with a government commitment to supplying ethane over the long-term. "This was by far the most important ingredient in a project such as this. You cannot invest close to $5 billion in a project without the complete insurance of the supply of competitive raw materials," explained Uriegas.

At the end of 2014, the project was at its peak construction phase,

Roberto Bischoff, CEO, Braskem Idesa.

José Carlos Tapia Bueno, general director, Trichem.

Raúl Baz, president and general director, Grupo Beta.

with 17,000 workers on site. As one of the major projects that Mexico has seen in the last decade, Braskem Idesa has had to take a proactive approach to equipment procurement and labor force development. "It is the largest industrial investment in Mexico and the largest petrochemical project to start in the Americas," explained Roberto Bischoff, CEO of Braskem Idesa. "We started this project ahead of the current wave of new projects, so we are in a better position in terms of equipment procurement and labor force. However, we will also face some labor challenges as we work on training our operational workforce."

For its part, the company has invested in training its construction workforce and is now working to hire its operational workforce well in advance to provide them with training at Braskem's Brazil operations.

In addition to jobs, the megaproject will bring downstream benefits to small and medium-sized consumers of its polyethylene, of which the site will be producing both low density and high density.

While certainly a positive step forward, Braskem Idesa's Etileno XXI project is not a silver bullet. Growing petrochemical demand will be too great to be satisfied with one facility, albeit one of this scale. "Although there will be new production plants set up to produce raw materials domestically, such as the Braskem Idesa project, imports will continue to be vital for Mexican producers," said José Carlos Tapia, general director of chemical distributor Trichem. "Mexico will continue to be a net importer of these raw materials for the near-term."

Yet the success of Etileno XXI has set a precedent for investors. "We have shown that such projects can be successfully brought to fruition in Mexico, even in the aftermath of the worst financial crisis in recent history. As long as there is a guaranteed supply of competitively priced feedstock and support from government and other relevant stakeholders, which Etileno XXI has, these projects can work," said Sean Goldstein, partner at White & Case Mexico.

Pemex Policies Shape Petrochemical Landscape throughout the Years

Othón Canales, chairman of chemical distributor Quimi Corp, outlines the history of Pemex's petrochemical developments and its impact on the private sector over the last three decades.

At the time when Pemex invested in its first ammonia plant in the early 1960s, Mexico was a closed economy. When the ammonia and other products plants were built, the private sector immediately invested in downstream plants. This created a scenario unique to Mexico in which primary petrochemicals were made by Pemex and secondary petrochemicals were made by private industry. By the 1980s, Pemex was one of the main producers of ammonia in the world. As a result, the private sector was investing in more downstream capacity. Not long after, however, Mexico signed the General Agreement on Tariffs and Trade (GATT) in the early 1990s and eventually NAFTA. With the opening of the economy, Mexico was flooded with petrochemicals. At this time, the government decided to discontinue its focus on the petrochemical industry and stopped investing in Pemex's petrochemical plants. This brought the private sector to a halt, as they were not able to back integrate raw materials.

Under the regime of President Carlos Salinas, Pemex was broken into five inter-dependent entities (one corporate and four subsidiaries), which had negative implications for the private sector. The Ministry of Finance interfered with transactions between the subsidiaries and determined the price at which Pemex's gas was sold. The price of gas was based on the price of gas in Texas and adjusted for freight and transportation cost. Immediately the price of gas soared in Mexico and Pemex decided to shut down its ammonia plants. Urea producers in Mexico lost their source of ammonia and CO_2 and many producers collapsed. Over these years there were only a few survivors in the private petrochemical sector, including Grupo Idesa, Alpek, Kuo and Mexichem.

PRIVATE PLAYERS HARNESS THE POWER OF PEMEX

Pemex continues to play an influential role in the industry, supplying the main feedstocks to producers and consuming a majority of the industry's output. As a result, weak performance by the global oil and gas giant in chemical sales, sustaining a 6.6% decline in 2013, is being felt further down the value chain.

"When we started our facility six years ago, Pemex used to supply us with five very important raw materials. They have since stopped producing these products that we now have to get through importers. Today we import roughly 70% of our raw materials," said Moises Preciado, general director of Barnices y Resinas.

Grupo Petroquimico Beta (Grupo Beta), the only Latin American company producing hydroxyethyl cellulose, has its production plant in Coatzacoalcos, Veracruz, strategically situated between Pemex Petroquímica's Cangrejera and Morelos plants. "Grupo Beta receives a substantial portion of its feedstock through a pipeline that comes directly from the Pemex facility; this is a substantial agreement for us. We have developed a lubricant that takes five minutes to transport to Pemex which allows us to be very flexible in terms of our client offerings," said Raúl Baz, president and general director of Grupo Beta. "Our goal is to start manufacturing more of the products that Pemex will need as it opens up at a better price than our competitors so that we can build on this relationship."

In order to combat rising imports, Baz at Grupo Beta advises companies to focus on specialty petrochemical products destined for domestic use. "Grupo Beta has a very important R&D team based out of Mexico that receives 5% of our sales. They work on consistently developing the latest HEC products as well as other polymers. Mexico imports more petrochemical products than it exports oil, which is something that needs to change. The Mexican industry as a whole should move to manufacture more specialty chemicals that can be applied to the oil and gas sector, and we aim to adopt this strategy at Grupo Beta," said Baz of Grupo Beta.

Grupo Beta's Investigation and Development staff is a team with wide-ranging experience in etoxilation and propoxilation processes development; they have created innovative technologies for the production of Hydroxyethylcellulose, synthetic lubricants, and polyalquilenglycols of high molecular weight. Photo courtesy of Grupo Beta.

Also expected to play a hand in decreasing Mexico's petrochemical imports is the energy reform's restructuring of basic petrochemical processing regulation. "Previously the basic processing in the petrochemical industry was only in the hands of PEMEX," explained Alejandro LópezVelarde, partner at energy-focused law firm LópezVelarde Wilson Hernández & Barhem S.C. (LVWHB). "This division created inefficiencies in production, because at the same time that companies produce secondary petrochemical products, they also produce primary products reserved only for the Mexican state. According to previous Mexican law, PEMEX had to buy the basic petrochemical products at the cheapest price on the market, which is why no companies wanted to invest here."

AGROCHEMICALS

Mexico's agrochemical sector is dominated by global players that together account for 70% of the market, followed by a highly fragmented market of small and medium-sized companies. While consolidation has occurred in the last five years, significant potential remains for further merger and acquisition activity. Domestic and global players alike have been constrained by the introduction of 2004 regulations restricting production registration, while a growing focus on innovation presents opportunities for companies with R&D capability.

As the global population increases, agrochemicals will play a more important role in agriculture. "In Mexico's particular case, by the year 2050 our country will have around 150 million inhabitants, who will demand a greater quantity of food," says Maria Eugenia Villanueva, executive director of Mexico's largest crop protection association PROCCYT. "Our industry plays a fundamental role supporting agriculture to increase production, covering the food needs of a growing population and reducing the dependency on importing food from abroad. Without the use of agricultural consumables supplied by our industry, productivity of all types of crops, including conventional, hybrids, transgenic and even organic, will be reduced up to 40%."

STRICT REGULATIONS SPUR MARKET ALIGNMENT

Since product registration regulation for agrochemicals was changed in 2004, the process has beleaguered the industry. While companies both international and local in scope have struggled with these regulations, which have been described as unclear and lacking transparency, domestic manufacturers have been most affected. Overtime, political opposition to the sector has taken its toll on production.

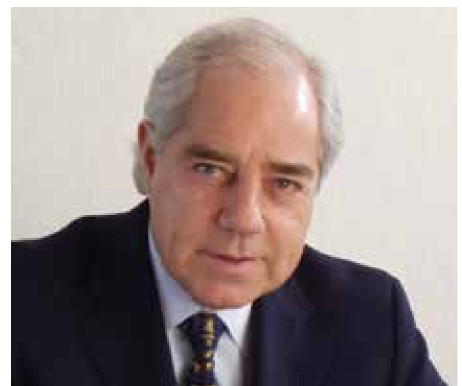
"In Mexico registration is done through the Federal Commission for the Protection against Sanitary Risk (COFEPRIS), which is part of the Ministry of Health. There is political opposition to agrochemicals within the government driven by the Green Party and they are not issuing any permits or registrations, which has brought the industry to a standstill," said Gregory Polak, general director of Grupo Polak, whose subsidiary Polaquimia manufactures agrochemicals. "In agrochemicals Polaquimia is the only company in Mexico that is still manufacturing molecules for agrochemical active ingredients. We were the first company and now the last," said Polak.

Although updated regulations were issued in 2010, the process remains prohibitively costly for many companies in the market. Yet this cost is necessary to ensure the safety of the industry's products, argues José Escalante, president of Velsimex and vice-president of agrochemical association UMFFAAC. "The new regulations are great improvements when compared to the previous ones. Velsimex understands that the market needs to be regulated as the general public is consuming many of our products, but there also has to be incentive to make money. The new regulation is much more balanced," he said.

With regulations now slightly more in check, agrochemical manufacturers in Mexico are focused instead on staying competitive in a rapidly consolidating global industry.

FMC Corporation announced in late 2014 that it would acquire Cheminova, the Denmark-based crop-protection company, for $1.8 billion. Both companies have significant footprints in Mexico and their integration will commence when the sale is completed in the early 2015. Carlos Jurado, general director of FMC Agricultural Solutions LAN region, noted: "This acquisition will give us a better position in the market and we hope to climb from the sixth to the third market position within Mexico. Cheminova will give us a very strong position in insecticides specifically because they will bring in between $30 to $35 million to our current sales of $72 million, so that means more than $100 million in Mexico alone."

This is the second major agrochemical deal of the year affecting Mexico after Chemtura announced it would sell its agrochemical business to Platform Specialty Products Corporation in early 2014.


José Escalante, president of Velsimex and vice president of agrochemical association UMFFAAC.

Juan Manuel Ramírez Muro, general director, IQC.

Within the domestic market, producers are further squeezed by the availability of raw materials. "Since 2009, the government has closed all semi-official companies that were supplying raw materials used to manufacture urea, ammonia, and phosphoric acid, which are very necessary for agriculture. This has led to Ibarquim having to fight for prices," said Julián Ibarlucea, general director of Grupo Ibarquim.

With Grupo Polak's Polaquimia subsidiary one of the few remaining active ingredients manufacturers in the Mexican market, agrochemical manufacturers are starved for raw materials. Without the option of relying on global networks as do the sector's multinational heavyweights, domestic producers are seeking creative value chain solutions. "The key strategy to stay competitive is to import active ingredients. By

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doing business in China, you can reach the same low costs of multinationals and large domestic companies for active ingredients," said Juan Manuel Ramírez, general director of Internacional Química de Cobre (IQC), which produces fungicides, insecticides and herbicides. "Beyond imports, smaller domestic companies, like IQC, also benefit from our structures. Compared to multinationals that have very large staffs, we can be more flexible and efficient."

On the other end of the supply chain, Velsimex is looking to take advantage of Mexico's geographic position in order to become a top global player. "Velsimex is currently looking at Africa and Asia as potential markets, but Latin America currently presents a very interesting market. Mexico has many shared idiosyncrasies with these countries and with the many trade agreements that exist between Mexico and these countries," said Escalante.

INNOVATING TO FEED A GROWING ECONOMY

Expanding the sector's in-country innovative capacity is crucial as Mexico's small landowners face climate constraint and market consolidation. "Farmers are always looking for better quality seeds both in terms of yield and disease resistance. Roughly 75% of Mexico's area is reliant on rainfall for its irrigation, which can affect the crops, climate and yield depending on whether there is an excess of rainfall or a drought," said Manish Sirohi, general director at United Phosphorous de México.

Companies are tapping into this need for innovation with investments in research and development capacity specifically within the Mexican market. United Phosphorus's subsidiary Advanta will be establishing an R&D center in Mexico this year, while Syngenta will be investing in a Seed Care Institute in Jalisco to provide services in seed safety testing, treated seeds analysis, and formulations development and application.

Syngenta's institute will be focused on product application in the Mexican market. "There are three areas that we will focus on at the institute: training farmers how to use this technology, improving the safe use of products, and increasing productivity. The Seed Care Institute in Jalisco is a key way for us to expand as we will develop new technologies for seed care," said Javier Valdés, general director of Syngenta Mexico.

Yet introducing new technologies can be challenging in a fragmented market. "The use of technology remains regional here in Mexico with the majority of farmers on the Pacific coast, mainly Sinaloa and Sonora, utilizing technology in their processes. In the middle of the country as well as towards the southeast, the adoption of technology in farming practices remains low," said Ibarlucea of Grupo Ibarquim.

Many small-scale farmers do not have access to new technologies or the funds to implement them. Without government support, this is unlikely to change in the short-term. "Currently there is a huge demand for maize, sorghum and rice, but Mexico only produces 22 million mt/y of maize, while it consumes 31 million mt/y. Rice farming areas have dropped by half, with production at around 180,000 mt/y and consumption at 1,000,000 mt/y," explained Sirohi of United Phosphorous de México. "This needs to change. The government must take initiatives in providing both credit and education to meet these needs. The private sector has been attempting to do this, but it cannot and should not be held responsible for this on its own. Public-private partnerships will be key in making this change," continued Sirohi.

Faced with the lower purchasing power of small agricultural producers and low agrochemical prices from multinationals, players such as IQC have taken further innovative approaches to developing their value chains. In a partnership with the mining company VES Capital Partners, IQC is developing the Veta Grande silver-copper project as a mine with on-site processing and refining capacity. "We plan to continue this model in the future and acquire various mining projects to put into operation. The copper we are mining we can then refine into copper sulfate and use for IQC's production, making our business more vertically integrated," said Ramírez of IQC.

PAINTS AND COATINGS

Latin America, previously a supplementary market for many paints and coatings producers, is quickly shifting to the forefront of corporate strategies.

TRANSACTIONS SPIKE AMIDST OPTIMISM

A number of high profile mergers and acquisitions have taken place in the last 18 months, indicating an attractive and active sector with significant growth potential. In the last year, industry leader Mexichem purchased PolyOne's specialty vinyl dispersion, blending, and suspensions resin facilities in Ohio for $250 million, while Axalta Coating Systems is expanding capacity within Mexico with a $10.5 million investment in their Tlalnepantla facility for transportation coatings. Chemical giant DuPont, which has had manufacturing in Mexico since the early 1950s, is in the process of a global divestiture of its performance chemicals segment. The $7 billion per year unit will be spun-off, and follows the 2013 sale of the giant's automotive coatings business to Carlyle Group, which today is Axalta.

Global paint supplier Sherwin-Williams has set its sights on Latin America as a major growth market, taking advantage

AP plant located in Queretaro, Mexico which develops high quality water and solvent based products. Photo courtesy of AP.

»Most of our innovations are invisible but indispensable.«

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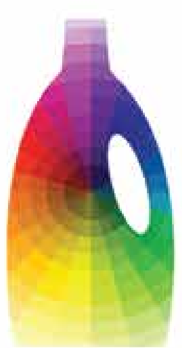

THIS IS CLARIANT: SPECIALTY CHEMICALS CREATING VALUE

Our products change the world in a way that is not always visible, but is still perceptible. With well over 9,500 patents, today our specialty chemicals already help us offer important solutions in many areas. To maintain this position, we are constantly developing new ideas and researching additional options to make life more beautiful, safer, and more sustainable. That is precious to us.
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of Mexico's proximity to the US market by headquartering its new Latin American coatings group in Mexico City. "The protective and marine industries are growing very fast; considering the new regulations surrounding those areas, Sherwin-Williams is hoping to see the most growth there," said Gerardo Gurrola, director of research and development at Sherwin-Williams Mexico.

Sherwin-Williams' decision to invest in a regional coatings group follows a thwarted attempt to acquire family-owned Mexican paints giant Comex. A 2012 bid by the company to buy Comex would have doubled their Latin American business, but was rejected due to antitrust issues.

Comex has proved an attractive target, as a new acquisition deal was announced in June 2014, this time with PPG Industries as the buyer. Following the October 2014 approval of the deal by Mexico's Federal Economic Competition Commission, PPG Industries has successfully completed its takeover of Comex. The $2.3 billion transaction is just the latest acquisition in Latin America that PPG has made in recent months.

"PPG is not strong in the architectural market, which is our strongest point in Mexico, so we see great opportunities for synergy there. They also do not have any operations in this part of Mexico, so we are looking to work with them in this regard. We are also hoping to take advantage of their knowledge and experience with industrial OEMs to expand our network in that market," said Alejandro Morones, vice president of global research and development at Comex.

Synergies with the US market are growing among Mexican paints and coatings providers, with Comex subsidiary AP, a producer of resins, now eyeing the market for expansion. "In the past, we focused our exports on the Latin America market, but more recently there has been a shift in the market and we are examining the United States as a potential expansion area," said Luis de Vecchi, national director of sales at AP.

Also looking south, the Mexican paints and coatings industry is working toward regional integration in order to harmonize standards and facilitate exports. The regional association Latinpin is the result of these efforts, spearheaded by Mexico and Brazil. Current members also include Colombia, Uruguay, Ecuador, and Argentina. According to the newly formed organization's head, Javier Maldonado, the move toward regional representation will help with regards to standardization and image. "Our main objective is to send all the industry standards that are already approved to the other countries to incorporate them. In the near future, we want to submit these to the International Paint and Printing Ink Council (IPPIC)," said Maldonado, president of Latinpin and general director of architectural paints manufacturer PSI Pinturas. "The Mexican paints and coatings industry has been increasing our relations with Brazil because both countries are the giants of Latin America. Brazil in particular is very well-developed in terms of innovation and has many new technologies in the market that we can learn from," explained Maldonado.

David Arciniega, president, ANAFAPYT.

TOWARDS A MORE SPECIALIZED AND GREENER INDUSTRY

Along with the growing revenues of paints and coatings businesses in Mexico, producers are also responding to a demand coming from the market for better products. "Mexico is seeing an increase in technology and higher quality of paints and products," said Samuel Troice, general director of Pinturas Acuario.

For its part, the National Association of Paints and Coatings Manufacturers (ANAFAPYT) is supporting the industry in its quest to raise its specialty paints and coatings products. "The energy and economic reforms will help to kick-start projects in the industry. ANAFAPYT is working with its members to obtain government resources to start up new projects. We are trying to take advantage of this moment to help the industry develop more innovative products faster," said David Arciniega, president of ANAFAPYT.

Comex's Research Center for Polymers. Photo courtesy of Comex.

Maggie Flor Gómez, general director, Charlotte Chemical.

Particularly for Mexico's fast-growing and export-focused automotive and aeronautic industries, finding international-standard local materials is key. "The coatings industry is growing much faster with the introduction of numerous specialty products for the energy sector and the automotive industry. There have been a growing number of parts manufacturers coming to Mexico that can provide an expanded market for us. Companies are very interested in trying new technologies and developing new products as the market matures," said Maggie Flor Gómez, general director of chemical distributor Charlotte Chemical, and president of the chemical distribution section at ANIQ.

The energy sector reforms are also opening up opportunities for advanced paints and coatings products. "PEMEX and CFE are going to start building new power plants as a part of the energy reforms. The kinds of coatings these will require are completely different than what we already produce, and this change is exciting to us," explained Gurrola of Sherwin-Williams.

"At the same time, the average customer has changed. Price is no longer the main issue; environmental friendliness, performance, and quality are all drivers for improvement in the industry to keep up with changing demand," added Gómez of Charlotte Chemical.

It seems that almost all companies are getting onboard the green train. Another company with a focus on bringing eco-friendly products to the market is Monterrey-based paints and specialty chemicals maker Kathion. They have found that while there is a demand for greener products, price

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Operations in Kathion's new warehouse in Monterrey. Photo courtesy of Kathion.

Jorge Saldaña Lozano, general director, WYN de México.

still plays a certain role and what needs to keep improving is the attitude of Mexican businesses towards environmental protection. "Kathion has the capacity to make almost any change towards more biodegradable products. This applies to solvents, biocides, emulsifiers, and dispersants. The issue is that our clients do not always purchase these products due to the price. If we are talking about costs, it is a complicated issue, which is where our expertise comes in and we integrate new technologies to help lower costs. We have made a series of applications, for example with pigments, such as metallic pigments with chrome and lead. We have switched these for others imported from India that are organic. Perhaps today it is not mandatory, but we are generating the need, so that if our clients decide to use something biodegradable, Kathion has the capacity to do it," said Pedro Méndez, technical manager of home care and agrochemicals at Kathion. Juan Alonso Escobedo, general director of Kathion, added: "We know that Mexico has great potential and has not previously taken advantage of its resources to increase production and instead has relied on imports. Nowadays, the inclination is toward domestic production, so Kathion is working to introduce new products with new eco-friendly technologies."

Key to meeting the demands of an evolving marketplace is close collaboration with suppliers. "Our innovation strategy is to first optimize our processes to achieve lean manufacturing, and secondly to work closely with our suppliers on introducing their innovations into our production. For example, we send PSI Pinturas technicians to observe our suppliers' innovations to ensure they are efficient and environmentally-friendly," said Maldonado of PSI Pinturas.

For WYN de México, a local polymer producer, the company is ramping up its technical capacity in order to penetrate the growing paints and coatings market. "We have brought in technicians to improve our technology in this area to better serve the market. While we used to only sell polymers and adhesives that we bought from suppliers, we have moved into producing our own adhesives to supply them directly to our customers. We are now moving towards ready-to-use products," explained Jorge Saldaña Lozano, general director of WYN de México.

With growing interest in environmentally-friendly products, companies are also

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adjusting their product lines to meet consumers' increasingly stringent sustainability requirements. "The industry needs more green products. This is an idea that Comex has embraced recently, starting with the removal of lead from our paints. Being a larger company, it is easy for us to institute this change, and we are hopeful that others will follow," said Morones of Comex.

While the trend towards greener products happening in the industry is certainly positive, there is a lack of guidance from the government and most of these developments are introduced internally within the industry or externally due to an increased demand for such products. Companies would like to see the government play a more important role and do more to encourage companies to go green. "There is a lack of regulations, and the regulations that are in place are not clearly defined and enforced. In the United States, emissions from the production of paints, coatings, and solvents are controlled, but this is not the case in Mexico. A preservative prohibited in the United States can still be used in Mexico. IMPAC does not use this substance and focuses on producing water-based, environmentally friendly materials. Companies in Mexico are supporting environmental sustainability and creating solutions to promote this idea," said Ricardo Rodríguez, director of IMPAC, an acrylic water-based materials producer based in Monterrey.

An industry initiative led by ANAFAPYT is in the process of establising a level of standardization across the Mexican industry for green products. "We are looking to establish what the best percentage level of VOCs should be, as well as excluding APOs and formaldehydes. We want to set a standard so that when a product is produced with a green paint stamp in Mexico, it will comply with the agreed regulations," explained Saldaña of WYN de México, one of the companies taking part in the standardization process.

Another recent and crucial development in the chemical industry has been the gradual implementation of ANIQ's Responsible Care program. More and more companies have been encouraged to sign up to the program by undergoing an external audit conducted by ANIQ. In order to achieve the Responsible Care certification, a company must follow specific codes that include process safety, occupational health and safety, product safety, transportation and distribution, pollution prevention and control, and community protection. Mexican companies would do well to follow the procedures put in place by Reacciones Quimicas, a Monterrey coatings and composites manufacturer, that is ISO 9000, 14000, and OSHAS 18001 certified and has implemented tough safety and security measures throughout its facilities. "Safety is the number one priority in our operations; we are very well equipped in case of any emergency including having trained fire brigades. Training is paramount in our production. All our personnel are schooled in our manufacturing processes as well as emergency procedures," said Patricio Cueva Zambrano, general director of Reacciones Quimicas. Just like their peers, they are also highly committed to the environment. "Roughly 70% of our new composites line uses eco-friendly products," added Cueva.

SPECIALTY CHEMICALS

While the specialty chemical sector does not stand to benefit from Mexico's energy reforms as directly as petrochemical producers, the market has nevertheless grown in recent years on the back of increasingly specialized sectors. Multinationals have found an expanding market for their specialty solutions, while both domestic producers and distributors are positioning themselves to take advantage of these growth opportunities. With margins for commodities increasingly shrinking, specialties are a robust solution to the challenging quest for profitability.

SPECIALTIES WANTED: MEXICAN MANUFACTURING FUELS GROWTH

In August, Mexico surpassed Brazil to garner the title of seventh largest automotive producer, on top of its rank as the world's fourth largest exporter. Auto OEMs are flooding into the country with a focus on high-end vehicles, including BMW, Kia, Mercedes-Benz and a joint venture between Renault-Nissan and Daimler. Conscious of this golden opportunity, Mexico's chemical manufacturers are gearing up their specialty divisions to meet the needs of these luxury vehicles. "Mexico is becoming a key market for our products in the automotive manufacturing sector, which is growing very fast. The boom in the automotive industry is one of the most important expectations that we have in 2015 and the coming years," said Álvaro Galin-

Eastman's Uruapan Manufacturing Site.
Photo courtesy of Eastman.

do, sales manager for Dow Corning de México.

Dow Corning's products for the Mexican automotive sector are targeting performance improvements ssuch as reducing noise and vibrations and increasing long-term lubrication and extreme temperature resistance. The Mexican Association of the Automotive Industry (AMIA) forecasts Mexican automotive production reaching 4.5 million vehicles by 2020, up from an expected 3.2 million vehicles for 2014, meaning the market has huge growth potential for chemical suppliers.

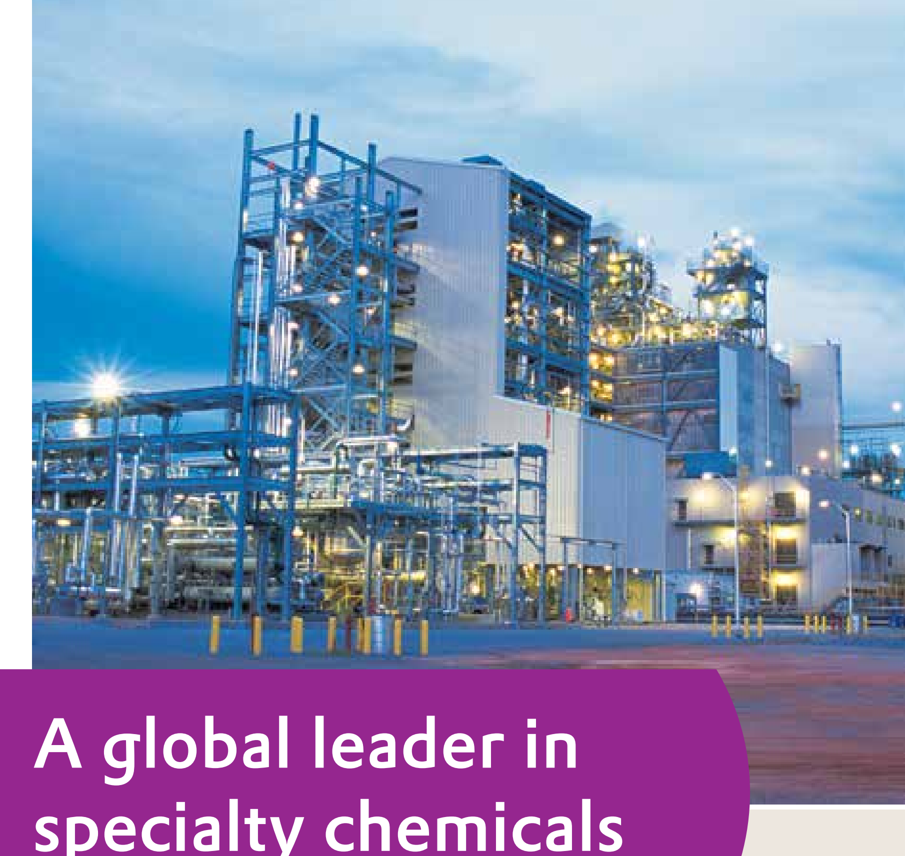
EIQSA, a PVC compounding company founded in 1954, like many of its counterparts is making the automotive sector a key focus for research and development activities. "Our main plan is to be more present in the automotive industry, which is growing very quickly in Mexico," said Ezra Bejar, deputy director general of EIQSA. "The aeronautical industry is also growing in Mexico and we are looking to penetrate this market with our materials, specifically in compounds."

Specialty giant Eastman grew from an import office in the country to owning two plants in Mexico via its global acquisitions. "Mexico represents a significant portion of Eastman's Latin American market," said Juan Carlos Parodi, vice president and managing director of Latin America at Eastman. "We have very diversified markets that we work in, with a key focus on the automotive sector, building and construction and industrial intermediates."

Specialty chemicals manufacturer, Croda, also sees big opportunities in Mexico. "Mexico is the second largest market for Croda in Latin America with a significant potential and Croda is positioned to grow regionally by providing our customers with new technologies and solutions that allow them to be successful in their markets," said Gerardo Victal, country director of Croda México.

Global specialties company Evonik has manufactured chemicals in Mexico since 1968 and expects manufacturing to remain the company's main focus in Mexico in spite of the expected changes coming to the market. "The Mexican population will have more buying power and will consist of a larger middle class that is able to afford higher value products. These shifts in the market will lead to more opportunity for Evonik requiring more specialty chemicals and products," said Bachmann of Evonik Mexico.

Echoing this strategy, the Brazilian chemicals giant Oxiteno has doubled its capacity in Mexico. "Our first priority is to look after the local Mexican market because there is a great demand that is not yet fully developed. There is a very low consumption per capita of personal hygiene products as well as foods, so these are great areas to grow. We want to serve these industries and use Mexico as an export platform to look after the NAFTA market and Latin America. We export products to Colombia, Costa Rica and elsewhere in Latin America," said Gerson Moacir Secomandi, commercial director of Oxiteno Mexico.



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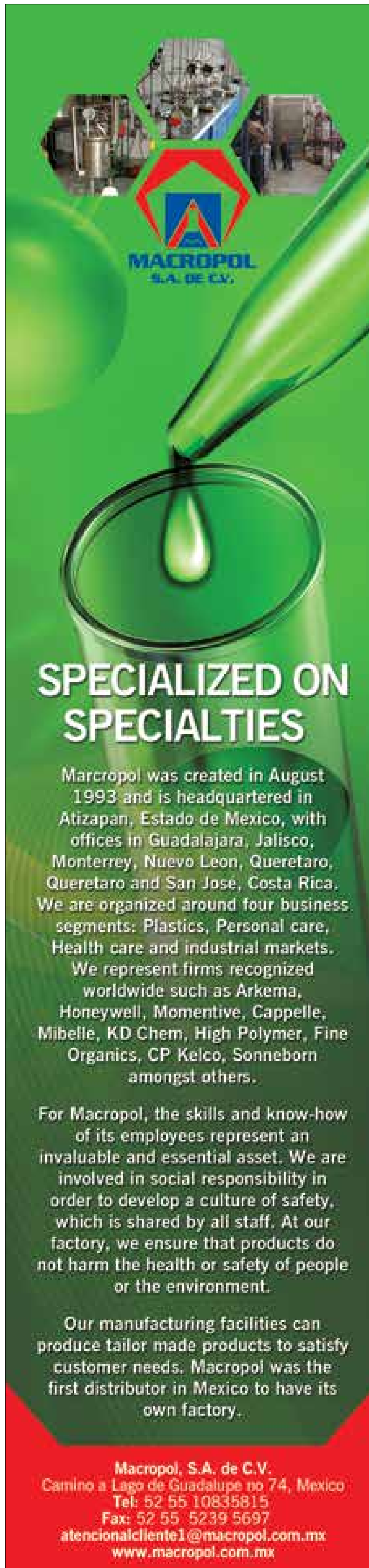

Gerson Moacir Secomandi, commercial director, Oxiteno Mexico.

For its part, Evonik Mexico is planning to partner with Grupo Idesa through its 100%-owned subsidiary CyPlus GmbH in a joint venture for the construction of a 40,000 mt/y capacity sodium cyanide plant in Coatzacoalcos. "This sodium cyanide plant will utilize cutting-edge technology in order to produce a raw material that is currently imported into Mexico. The market in Mexico continues to grow in an interesting way, and this partnership will yield substantial production over the next few years," said Bachmann of Evonik Mexico.

As the Mexican market grows in importance for international producers, local specialty chemical companies with manufacturing capacity have proved to be crucial in providing a foothold for the region. Organo Síntesis, a Mexico-based producer of fine chemicals for personal care, water treatment and disinfectants, offers toll manufacturing to international companies that do not have their own production facilities in Mexico and want to export to Latin American countries. "In such cases, they seek out Mexican companies like ours to deliver high quality results. Approximately 35% of our revenue comes from toll manufacturing," explained Federico Soto, marketing and sales director for the company. "We expect our toll manufacturing business to continue increasing in the next few years. We are looking to cooperating with more international companies. These companies are not always interested in building new plants because such investments require a lot of capital; it is often better to have a local partner for manufacturing such as Organo Síntesis."

First run on extruder. Photo courtesy of Macropol.

Such local-international tolling partnerships pave the way for joint ventures that can benefit not only production, but also innovation, a key area the industry is looking to improve.

MEXICO'S POTENTIAL AS AN INNOVATION HUB

As opportunities for specialties growth emerge from automotive and aerospace manufacturing, specialty players are also hopeful that the energy market will soon become more innovative as Pemex transforms. With Pemex looking to be more profitable and private oil and gas investors coming in, Mexico has the potential to become a center of excellence for energy-focused performance chemicals.

"With the new reforms, many players will have the opportunity to offer new technologies and products. For Dow Corning, we are focusing particularly on our products that have applications in the oil and gas industry. Our silicones are very well-recognized for their high efficiency in antifoams and de-mulsifiers," said Galindo of Dow Corning de México. "We plan to develop synergies with service providers to Pemex by offering new technologies and improving the productivity in Pemex.

For global specialties giant Clariant, its modern ethoxylation plant located in Coatzacoalcos is 2 km from Pemex's ethylene oxide facility, which makes the Clariant facility one of the company's stronger manufacturing sites for ethylene oxide derivatives. At its Santa Clara complex, Clariant has applications labs, a distribution center and a multi-business site with productive plants belonging to pigments,

masterbatches and industrial and consumer specialties. Its Puebla production site also houses laboratories for its functional minerals business unit.

While multinationals and large domestic players are relying on their global R&D centers and deeper pockets, innovation is occurring on smaller scales thanks to cross-industry partnerships and collaboration with institutions. "Unfortunately, the government does not provide enough incentives to promote innovation; this comes from within the industry. Most companies here reinvest their profits to fund expansions and research, which becomes difficult for smaller companies like Macropol," said Eloy Cordero, general director of Macropol. "The current reforms are a step in the right direction, but it will be some time before we see government-funded innovation here."

"The first challenge for innovation is to develop new molecules for different market applications, which must be eco-friendly and approved by the different relevant agencies. The second challenge for conducting R&D is capital, which we need for further investments in our plants. Although some financial supports from the government and banks exist, they are limited; therefore we usually finance new projects," echoed Soto of Organo Síntesis.

In the absence of adequate government support, agile domestic players are consulting academic and research institutions to leverage their chemical expertise. "Resymat has an important agreement with the National Autonomous University of Mexico (UNAM), whose graduates with doctorates and master's degrees we have working in our plants. We also have a partnership with Tecnológico de Monterrey focused on plastics. In addition to academic partnerships, we also have agreements with research companies such as Ciqua and Ciateq," said Aldimir Torres, commercial director of Resymat, a market leader in polyester polyols.

A lot of companies strongly believe in Mexico's potential. Their belief is that

OSSA pilot plant relies on a highly experienced team of chemists and chemical engineers supported by a modern laboratory and pilot plant equipment. Photo courtesy of Organo Sintesis.

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Mexico's young demographics have a lot to offer and should be given the opportunity to put to use their talents and newly-acquired qualifications from institutions of higher education across the country. Their conviction is that investing in people is one of the best ways to achieve a robust and sustainable growth in the future. "Mexico has an enormous potential when it comes to innovation and creativity. We now have some tech companies that have developed innovation centers in Monterrey. Mexico's young workforce is well educated, and IMPAC employs a lot of these fresh graduates. We have not had trouble finding talented individuals. IMPAC invests a lot of resources in our human resources department in order to find and train quality personnel," explained Rodríguez of IMPAC.

Going forward, Mexico's potential to become a regional center for innovation in the chemical industry will depend upon Mexican companies taking a similar approach to research and development. Furthermore, as de Vecchi of AP predicts, the country's strong demographics will prove to be a significant advantage. "Mexico is poised to become a leader in innovation. Never before in the history of Mexico have we had such a demographic balance where 50% of the country's population is less than 25 years of age. The country's young people will help Mexico to become an innovation hub, providing products and solutions that will be used around the world," said de Vecchi.

DISTRIBUTION

As consolidation occurs on a global scale for chemical distribution, growth opportunities are heating up for the remaining players. On a regional scale, Latin America saw chemical distribution growth rates of 8.6% according to a recent report issued by the Boston Consulting Group. Within the Mexican context, on top of this growth chemical distribution enjoys a vital importance to the industry's value chain.

CONSOLIDATION BREEDS FIERCE COMPETITION

As the trade imbalance persists for Mexican chemicals, distribution will continue to play a crucial role in the industry's value chain. "Mexico continues to rely heavily on imports, as is evident by the 10% growth in imports annually, which is the result of growing demand for materials, but flat domestic production," said Tapia of distributor Trichem.

"There is a net deficit of production close to $20 billion. Relative to the size of the industry, the chemical distribution market is huge," added Othón Canales, chairman of the board of directors at Quimi Corp, a Mexican-based Latin American chemical distributor.

In recent years, as chemical consumption continues to grow, the distribution market has attracted the attention of multinational distributors that are increasingly identifying Mexico as a prime target for expan-

Alerted by a camera and sensors of a possible imperfection, an IMPAC employee stops the automatic production line for a few seconds to examine the modified bitumen roll. Photo courtesy of IMPAC.

sions. Multinational interest has manifested itself in significant market consolidation as international distributors are entering the market by acquiring local players. "In the early 2000s, the top ten chemical distributors in Mexico were all family-owned companies. Today it is a new world where big multinationals like Brenntag and Univar are acquiring more businesses," said Johnny Silva, managing director of Disan Mexico, the Colombia-based Latin American chemical distributor.

As a result, much of the distribution business has been transferred to the accounts of very few. This is in line with global trends, as chemical manufacturers are increasingly rationalizing their distribution channels. "Today, six or seven companies control approximately 30% of the market," said Ison of Química Delta, one of the last remaining distribution leaders that is family-owned.

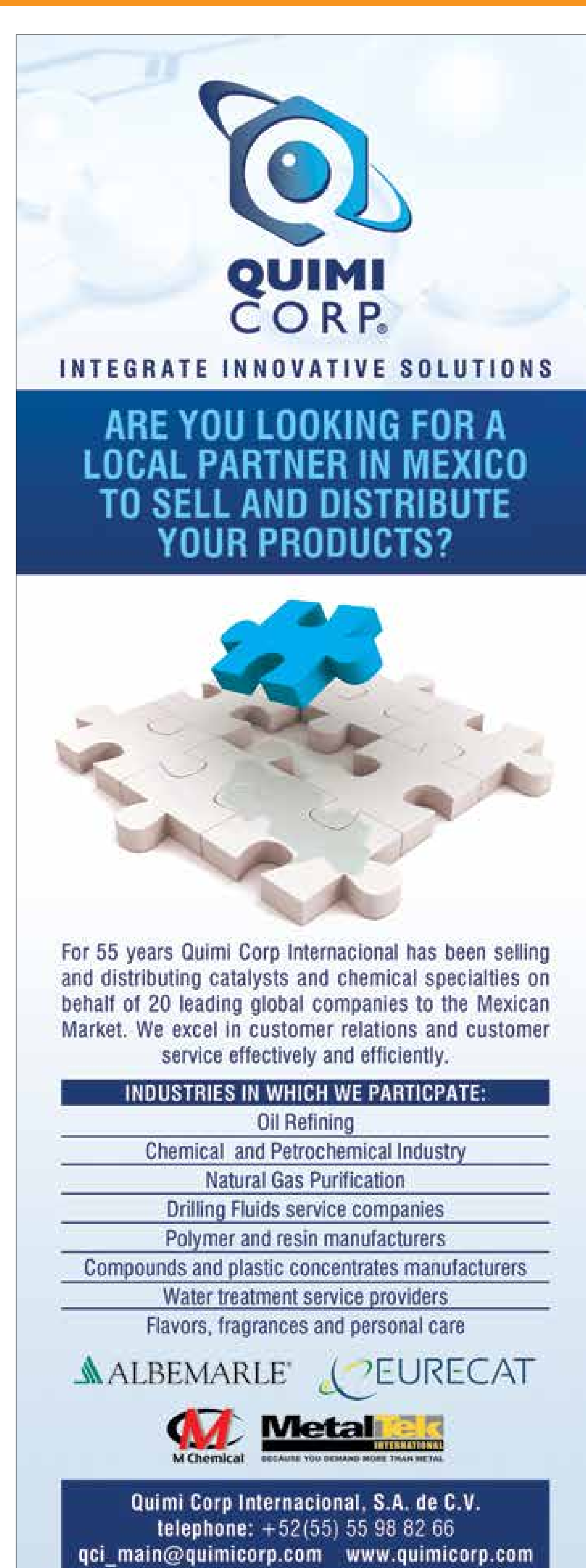
Remaining players in the market are either international companies with aggressive growth plans or small, specialized distributors. "The distribution space in Mexico is a very fragmented one. The top few are very focused on commodity-type products, with the rest focused on a variety of products and services to support the industry. There are 80 registered distributors within ANIQ, but perhaps over 100 including those who are not registered," said Arturo Hoyo, country manager of Nexeo Solutions.

Market consolidation is showing no signs of stopping as global companies like Nexeo are continuing to enter Mexico and looking for fast growth. "It is a large, but somewhat disorganized market. As such, there are a number of distributors ready for partnerships in the interest of consolidating and combining efforts. Nexeo's strategy is not about expanding our footprint so much as it is about improving our offering, so we have to conduct a very careful assessment of any potential partners. Not every company is a viable option for partnership, but we do see immense potential as we evaluate the market," added Hoyo.

Nevertheless, small specialized distributors continue to play their role, as evidenced through the example of family-owned Watson Phillips. "Our main strategy of differentiating ourselves from the competition is by providing excellent service and technical expertise. Watson Phillips is a fairly small, private company and this enables us to be very flexible and give personalized attention to our clients. Larger distributors are sometimes too large to be able to provide this kind of service. Mexico will continue to import a number of specialty products in the future as they are unlikely to be manufactured here. The production infrastructure is already well developed in the United States, for example, and they will continue to export to places such as Mexico, which is where Watson Phillips comes in as a distributor with extensive experience," said Clyde Louis Young, general director of Watson Phillips.

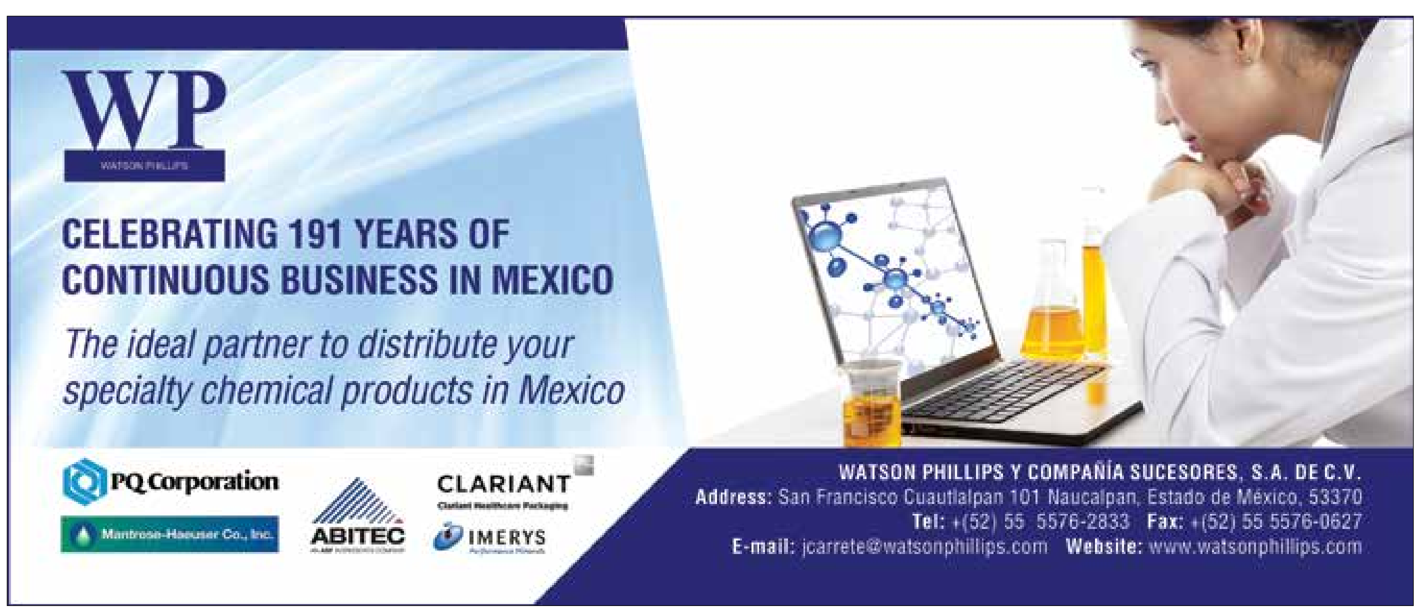
TAKING CONTROL OF THE SUPPLY CHAIN

To combat the fierce competition driven by a shrinking playing field, chemical distributors are finding more ways to participate in the value chain, whether it is increasing value added service offerings or moving fully into production.



DVA Team preparing a customer trial in a coating pan. Photo courtesy of DVA Mexicana.

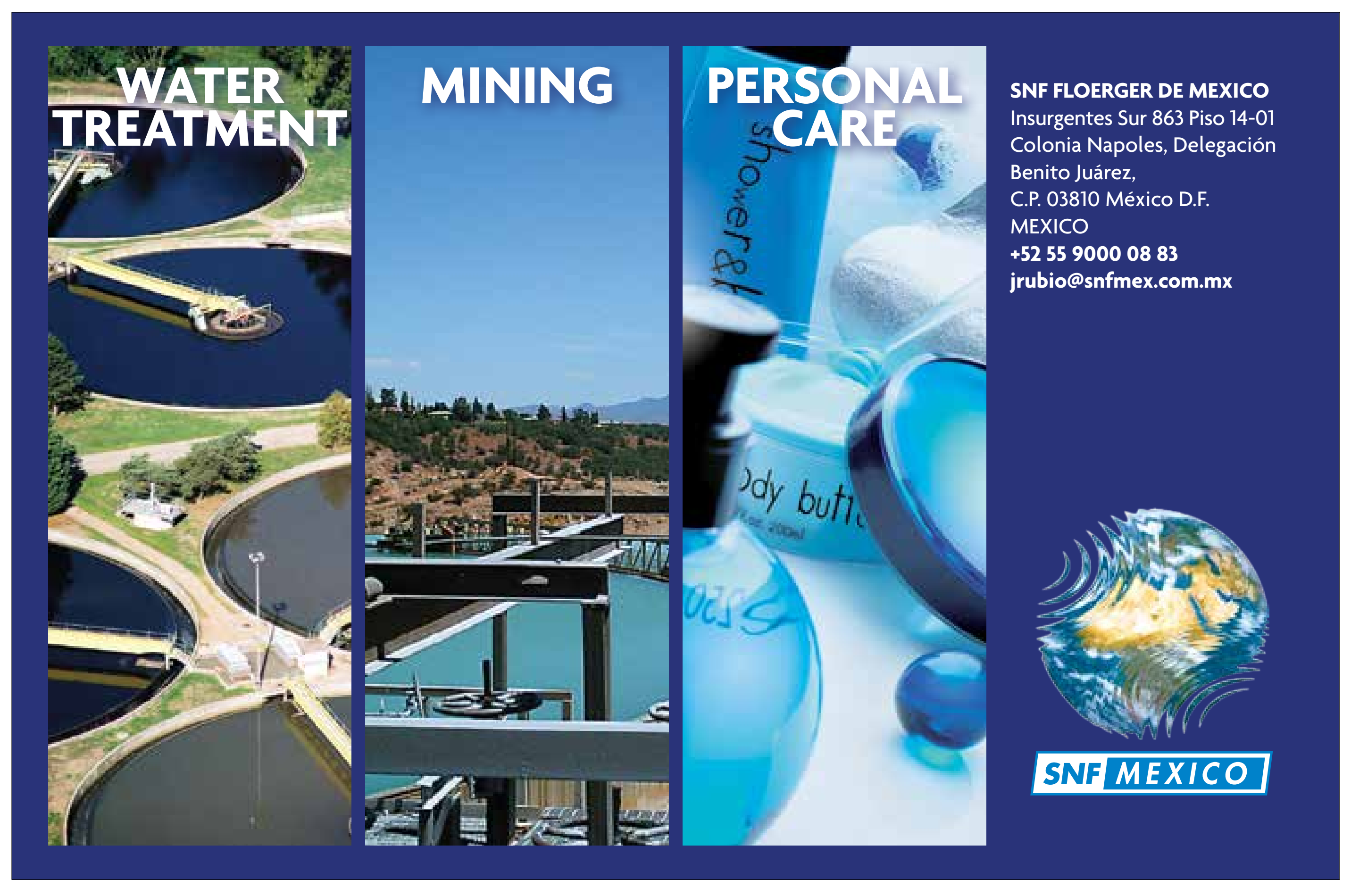
Mexican specialty chemical distributor Macropol has responded to the quickened evolution of the market by adding in production capability. "Since 2007, we have been running a factory to produce chemical products as well; the idea is to support our commercial lines with this. In the past, products evolved every 20 to 25 years. Today the rate is much faster. Macropol's activity is currently split 70% distribution and 30% production. Our goal is to increase production to between 50% and 60% by 2016," said Cordero of Macropol.
Pursuing a similar strategy, distributor Trade Chemicals is currently manufacturing and importing products in equal measure. "We hope to increase our manufacturing. The most important products for us are silicon emulsions, which are used in many markets," said Miguel Valdivia, commercial director at Trade Chemicals. "A number of distributors are moving into manufacturing, which is a smart way to develop the supply chain. Overall, this move means better prices and increased competitiveness with other companies. We also have more control over the quality of our products when we are producing them since we know how they are made."
While specialty chemicals and niche materials have traditionally been left to small players, Mexico's leading distributors are increasingly targeting specialties for growth, putting further pressure on small and medium-sized companies.
Química Delta, which is aiming to increase its specialties and differentiated products business from 40% of overall sales to 60%, joins a rank of larger distribution players aiming to grow through specialties. "In the context of the market consolidation, it is important to find ways to add more value for our customers. This can be achieved not only through a focus on specialties, but on products with higher value added in general," said Ison of Química Delta.
Colombia-headquartered distributor Disan has been in the Mexican market for ten years and is also targeting specialties for growth. "Disan has put a bigger focus on specialty products where there is room to grow and larger margins," said Silva of Disan. "Large chemical manufacturers want to focus on their production, R&D, and key customers. This creates more and more opportunities for distributors to add value into the supply chain."
In contrast to its commodities-focused peers that are now looking to enter into the specialties market, global distributor Brenntag entered the Mexican market in 1992 with a strategic focus on the specialties business.
"The usual progression when entering a new market is to start by shifting commodities and then move on to specialties. However, when Brenntag came to Mexico, commodities distribution was already well



covered, but there was a noticeable gap in the area of specialties. We, therefore, decided to invert the usual progression and focus our business on specialties before breaking into commodities. Today the split is around 50% specialties to 50% commodities," said Guillermo Bellot, general director of Brenntag Mexico.
Today Brenntag is expanding its commodities business, in spite of an aggregate drop in commodities demand in Mexico. "There is potential to expand our market share for commodities in both organic and inorganic products," said Bellot. "It is true that recently we have seen a contraction in demand for commodities, which has impacted profit margins for all distributors. To combat this and to differentiate ourselves we look to add value to all the products we sell. Rather than just buy large volumes and sell them, we offer further processing, such as blending, to our customers."

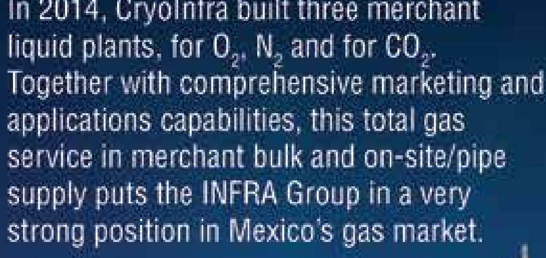
TAKING ADVANTAGE OF GLOBAL SUPPLY NETWORKS

Only twenty years after NAFTA opened up Mexico's markets to the world, chemical distributors are taking full advantage of Mexico's geographic positioning and numerous free trade agreements to optimize their sourcing networks. Increasingly, even domestic companies are opening branches in key markets around the world to find better prices and quality. "Charlotte Chemical has an office in San Antonio, which is mostly strategic. Most of our products are imported. Two percent of what we sell is locally produced, with the rest coming from the United States, the United Kingdom, India, China and Japan. Until the current reforms take effect, we will continue to import. We aim not to compete with local producers, so we sell things that are not available here," said Gómez of Charlotte Chemical.
Charlotte Chemical is one of many Mexican distributors scouring the globe, with many looking to China as the country's reputation for quality improves. "More distributors are bringing items from China because the quality is getting better, but not in all cases. You have to be very selective in what you import from China. We were the first company in Mexico that imported products from China for the textile industry. In every case we have to double check the quality of the products, which involves asking for all of the specifications and certifications from companies before we start doing business with them," said Salvador Solodkin, president of Mexican chemical distributor Materias Químicas de México (Maquimex).
This global strategy succeeds in price competition and is enjoying greater acceptance in the market. "Five years ago, quality control would have been a major concern for us when working with companies in Asia. Nowadays, we are happy to say that suppliers there are equally as reliable as their European or American counterparts," said Alonzo Autrey, general director of DVA Mexicana.

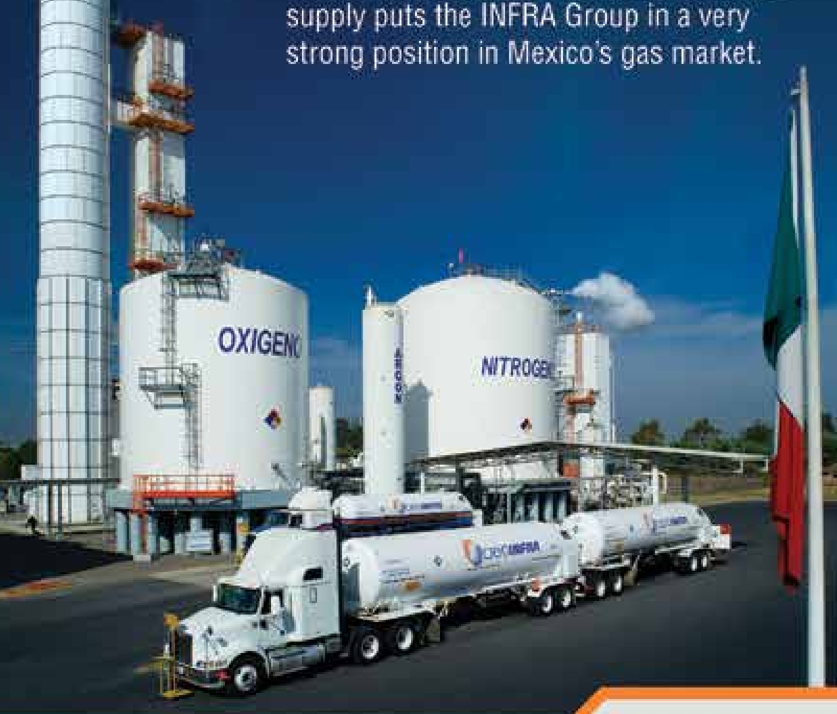


A LEADER IN INDUSTRIAL GASES

CryoInfra, a subsidiary of Infra Group, is a joint venture with Air Products which produces, sells and distributes merchant bulk and pipeline gases to large number of customers with widely varying requirements. CryoInfra provides these products and services for Oxygen, Nitrogen, Argon, Carbon Dioxide and Hydrogen.



In 2014, CryoInfra built three merchant liquid plants, for O_2, N_2 and for CO_2. Together with comprehensive marketing and applications capabilities, this total gas service in merchant bulk and on-site/pipe supply puts the INFRA Group in a very strong position in Mexico's gas market.



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SERVICE SECTOR

Supporting the chemical and petrochemical manufacturers and distributors of Mexico, an array of service providers have come from abroad or sprung up locally to provide sophisticated solutions to the industry's non-core activities.

INDUSTRIAL GAS HEATS UP

Mexico's industrial gas market has seen considerable growth in the last five years as a result of the country's strong manufacturing sector and its oil and gas activity. In 2012, according to a report by CryoGas International, the industrial gas market in Mexico grew by 6%, although this growth was tempered by the peso's deflation. Overall, on a regional level, Mexico has grown to now account for 30% of the Latin American market, gaining 2% in 2012.

Evidence of this boom can be found in a spate of investments from the country's main industrial gas players. Leading industrial gas suppler Cryoinfra, a partnership between Grupo Infra and Air Products, completed a new merchant liquid plant in Veracruz this year. The facility, Coatzacoalcos Dos, was built to fulfill the nitrogen gas supply contract that Cryoinfra won for Braskem Idesa's Etileno XXI plant. "In addition to supplying to Braskem Idesa, the plant will also supply oxygen and nitrogen to the petrochemical complexes as well as liquefied oxygen, nitrogen and argon to other customers in the petrochemical and chemical industries. This plant has the most advanced technology as well as a very good regional location," said Dieter Femfert, commercial director of Cryoinfra.

Beyond servicing Mexico's petrochemical and chemical producers through its merchant plants, Cryoinfra has also developed expertise to provide turnkey projects. "At Clariant's Coatzacoalcos plant we have developed a turnkey liquid hydrogen system to supply hydrogen for their amine process. We not only provided the product, but also the tank installation, pipeline, safety services, control systems, and flow meters, as well as preventive and corrective maintenance," said Femfert.

Joining already-established Mexican play-

ers such as Cryoinfra and Praxair de Mexico, Air Liquide completed in 2013 a new air separation unit to supply industrial gases to Altos Hornos de Mexico (AHMSA), adding over 1,500 mt/d of industrial gas to the Mexican market. Air Liquide's investment marks a growing capacity and growing interest from international industrial gas providers.

As the energy reforms attract new industrial gas suppliers aiming to work with a newly liberated Pemex and the nascent private sector, competition within Mexico's industrial gas space is set to grow fierce. "The market for technology is shifting, as Pemex is changing the way that it procures products from its suppliers. They are increasingly looking for suppliers to offer them all the services and products they need under one roof," said Leopoldo López, director of special nitrogen services at Cryoinfra.

ENGINEERING AND CONSTRUCTION DEMAND ON THE RISE

Even before the excitement generated by the structural reforms, international engineering and construction companies were moving into the country to service its growing industries. In the chemical space, multinational firms such as Ferrostaal, and CH2M HILL are competing with local companies to meet needs from the basic to design engineering for petrochemical and chemical plants. Rather than having a cannibalizing effect on the market, however, international and local firms are joining together to take on the industry's projects. Most notably, a joint venture between Odebrecht, Technip and ICA Fluor was awarded the engineering, procurement and construction of Braskem Idesa's Etileno XXI complex.

As the automotive, aerospace and energy sectors ramp up, their chemical suppliers are dusting off their expansion plans for the coming boom, requiring significant engineering capacity from suppliers.

"CH2M HILL's clients in the chemical industry need new facilities, improvements at existing plants, and assistance complying with regulations and wastewater treatment requirements," said Elisa Guinea, regional business group manager

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Elisa Guinea, regional business group manager, environmental services, CH2M HILL Mexico.

Maximo Roberto Pepe, Hispanic Latin America area manager, Tecnimont (Maire Tecnimont Group).

Hot water handling unit and compression unit of LDPE plant. Photo courtesy of Maire Tecnimont Group.

of environmental services for engineering firm CH2M HILL. "To meet these needs, we offer a cross-market, integrated service approach where we provide engineering services to clients throughout all the phases of their projects, including basic and detail engineering."

In time to meet increased demand for engineering in Mexico is a new generation of engineers coming out of the country's universities. By 2012, Mexico was graduating 130,000 engineers and technicians a year, surpassing graduate numbers of countries such as Canada and Germany. Gradually local engineering offices are taking on greater shares of projects and are set to increase this workload given the ample supply of engineers. "Most of the engineering work we do in Mexico is done by our local teams. From time to time we need support in basic engineering from our experts in other countries; however in the last nine months we have done work for our office in Houston, as well as worldwide installations with different clients," said Guinea of CH2M HILL.

Engineering support is not the only prerequisite to promote the development of the chemical industry in the country. Mexico is lagging behind in infrastructure, as Maximo Roberto Pepe, Hispanic Latin America area manager at Tecnimont, main EPC contractor part of Maire Tecnimont Group, pointed out: "For petrochemical plants you need either naphtha or gas. Mexico should, first of all, upgrade their logistics. They still need a lot of pipelines to connect the reservoirs with the areas where new plants could be built. Secondly, they need to modernize their existing refineries to keep up with the new sulfur content requirements. Thirdly, Mexico should expand their oil and gas resources, or they could use the shale gas from the US, but this would require more pipelines and connections across the border."

Listed on the Milan Stock Exchange, Maire Tecnimont provides EPC solutions in areas such as polyolefin projects, urea and ammonia plants and sulfur recovery systems. The group, that has the Middle East and Russia as its main markets, expects to strengthen its presence in Mexico in the upcoming years, thanks to its capacity to develop projects in the $4 to 5 billion range. Through its subsidiary Kinetics Technology (KT), it is already working with Pemex on a hydrogen production project, while it also participates in the Etileno Siglo XXI private venture. For Pepe, the energy reform will bring great opportunities to do more work with Mexico's NOC: "The new situation in Pemex is very favorable in our view, be-

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cause they would like to open up to new companies. The reform will allow Pemex to incorporate a more agile management to speed up the process for the new required projects. They are now using an open book model to avoid surprises with the lump sum projects that incurred in cost overruns."

In the construction sector, despite the difficulties of the last few years, some companies have not been greatly affected because their products are applicable to home renovations, offsetting the lack of new houses being built. Rodríguez of IMPAC, said: "IMPAC's focus is not only on new construction, but also on houses that are already constructed. When the economy deteriorates, people tend to renovate their homes instead of selling them, which helps our revenue. People do whatever it takes to maintain their homes, whether it is fixing a rooftop leak or whatever the problem may be. IMPAC's products help them do this well. Currently, Mexico is not in the best economic shape and Mexicans do not have the money to invest in new housing, but due to the strong performance of the US economy, Mexico is also looking to benefit from this boom. Overall, we expect the construction industry to grow by 4% this year."

Another company with a focus on residential property construction is Styrolution Mexicana. The company also shares a similar outlook for the future. "Although Mexican construction has been lagging behind, we have seen a recovery in the United States, which has helped drive demand for our products," said Ricardo Cuetos, managing director of Styrolution Mexicana.

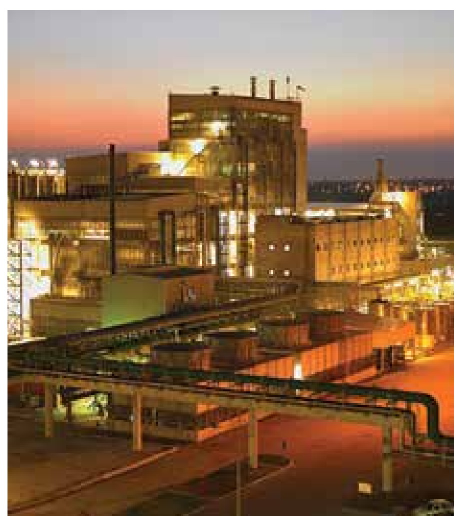
WATER TREATMENT RIDES THE WAVE

With high expectations in Mexico's energy sector, producers and service providers for the water treatment market are preparing their offerings to meet this eventual growth. With global players expected to come in, along with their international standards, the market is readying itself for an uptick in demand for specialized solutions.

SNF Floerger, a France-based provider of water soluble polymers and the largest global producer of polyacrylamides, views the country as a key market for marketing its products. "Today, Mexico is the biggest country in Latin America in terms of the market for water soluble polymers, with the polyacrylamide business worth $100 million a year," said Julio Rubio, general director of SNF Floerger.

For ChemTreat, a US-based water treatment company, demand for their products and services within Mexico's chemical industry has been flat; however, the company still counts among its clients some of Mexico's large chemical players, providing water treatment services to the Pemex and Mexichem propylene joint venture, while also working with DuPont at their expansion in Tampico and with Mexichem again at Matamoros.

Cooling of reactions. Photo courtesy of Cryoinfra.



Styrolution's chemical complex in Altamira, Mexico. Photo courtesy of Styrolution.

As water treatment chemicals within the chemical sector specifically have not seen much growth, suppliers are looking at niche markets to apply their expertise. "We are very active in specialties such as home care and personal care. These specialties are driving the growth of the business here in Mexico," said Rubio of SNF Floerger.

The most promising applications for such specialties are in Mexico's oil and gas market. The energy reforms have already prompted plans to enter the market for many of ChemTreat's customers. "We have a lot of customers in the United States that are planning to come to Mexico with whom we already have corporate agreements. We also plan to eventually do business with Pemex," said Raúl Morales, director of ChemTreat Mexico.

SNF, which is making considerable investments into its chemical production facilities in North America, is also targeting the oil and gas market, creating polymers for Gulf Coast projects. When Mexico's energy sector will partake in this North American boom remains a matter of debate. "In Mexico, this kind of growth is expected in the next five to ten years as investments are made in shale gas and offshore oil. We will not see the impact of the structural reforms for another five to 10 years. If the market evolves as expected, Mexico's consumption of these kinds of chemicals will increase quickly," said Rubio.

As Mexico's market grows and becomes more sophisticated, water treatment suppliers are looking to innovation to reduce safety risks and service costs. "We are offering smart release technology to our customers, which uses pellet chemicals instead of liquid chemicals. By packaging the chemicals in a bag in pellet-form and not in barrels, humans do not have to touch the chemicals and there is no chance of spills. It is a secure method that can be delivered through DHL or UPS and is biodegradable and phosphorous-free," said Morales of ChemTreat.

Speaking of the crucial importance of recycling water, SNF Floerger is devoting resources to developing new technologies. "There are many technologies like graphene, ultra filtration, and nuclear energy that will help us to treat water at lower costs. There is a focus for chemical companies right now because we have less and less water available from wells," said Rubio of SNF Floerger. "Companies require intensive water consumption and must recycle as much as they can."

INFRASTRUCTURE AND LOGISTICS

As Mexico deepens its ties with global markets, logistics are increasingly affecting the industry's bottom line. Covering large distances across the country and managing shipments in Mexico's increasingly globalized economy has put stress on both manufacturers and distributors. As a result, the role of third party logistics is growing in the market, along with distributors who are stepping up to the logistics sphere.

INFRASTRUCTURE UPGRADES IN THE PIPELINE

One of the key challenges facing the industry from a logistics perspective is the need for updated transport infrastructure, particularly when it comes to links between its biggest trading partner, the United States. According to 2012 data, 77.5% of Mexican exports go the United States, yet transporting across the border remains costly. "The price of raw materials and logistics continues to be a major problem here in Mexico. The government has abandoned rail freight and instead continues to transport everything by road. This means additional costs for distributors," said Ibarlucea of Ibarquim.

This additional cost comes from road and rail networks that cannot support the volumes that need to be transported. "We have an insufficient highway network and we need a better railway system. Rail has huge potential for the chemical markets, and some chemical industry customers are using the railways for long-distance transport into the United States. We would like to see more railway development inside Mexico to improve efficiency when it

Martin Sack, managing director, Leschaco Mexicana.

comes to time, flexibility and costs," said Martin Sack, managing director of Leschaco Mexicana.

A national infrastructure plan unveiled in April 2014 has laid out a plan for $590 billion of public and private infrastructure investment between 2014 and 2018. The plan is an update to a 2013 predecessor that had outlined $340 billion, and is heavily focused on improving communications and transport for the energy sector. With six of every 10 pesos to come from the government, the developments will depend on the ability of the public sector to tackle this ambitious plan. "We are optimistic that Mexico overall has a unique strategic geographic position. If our government puts these programs into place, we will have a very positive future in Mexico," said Sack of Leschaco Mexicana.

Upgrading capacity at Mexico's airports and ports will also be necessary going forward, as importers and exporters encounter delays at these hubs. DVA Mexicana, the Mexican subsidiary of German distributor DVA, relies heavily on Mexico's logistics infrastructure, as the company imports the majority of its products from China, India and Europe for use in Mexico's pharma, food, industrial and specialty markets. While delays occur often at points of origin, because of the heavy volumes of products being imported to Mexico, DVA Mexicana argues that port processes are sufficient to keep their business running on time. "In our experience, within Mexico the logistics framework is suitable for our needs, but the biggest problem we face is when vessels coming from abroad do not arrive on time. This happens a lot with vessels from China; given the demand they have, their freight needs are always changing. This makes it logistically quite challenging to coordinate efficient and timely client deliverables. However, once products reach the ports, we have no issues," said Autrey of DVA Mexicana.

FINDING SOLUTIONS TO LOGISTICS BOTTLENECKS

To meet the challanges, the logistics industry has boomed in the last 15 years in Mexico. Leschaco, one of the first foreign players to arrive in Mexico, noted that the industry has multiplied thanks to small and medium-sized local companies entering the market. "When we arrived in 1998, there were about 80 companies in freight forwarding. Fifteen years later we have

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Cargo Group International's operations team moving a tank from Altamira to Navolato, Sinaloa. Photo courtesy of Cargo Group International.

more than 300 companies and another 300 to 400 indirectly linked to the market. More international players have come in, and small and medium-sized national companies have been established. Today Mexico has a developed open market as in Asia and Europe," said Sack of Leschaco Mexicana.

To help clients optimize their supply chains, logistics companies are dedicating more specialized attention to specific client needs and taking advantage of technological innovations to improve service offerings. "Especially in Mexico, we are developing in-house and in-plant presence with our employees. We already have Leschaco employees present in seven companies in Mexico working directly with customers. Leschaco is taking more and more control of the supply chain and implementing key account management activities, so our customers can focus on their core businesses," said Sack of Leschaco Mexicana.

A company introducing innovative products in the logistics industry in Mexico is Euromex Logistica Internacional. Through its partnership with Houston-based Environmental Packaging Technologies (EPT), Euromex is using flexitanks to transport chemicals in liquid form. "A flexitank is a large bladder that is used in a 20-foot container. Most flexitanks are made from liners of low density polyethylene and have between one to four layers. The bag exterior is made from polypropylene. Flexitanks cost between $700 and $900. Basically, most flexitanks look the same, but the differences are in the thickness, strength and manufacturing process," explained Santiago Carús, director of Euromex and exclusive representative of EPT. Flexitanks from EPT are an improved and safe technique to transport bulk liquids. "Our company uses tubular materials leaving no longitudinal seams, which prevents the pressure inside the container from increasing during transport. This is probably the safest type of flexitank in the world and has enabled Euromex to grow very fast in Mexico," added Carús. The use of flexitanks has enabled Euromex to grow substantially over the last five years and it now controls about 80% of the flexitank market in Mexico.

A key challenge for transport is the security risk in the north of Mexico, exacerbated for the chemical industry by the hazardous nature of the materials in transit. To protect against these risks, companies work to obtain and maintain certifications, including ANIQ's Emergency Transportation for the Chemical Industry (SETIQ) and the International Cyanide Management Institute.

Distributors looking to gain an edge in the market are also focusing on expanding their logistics capabilities. One of Mexico's largest chemical distributors, Alveg, is the only distribution player in the market to invest in its own maritime terminal. "We always deliver products with our fleet of 200 units controlled by satellite tracking. A problem that we see in the short term for the country is storage capacity," said Rodolfo Ramírez, general director of Alveg.

With a clear vision from the government to expand transport capacity, the private sector will need to support these plans and follow suit with storage capacity expansion.

CHALLENGES

Despite the enormous potential that Mexico offers, it is still a developing country and presents a number of challenges for businesses conducting their operations in the Mexican chemicals industry. While the government has certainly taken positive steps towards reform, including the vaunted energy reforms, there remain a number of shortcomings that need to be addressed.

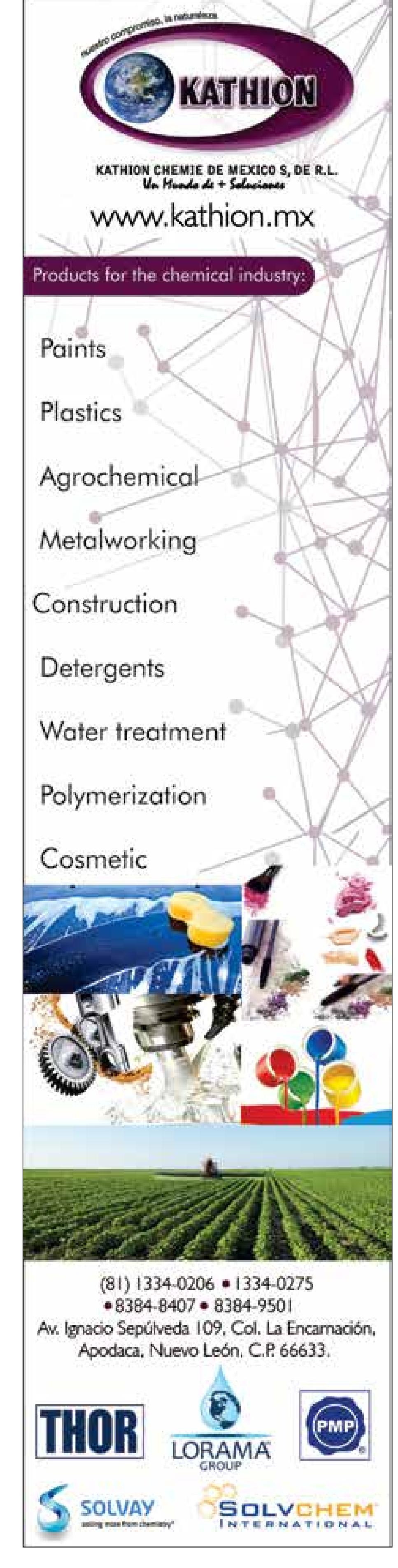
One of the most obvious challenges, as previously mentioned, is security, which is oftentimes the result of corruption and can directly undermine business operations and turnover. Although the situation has improved in recent years, problems remain. "We have had one of our tank cars robbed and are looking for ways to secure them in the future," admitted José Luis González Aragón, director of Cinética Química, a Monterrey-based manufacturer of water treatment chemicals. Unfortunately, this is an issue that affects not only smaller companies, but larger ones as well. Alejandro Llovera Zambrano, president of Indelpro, a polypropylene resins maker, said: "Even our finished product is stolen sometimes. Our losses from these activities are small, less than 1% of our revenue, but because the profit margins in the petrochemical industry are small as well, the 1% can mean a lot of money."

The agrochemical sector has its own unique set of challenges, which are summed up by Ricardo Muñoz, director of Valent de México, an agrochemicals company. "An issue facing the agrochemical industry is the public perception of chemical companies, which can often be viewed as producers of pollutants. This is oftentimes not the case. The industry is well aware of this and is trying to rebrand itself to be seen as more environmentally friendly. Another major challenge in our industry is payment collections. Mexico still has a problem with accessibility to credit, which can impede development. The government used to be a lot more supportive of the farmers around the country, but this is no longer the case. Companies like ours have also become financing institutions of sorts."

The issue of credit and financing, however, is not unique to the agrochemical industry. "Credit and collections are still a challenge, since most medium and small companies do not have access to bank financing. This puts suppliers in a situation where we have to be substitute banks. Some newer banks have started implementing credit options similar to ours and hopefully this will become more widespread in the future," said Armando Santacruz, general director of Pochteca, a distributor of industrial input materials like paper, cardboard, chemicals, and lubricants.

Perhaps the most immediate challenge facing businesses is the low price of oil, which has hurt a number of players in the chemical industry. Univar, a large distributor of chemicals, has even had to delay its IPO plans until later in the year due to decreased profits from selling chemicals to the fracking industry. On the other hand, agrochemical companies like FMC Agricultural Solutions have benefitted from the lower oil prices as it is an input in farmers' production, either directly through the use of fuel or indirectly through the use of fertilizers and pesticides. Another current issue is the deteriorating value of the peso. Many companies operating within Mexico's chemical industry buy and sell their product in US dollars and have, thus, been spared this pain. "Fortunately, we conduct roughly 40% of our business in US dollars and the deteriorating value of the peso has not affected us," said Cueva of Reacciones Quimicas. However, some companies are indirectly impacted by the falling exchange rate. As an example, some chemical distributors that import products from abroad have seen the lower peso translate into reduced purchasing power for their clients which operate in the local currency. "The deteriorating value of the peso has greatly affected Watson Phillips. We sell our products in US dollars and this has caused considerable strain on our business. We are hoping the exchange rate will fall back down to 13 or 14 pesos per dollar," said Jesus Carrete, commercial director of Watson Phillips.

Given these challenges, the government must do more to attract new companies into the country and help the existing ones succeed. "For new foreign companies coming to Mexico, dealing with Mexico's labor unions may prove difficult. Most



industries in Mexico are unionized and given this leverage over employers, they have the capability to halt the entire plant production if demands such as wage increases are not met," said Eduardo Paz, sales manager at Logwin Logistics, an international logistics provider.

Cueva of Reacciones Quimicas added: "The biggest challenge is our internal economy. We expected great things from the new government, but nothing has happened so far. The energy reforms will take time to implement; the real effects will not be felt for another 15 to 20 years."

Despite having confidence in Mexico, some companies can see the economy going in either direction. "Mexico is at an interesting and fragile point, where expectations can go up and down quite easily. We do not have a stable outlook of what the next few years might bring in the domestic market and we have not yet seen the implementation of these reforms," said Abraham Shabot, director of Innophos, a manufacturer of specialty chemicals.

CONCLUSION

While challenges lie ahead for the industry in the form of tough regional competition and a transforming economy in the wake of the historic energy reforms, Mexico's chemical industry has the potential to not only return to its levels of decades past, but also to become a leader in the chemical landscape of the Americas.

Close collaboration between the government and the private sector will be crucial to achieve this. "The United States is experiencing a boom and business is beginning to return to North America, presenting an amazing opportunity for Mexico. You need to look beyond how the reforms affect the oil and gas industry and also consider how they impact the entire value chain," said Tapia of Trichem.

Beginning with petrochemical expansion, cheaper and more available raw materials can trickle downstream. The startup of Braskem Idesa's Etileno XXI project is a first step that could launch further investments up and down the chemical value chain. "Five years from now, Grupo Idesa plans to be in the expansion phase of our projects," said Uriegas of Grupo Idesa. "The reforms are a powerful step in allowing greater access to feedstock, a necessity in increasing production in the future."

"With more investment in the chemical sector, we are hoping to see the growing trade deficit in raw materials reverse," added Ortiz of Nynas Mexico. "We have seen the overall chemical industry decline in the last two decades, as a result of NAFTA and other factors, and we hope that we can rebuild a strong industry for tomorrow."

A focus on locally-made raw materials, coupled with a distribution sector made strong by competition and a growing base of international and domestic manufacturers focused on quality, the correct ingredients are in place for a robust sector going forward. With more government support for research and development, Mexico can have what it takes to play a larger role in the global chemicals marketplace. •