



SPECIAL REPORT ON BRAZIL

A Global Business Reports publication,
presented with IHS Chemical Week



GLOBAL BUSINESS REPORTS

IHS Chemical Week

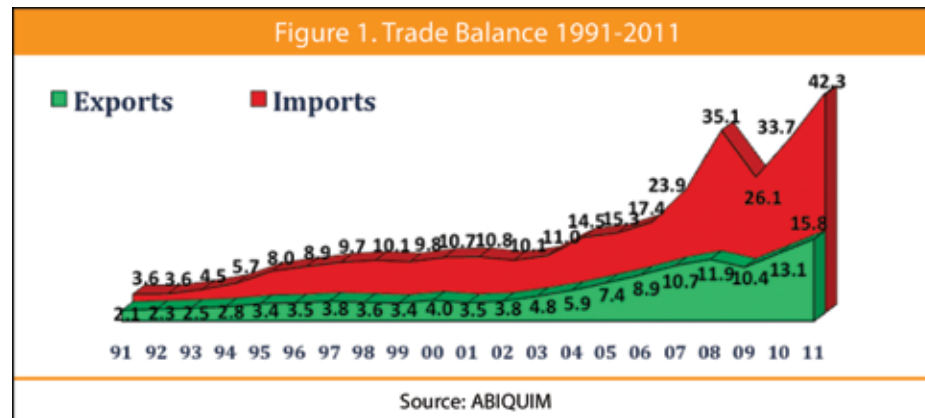
The Brazilian Chemical Industry

This research has been conducted by Vanessa Acuna, Sharon Saylor, Amanda Lapadat and Maher Tariq Ali of Global Business Reports. For more information, contact info@gbreports.com

INTRODUCTION

As the world's seventh largest, Brazil's chemical industry has contributed to the rise of Brazil as a global economic powerhouse. The country's pre-salt oil exploration, biomass potential and the rise of the middle class have the ability to drive economic growth, positioning Brazil amongst the top five largest global economies and chemical industries worldwide.

Critical to ensuring the sustainability and profitability of the sector is new investment. A potential investment in new capacity of \$167 billion investment between 2010 and 2020 is required to decrease the trade deficit and meet rising demand. Over the past two decades, investment has been far below the needs of the country, resulting in a chemical product trade deficit that grew from \$1.2 billion in 1990 to \$26.5 billion in 2011 (See Figure 1. \$42.3 billion imported, \$15.8 billion exported). Brazil's increased consumption of chemicals in recent years was largely supplied by imports. "In the last 12 months, we experienced an increase of 7.7% in the overall growth rates of the Brazilian chemical market, trends that are similar to those seen in China. However, at the same time, Brazilian chemical production shrank by 2% and imports grew by 27.9%. In Brazil we have three big national companies, and many large well-established multinationals with an integrated Brazilian culture; we have the foundation to grow the industry, now we need to see



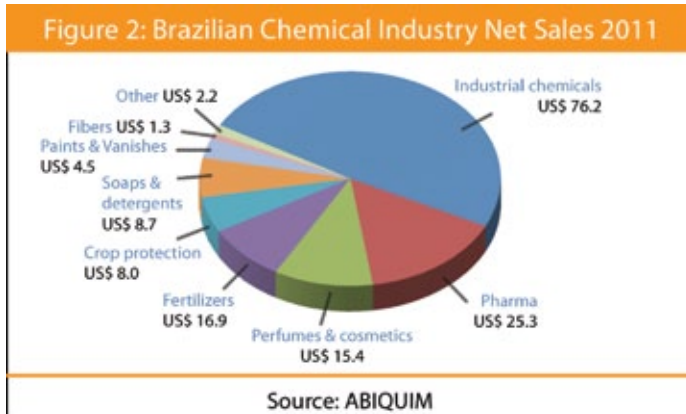
the commitment from the government," remarks Fernando Figueiredo, CEO of ABIQUIM, the main chemical industry association in Brazil.

Underdeveloped infrastructure, high energy prices, shortages of raw materials at competitive prices, taxes, interest rates and exchange rates threaten Brazil's position at the forefront of the global chemical arena. These, coupled with the industry's call for a projected \$32 billion investment in research, development and innovation (equivalent to about 1.5% of net revenues forecast for 2010-2020), means Brazil's chemical industry is in need of a shake up. A collaborative approach from government and industry is imperative to enhance its image as a preferred investment destination and ensure the next wave of prosperity is not a missed opportunity.

In previous years, the chemical industry has contributed 3% to the nation's GDP, the third largest sectoral participation of industry GDP.

"What is most apparent about Brazil is actually how much of a closed market Brazil really is. If you look at imports and exports as a percentage of GDP, in Brazil this represents just 10%; the world average is 25%. Our neighboring country, Argentina, is over 30%. On the positive side, those inside are very protected, and whatever happens in Europe will have a limited impact on the economy in general in Brazil. We are an island of self progress and we live off our internal demand," remarks Fabio Rios Haberland, CEO of Bandeirante Brazmo, one of the companies of Formitex Group's chemical division and a leading distribution company with the largest chemical product distribution structure in Latin America.

Net sales from the 2011 Brazilian chemical industry surmounted \$158.5 billion (figure does not include sales from ethanol) (data provided by ABIQUIM and associations of specific segments). Not surprisingly, industrial chemicals represented just under half of the total sales (\$76.2 million), followed by pharmaceuticals



Innovation. We sustain this idea.

Oxiteno is a major producer in the surfactants and specialty chemicals market, with presence in South America, North America, and Europe.

Oxiteno invests in technology and professionals involved in the research of products derived from renewable feedstocks and in production processes that help preserve natural resources. After all, innovation is present in each of our ideas.

Oxiteno. Committed to evolution.



Committed to evolution

oxiteno.com

Interview with Paulo Roberto Costa, Chief downstream officer, Petrobras



Please provide a brief overview of Petrobras' current position in the petrochemical industry in Brazil?

Today we have three chemical poles in Camaçari, Bahia, Capuava, São Paulo, Triunfo, Rio Grande do Sul and 10 refineries operating in Brazil, an asphalt and lubricant factory in Ceará and also an oil shale production in Parana. We also have a full logistic function, which oversees shipments, transportation of crude oil and derivatives in Brazil and abroad. In addition to our refinery and logistics operations, Petrobras also has a commercial division for oil and derivatives commercialization, with offices in China, Singapore, London, Houston and Buenos Aires.

What strategic advantage has your partnership with Braskem brought to the company?

Today in Braskem's advisory board we have four advisors and a very active participation in management and decision-making. We chose Braskem to be our petrochemical arm in the polyolefins, polyethylene and polypropylene markets. With the merger Petrobras also gained strength to become a global player and has participation in Brazil at the three chemical poles in Camaçari, Capuava and Triunfo. Braskem bought Sonoco, and most recently we bought Dow's assets in the US and Germany. When we merged with Braskem, Petrobras gained Braskem's operational and commercial expertise in the petrochemical business and, in return, Petrobras opened doors for financing and investment for Braskem.

Together, we are also developing a petrochemical refinery, which is a result of our company focus on product exchange to add value and continuously improve our offering. With the construction of COMPERJ, we will be better positioned with the refinery and petrochemical operations integrated together. We are very confident and interested in the benefits and synergy of the petrochemicals refinery to add more value.

Please can you detail Petrobras' current investments in the petrochemical sector and your plans to strengthen your foothold in this industry?

As outlined in our business plan for 2011 to 2015, we will invest \$5.4 billion in the petrochemical sector to stimulate further growth in Brazil. Today, Petrobras is simultaneously building five refineries because our refinery capacity is around 1.85 million bbl/day and the market demand is now at 2.2 million bbl/day. If we look towards the future, in 2020 the demand will likely be 3.2 million to 3.3 million bbl/day and Petrobras' refinery capacity will be around 3.1 million to 3.2 million bbl/day after the construction.

We have a project called Complexo Petroquímico do Rio de Janeiro (COMPERJ), which is a large project that will sit on 45 km² of land. We have already completed 30% of the initial phase, which is the construction of a refinery that will produce 165,000 derivate bbl/day. We will also construct Brazil's fourth petrochemical pole with a planned start date in 2014. Braskem will be very involved with COMPERJ and will build the cracker and the polyethylene, polypropylene and PVC factories.

How do you consider Brazil's ability to position itself amongst the top five petrochemical industries worldwide?

Through Braskem, Petrobras will be the fourth or fifth largest petrochemical group in the world, which will help grow the Brazilian petrochemical industry. The petrochemical market is global, not regional and you must be strong or you will disappear. It is Petrobras' priority to invest in the petrochemical sector in Brazil and when we complete our integration plans for the refinery and petrochemicals we will add a lot of value to the market.

(\$25.3 million), fertilizers (\$16.9 million), perfumes and cosmetics (\$15.4 million), soaps and detergents (\$8.7 million), crop protection (\$8 million), paints and varnishes (\$4.5 million), fibers (\$1.3 million) and other (\$2.2 million) (see Figure 2).

Overall the chemical industry estimated a 23.4% annual increase in net sales during 2011. The greatest boost was seen amongst fertilizers, in which 2010 sales have almost doubled (\$11.5 billion), and industrial chemicals, which grew 24.5% from \$61.2 billion.

The 2010 National Pact for the Chemical Industry, an initiative by ABIQUIM, which represents more than 140 chemical producers comprising around 85% of industrial chemicals production in the country and more than 50% of total chemical sales, has outlined the necessary sectoral and governmental response to strengthen an already well-established industry. Essentially, the document aims to meet ABIQUIM's mission to promote the competitiveness and the sustainable development of the chemical industry by making a quantification of the investments needed, and making suggestions to overcome the barriers that hamper new investment. The final result is intended to create a leading position in green chemistry with a surplus of chemicals.

Emerging from a comprehensive evaluation of the sector, the initiative outlines the chemical industry's commitments to the economic and social development of the country; specifically the direct and indirect creation of more than 2 million jobs, increased attractiveness for foreign direct investment, increased importance of Brazil in international trade, reduction of external vulnerability, adding value to inputs from pre-salt, expanding the potential use of biomass resources through the chemistry of renewable resources, encouraging the development of the capital goods sector, the creation and development of technology, fostering a culture of innovation and research and strengthening the capital market with stronger chemical companies.

ABIQUIM has also been pivotal to the adoption of Brazil's own version of the Responsible Care program, modeled on the Canadian equivalent, and which is now integral to the operations



Fernando Figueiredo, CEO, ABIQUIM

of ABIQUIM's members. The program is dedicated to the continuous improvement in health, safety and environmental quality. "This is an important milestone; it ensures that Brazil's chemical industry complies with legislative requirements from some the most demanding markets," comments Figueiredo of ABIQUIM.

Brazil's current growth and the prospects for its continuation present great potential while at the same time imposing significant challenges. Over the past two decades investment in the sector has remained below the country's needs, resulting in a domestic production that has remained below demand and a lack of qualified jobs. This has further hindered the possibilities of technological development, pivotal to fully exploiting the potential of the sector.



With manufacturing capacity of over 295 thousand tons of products Guaratinguetá complex works 24 hours a day. Photo courtesy of BASF.

The first steps to overcoming these challenges are underway. Allocated, recent and planned investment includes major plans from BASF, Rhodia & Solvay, Coquepar, Oxiten, Pan-Americana, Petrobras and its subsidiaries Petroquisa and Braskem. Figueiredo says: "while the tax issue is a predominant concern for companies who want to install in the country, Brazil has a framework of legal security, is experiencing positive growth rates and macroeconomic stability and a stable democracy which for many offset the obstacles faced by investors interested in expanding or entering into Brazil."

More than ever before the chemical industry has a critical role to play in the future economic development of the nation.

NATIONAL GIANTS DRIVE THE PETROCHEMICAL INDUSTRY

Petrobras, the world's fifth largest energy company (PFC Energy, 2011), was elected the Energy Company of the Year (Platts, 2011) and has embarked upon an aggressive investment path with plans for \$224.7 billion of investments between 2011 and 2015. Established in 1953, Petrobras is an integrated energy company working in exploration, production, refining, trade and transportation of oil and natural gas, petrochemicals, distribution of oil derivatives, electricity, biofuels and other sources of



BRANCOTEX
Indústrias Químicas Ltda.

40 YEARS OF PROVEN EXCELLENCE IN VALUE GENERATION

- Producer of resins & adhesives, emulsions and additives for the Brazilian and Latin American markets.
- Operating in textile, paper and packaging, construction, self-adhesives, paints and pigments sectors
- Modernizing and expanding our manufacturing structure
- Dedicated to an ecologically and socially sustainable approach

Brancotex Indústrias Químicas Ltda.
Estrada Dr. Cicero Borges Moraes, 1615 Cep 06407 000 Barueri - São Paulo - Brasil
Tel: 55 11 41995469 vendas@brancotex.com.br

www.brancotex.com.br



Interview with Manoel Carnauba Cortez, Executive vice-president for basic petrochemicals, Braskem



As Brazil's largest petrochemical company and celebrating your tenth anniversary in 2012, please can you detail your key aims as Executive Vice President for Basic Petrochemicals to foster another 10 years of growth?

In Brazil, Braskem has four crackers and three of them are naphtha based. The largest cracker is located in Camaçari in the northeast of Brazil. It has 1.27 million metric tons per year of installed ethylene capacity. The second largest is located in the south of Brazil, in Triunfo, Rio Grande do Sul, which is also naphtha based and has 1.25 million metric tons per year of installed ethylene capacity. Currently, Braskem's priority is to evaluate the options for de-bottlenecking these crackers. Braskem will need additional capacity to fulfill the immediate demand until the start up of the new cracker in Rio de Janeiro.

Braskem has a well-established presence in Brazil and Latin America with current expansion in Mexico. What further opportunities do you see for geographical diversification?

To reach our growth targets, Braskem intends to continue to expand its global footprint. Over the past 10 years, Braskem has increased capacity significantly and grown our presence in the Americas as well as in Europe with the acquisition of the Dow Chemical polypropylene business in September 2011. With this acquisition, we gained manufacturing facilities in Germany and became the number one polypropylene producer in the Americas. Today, Braskem is developing a

new cracker; the Ethylene XXI project in Mexico. We are looking at other possible projects in the US and Peru.

Braskem recently announced the partnership with BASF to construct an acrylic acid plant. How important is this project to Braskem and what other projects form part of Braskem's investment portfolio in Brazil?

In this project, BASF plans to invest about 750 million euros and Braskem will be the propylene supplier investing approximately \$30 million in logistics. In addition to this, we are focused on our investments to de-bottleneck the current crackers and increase the capacity of polyethylene and polypropylene. Furthermore, we are studying the complex in Rio de Janeiro, which has two polyethylene plants and two lines with potential to be de-bottlenecked.

In Triunfo, our clients require ethylene for additional styrene production and Braskem is also looking for the opportunity in polyethylene and polypropylene. There is potential in Camaçari to grow the entire complex and we are looking into acrylic acid, oxilalcohols, polyethylene, polypropylene and PVC. Braskem planned for two lines (until the end 2014) to introduce those de-bottlenecks which are currently being studied for economic feasibility. We are also building a 100,000 metric ton butadiene plant in the south near Triunfo to start production in July 2012, a \$150 million investment. In 2012 we will also start up a new VCM and PVC plant in Alagoas with 200,000 metric tons per year installed capacity.

Although your main feedstock is naphtha, Braskem has made significant steps to becoming a global leader in sustainable chemicals. Please highlight some of Braskem's key sustainable development initiatives?

Braskem's green ethylene plant has recently completed one successful year of running, after opening in September 2010. We are now considering a new polypropylene from renewables using ethanol as a raw material. The idea is to evaluate other investments in Brazil for an integrated complex to produce from ethanol polyethylene and polypropylene in the southeast of Brazil to integrate with the sugarcane ethanol production.

renewable energy. Petrobras has proven oil reserves of 14 billion barrels, a figure that should double with the discovery of oil and gas in the pre-salt region. Further downstream, the company has committed \$35 billion of investment until 2013 into the petrochemical sector, including development of the Rio de Janeiro petrochemical complex (COMPERJ). The Brazilian conglomerate has stakes in the local petrochemical company, Braskem.

Founded only ten years ago (2002), Braskem was the result of the major restructuring of the Brazilian petrochemical industry and the consolidation of six companies, Braskem is now the largest petrochemical company in Latin America. Through organic growth and acquisitions, including that of Politeno (the third largest polyethylene producer in Brazil), and the largest merger in Brazilian history that consolidated business segments from Grupo Ipiranga (a former Brazilian company involved in refining and distribution of oil, as well as the petrochemical and chemical industry that has since been sold to Petrobras, Braskem and Grupo Ultra) together with Petrobras and the Ultrapar Group (a Brazilian group, with three business streams: distribution of fuel through Ultragas and the acquired Ipiranga business, production of chemicals through Oxiteno and integrated logistics solutions through Ultracargo). In addition, the more recent acquisitions of Quattor (the second largest petrochemical producer in Brazil) and Sunono (which added more than 1.5 million tons of resins to the production capacity of Braskem) have positioned Braskem as the eighth largest petrochemical company in the world by production capacity. More recently in 2011, Braskem bought Dow Chemical's polypropylene assets in the US and Germany.

Braskem, the petrochemical arm of Petrobras, is responsible for the operations of 35 industrial units in Brazil, including the two largest petrochemical complexes in the country, Camaçari (Bahia) and Triunfo (Rio Grande do Sul), and their first greenfield project, the polypropylene plant in the city of Paulínia (São Paulo state) as well as operations in the US and Germany. As part of Braskem's globalization strategy, the company is

constructing the Ethylene XXI project in Mexico, planned to begin production in 2015, which is a joint venture between Braskem (65%) and IDESA (35%). These activities have given Braskem a diversified portfolio of petrochemical products with a focus on PE, PP and PVC.

Current predictions say that Braskem, which is controlled by Odebrecht with Petrobras as its main partner, and is effectively the only supplier of domestic resins, will need to supply almost 100% of its production in Brazil to the growing local market. Demand for polymers is forecast to increase (polypropylene and polyethylene are expected to grow by 12% to 13% annually) and Petrobras' new COMPERJ refinery and petrochemicals project in Itaboraí will help fill much of this gap. Investment into this plant, which is expected to come online in 2013 and process 165,000 bbl/day of heavy crude oil to make olefins and downstream products, equates to \$8.4 billion. Other investments include Petrobras' Premium I Refinery to be built in Maranhão and Premium II



New ethyl benzene facility in Camaçari, Bahia, Brazil. Photo courtesy of UNIGEL.

Refinery in Ceará, each with a processing capacity of 300,000 bbl/day of oil. The Premium I Refinery is expected to be completed in 2017.

At the beginning of the 1990s, the concept of privatization was introduced to the Brazilian petrochemical industry and the Odebrecht Group became a player in the subsequent consolidation.

Odebrecht is the second largest Brazilian multinational, specializing in the field of engineering, construction, chemicals and petrochemicals. Founded in 1944, Odebrecht has been instrumental in the development of two major firsts for Braskem: the green ethylene plant in Triunfo and the polypropylene plant in Paulínia, the company's first greenfield project.



Leadership, Innovation and Commitment to Value Creation

LEADERSHIP IN LATIN AMERICA

Founded in 1966, Unigel is the leading Latin American company in acrylics and styrenics, with a strong presence in fertilizers and plastic packaging materials. It is the largest manufacturer of acrylonitrile, methyl methacrylate, acrylic resins, polycarbonate, styrene and polystyrene in Latin America, as well as the largest producer of ammonium sulfate and extruded acrylic sheet and cast acrylic sheet.

COMMITMENT TO VALUE CREATION

In recent years, the company has invested in upgrading and expanding its industrial facilities. With operations in Brazil and Mexico, Unigel contributes to the generation of income and wealth in both countries with approximately 1,800 direct employees.

INNOVATION AND TECHNOLOGY

As an example of a successful initiative, in February 2011 Unigel increased its ethylbenzene production capacity with the start-up of the EB Zeolite Project which resulted in greater efficiency, reduced emissions and less generation of effluents.

SOCIAL RESPONSIBILITY

Unigel actively contributes to the education and development of those communities where it operates. In addition to sponsoring training courses, the Company develops, in partnership with the public sector, childhood education projects that benefit 500 children aged between 2 and 11 every year.



Henri A. Slezynger, President and CEO, Unigel

As a pioneer in the Brazilian chemical industry, Henri A. Slezynger, president and CEO of UNIGEL, the second largest petrochemical company in Brazil, and president of ABIQUIM, comments on the historical evolution of the petrochemical industry: “historically the model for the Brazilian petrochemical industry was the so called ‘three party model’; government-owned Petrobras/Petroquisa would combine with a foreign technological licensor and a Brazilian group that often did not have specific experience in the industry but wanted to invest as the third party. This was a very successful model and the Brazilian industry was protected with extremely high tariffs. This enabled the establishment of the industry but once it matured, this model was not conducive to diversification. Companies established themselves to produce only one product and the multinationals did not necessarily want to produce anything else. Therefore, there was a lot of consolidation in the market resulting in the formation of Braskem.”

Perhaps unusually in an industry that requires such high capital expenditures, Brazil’s history has spawned many successful Brazilian companies. The above-mentioned Braskem, Oxiteno and Unigel are all proudly Brazilian pioneers.

Slezynger of Unigel recalls that much of Unigel’s growth was a result of changes in market conditions. “Unigel did not participate in these consolidation movements as we were mostly producing niche products (acrylics). But as we grew we eventually became partners with Monsanto in CBE (Companhia Brasileira

de Estireno). Then we saw a shift in the strategies of many of the multinationals who were interested in divesting out of specific markets, for example Monsanto started producing genetically modified seeds and decided to become involved in bioscience. Then, both BASF and DOW decided to leave the styrene and polystyrene business and Unigel decided to acquire their operations. In Mexico it was a similar story and through acquisitions and a successful agreement with Pemex, we were able to expand into the North American market and create on a smaller scale a copy of what we have in Brazil. Today Unigel has 12 production sites strategically located in Brazil (eight) and in Mexico (four),” he says.

Unigel is now the leading Latin American producer of acrylics and styrenics, with a diversified portfolio of products including fertilizers and packaging materials and annual turnover of approximately \$2 billion.

Amongst the largest chemical groups in the country is Oxiteno. Oxiteno is the chemical subsidiary of the Brazilian industry company Ultrapar Holdings and was created in the 1970s as a result of mergers and partnerships. In 1973, the first Oxiteno plant was built in the petrochemical complex of São Paulo: the first chemical plant in Latin America to produce ethylene oxide and its derivatives. Oxiteno has industrial units in five locations across the country, three of which are in Camaçari, including the first and only plant to produce natural fatty alcohols in Latin America.

As well as receiving recognition for its research and innovation, Oxiteno also has a strong track record of foreign sales, exporting more than 110,000 tons and realizing revenues of \$235 million from September 2010 to August 2011. 60% of all sales made outside Brazil corresponded to products made of natural-source raw materials, such as ethanol, palm kernel oil and soybean oil.

BASF is also a key exporter in the Brazilian chemical industry. Celebrating 100 years in Brazil, BASF will make its largest South American investment in its history with its acrylic acid production complex in Camaçari, Bahia. An investment of more than 500 million

euros will make this the first factory of acrylic acid in South America. Dr. Alfred Hackenberger, president of BASF for South America, explains that the domestic market is still a primary concern: “this investment is mainly driven by the growth in the internal market as a consequence of 30 million people moving up the social class and having increased purchasing power. The downstream products are used in super-absorbents (diapers) and one ingredient in decorative paints, which will increase due to the construction of new homes. The disadvantage of Brazil is of course exporting. Unlike most other countries in the world, you wait until the internal market represents about 50% of your consumption; but due to the high cost of Brazil, you need to have a stronger internal market. This will not be the only investment we make in Brazil.”

While Oxiteno and some of the major players, including Ajinomoto, BASF, Braskem, Dow, Lanxess, Rhodia and Unigel, were leading exporters with sales contributing to more than \$6 billion in 2001, rising costs mean that, for many smaller local producers, exports are not always financially feasible. President Ronaldo Silva Duarte of Columbian Chemicals Brazil comments on the possibility for further local profitable investment: “we need to compensate for the low infrastructure and high costs of business in Brazil. For instance, at an exchange rate of BRL1.6 to the USD, labor costs in Brazil are now

more expensive than in the US. Thus it is very difficult to be competitive. For future investment the risk in Brazil is very high. If worldwide demand decreases, investment here is almost impossible, as it makes us uncompetitive when exporting to worldwide markets. There are some movements from the government, but there are a lot of things that still need to be done.”

Columbian Chemicals was recently acquired by India’s Aditya Birla Group with the intention to utilize their synergies to enhance growth in selected regions such as Brazil. It has the only local carbon black plants in Brazil, supplying 71% of the market in South America. This dominant market share, however, is not free from obstacles, as Silva explains: “we have a natural gas monopoly in Brazil... In a carbon black market we can use part of our raw material as natural gas, but we do not have a cost incentive for this in Brazil like we do in any other country worldwide.”

Brazil’s high cost of natural gas as an industrial raw material reduces the sector’s competitiveness. Silva continues: “we have legislation in Brazil but we lack implementation; we have the law, but we do not have the rules of the law to be applied to the market. The incentives we have in Brazil are a stable economy and the growth in local demand.”

Brazilian chemical company GPC Química, created by the merger of methanol producer Prosint and resin supplier

Synteko, currently has two joint ventures to produce methanol (one with Petrobras in Camacari), and has recently developed a new business recovering carbon black from tires.

Wanderlei Passarella, GPC’s President Director, also comments on the cost of raw materials and the resultant need to diversify into other segments such as renewable energy from biomass: “we are not able to supply the growth of demand because of restrictions on raw materials and therefore we are not able to expand production due to the price of natural gas. This year we will reach 1 million tons of internal demand for methanol and we will only supply 200,000 tons, meaning 800,000 tons needs to be imported. If we were to grow as the market demanded we would need big changes. The National Pact for the Chemical Industry is the blueprint for growth and if we do not negotiate this with government we will not see any growth in this industry. The profitability after taxes makes little incentives for investment with almost 50% allocated to taxes. This means GPC will continue to grow as a company, but we have to grow in areas where we do not have the presence of the state. Up until now, our core business has been in methanol, but now we are forced to diversify to reach our goal of becoming a BRL1 billion company. Methanol is a mature industry, but resins is a big growth market, growing at 10% per year and we will take advantage of this opportunity.”



Let's reach the sun

BIRLA CARBON VISION
To be the most respected, green, global, advanced fillers business with a clear focus on tyre and MRG markets

OUR VALUES
Integrity • Commitment • Passion • Seamlessness • Speed

South America Sales Office
Phone: +55.11.3598-3800
vendas@adityabirla.com

Cubatão plant
Phone: +55.13.3362-7100

Camaçari plant
Phone: +55.71.3616-1100



Looking to invest in Brasil? Need a local partner?



Bann Química is a 50+ year old 100% family owned chemical business located in São Paulo, Brasil. Bann Química provides its customers with quality products and high quality tolling services for a wide range of industrial sectors. Aside from ample land for expansion, Bann Química maintains an engineering department, a laboratory research facility, a pilot plant facility, a metal shop for basic chemical equipment, and a biological waste water treatment facility for your needs. Constantly audited under the ISO 9001:2008, ISO 14001:2004, OHSAS 18001:2007 standards, and Responsible Care Program, we are committed to the highest operating and safety standards demanded by international companies. Come talk to us. We'll be glad to help you get started in South America.



Bann Química Ltda.
Av. Roque Petroni Junior 1089, 10th floor, Suite 1013
São Paulo, SP 04707-000, BRASIL
Tel: +55-11-3956-2000 Fax: +55-11-3956-2001
E-mail: sales@bann.com

Henri A. Slezinger, president of Unigel, reiterates the need to improve the nation's competitiveness: "all Brazilian industries suffer from a very strong currency, which reduces our competitiveness. In the chemical industry, we struggle with extremely high costs of raw materials and we have been discussing with Petrobras and Braskem alternatives to maintain the competitiveness of the production chain. In Brazil, Petrobras is responsible for the exploration of gas but they have not yet taken the step of detaching the price of gas from its equivalent in oil. The price of gas is \$12 to \$15 per million british thermal unit (btu) which makes it impossible to use as raw material. Therefore the chemical association is on a crusade to decrease the price of gas and we are trying to make the government understand that Brazil cannot compete against an industry that sells gas for \$3.5 to \$4 per million btu if we charge \$12 to \$15 per million btu... Brazil is not pricing its naphtha as a producer, it is not giving any thought to the fact that Brazil is now producing as much oil as it consumes and with the new discoveries, Brazil is on the way to becoming the fourth largest producer of oil. Brazil needs to give serious thought to more accessible prices to increase the competitiveness of the petrochemical industry."

Bann Química, founded in 1954, evolved from a trader to a producer of chemicals for the rubber industry. Over time, due to exchange rates and competition from countries such as China, the business refocused. Dwight K Bann from Bann Química Ltda comments: "as part of our strategy, Bann Química built the Paulinia site to make the raw materials for the rubber chemical plant. In essence, Goodyear gave us the boost to increase our presence in the industry, Monsanto gave us exposure to new technologies and together this consolidated our position in the marketplace. Since we needed a certain level of capacity we needed to find another product line to utilize the raw materials. At the time the government suggested making Indigo Blue, as then it was 100% imported. Thus we built the plant and took over the market. Back then, Brazil was a protected market and the government increased duties on imports to encourage the industry to evolve. So now our two lines of business are chemicals for tires and chemicals for textiles. We shut down the rubber chemicals plant in 2007 due to exchange rates and competitiveness from China, but we were the last producer in South America to shut down."

Another Brazilian company that is using a similar business model of moving from supplier to producer in the local market is Forscher, which currently supplies pigments to the national market. Forscher distributes pigments to around 230 customers in the Brazilian market, and is currently partnering with eight major international producers around the world, and around 30 producers that are used for supplying smaller and less frequent volumes.

Brazil's current trade regulations make it difficult for companies like Forscher to import and sell products from foreign markets at a competitive price. "In Brazil you require a license to import and export which is difficult to obtain and the timeframe to receive the license from the application date is lengthy, it could take up to one and a half years. The duties on imported goods are very high; we could face up to 63% taxes

on our imported products, in addition to internal taxes which often result in some products being 200% higher than the freight on board (F.O.B.) price. This obviously makes it difficult for companies in our situation to compete based on price," says Heise. To further develop the company's pigment offering in Brazil, Forscher is set to add the production of pigment preparation to its operations in 2013. Forscher's pigment products are distributed to major players in the chemical market, such as BASF.

Although Brazilian-owned companies continue to dominate the market, Reichhold has set an example of an American manufacturer of synthetic resins with a history in Brazil. Founded as Resana Company in 1948, by 1998 the company was completely acquired by Reichhold, establishing their foothold in South America. Throughout its history in the country, Reichhold has expanded its capacity significantly to become a supplier in the production of composites and coatings in Brazil.

Brazil is one of the five largest global markets for paints and the leading global suppliers of raw materials for paints and supplies are present in Brazil, along with many national companies. Brazil's national paint manufacturers' association, ABRAFATI reports a 60% growth in the paint industry in the past decade and predicts growth in the current decade to be even stronger.

Where domestic companies are a symbol of Brazilian growth and development, the expansion of such leading multinationals as Reichhold in Brazil exhibits confidence in the industry's continued rise in the ranks of global economies. "As an example of that," says Jose Luiz Calvo, vice-president & general manager of Reichhold in Brazil, "we just launched a new reactor for the production of powder coatings resins and increased our production capacity for these resins more than 30%."

Environmental regulations are increasingly important in such a fast developing market, and Reichhold is taking these regulations seriously. "We are introducing



José Luiz Calvo Filho, vice-president & general manager, Reichhold Brazil

new environmentally-friendly products that help our customers to develop their green products. Our Beckosol AQ® product line for the coatings industry allows customers to formulate their paints with almost zero volatile organic compounds and our Envirolite® product line is bringing new unsaturated polyester produced with recycled and renewable raw materials for the composites industry."

REICHHOLD

RESINS AND GELCOATS: WHAT WE DO BEST

Reichhold develops and supplies innovative and sustainable resins and gelcoats to support the growth of composites and coatings worldwide. In addition to over 85 years of experience, Reichhold also has the global resources to provide innovative solutions to the needs of our customers for a variety of markets and applications. In Brazil, Reichhold has been the pioneer and leading supplier of resins since its foundation in 1948. Reichhold's success is due to a strong belief in its core values of safety, ethics, customer support, and respect for the environment.

Everywhere Performance Matters

Tel: 55-11-4795-8136
vendas@reichhold.com
www.reichhold.com

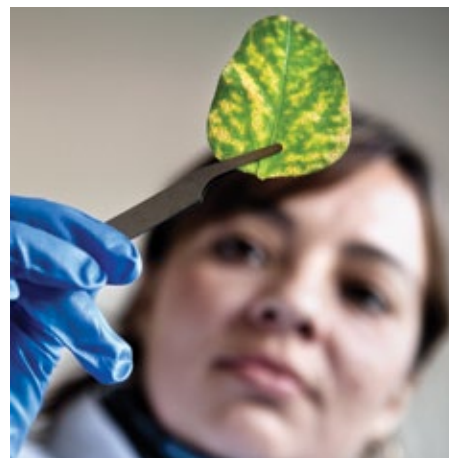
AGROCHEMICALS

The Brazilian agrochemical business has shown impressive performance over the past years in both fertilizer chemicals and crop protection.

With the Brazilian population estimated at over 200 million inhabitants and high demand for food worldwide, there is an increasing need for agrochemicals to meet escalating demands locally and internationally. 2010 data revealed Brazil's crop share amounting to \$7.3 billion, with 44% from soybeans, 11% from cotton, 10% from sugar cane, 9% corn, 4% coffee, 3% citrus and 19% other (Sindag 2011). Brazil is now one of the world's largest agriculture producers with the highest rate of expansion. Similarly, Brazilian agribusiness exports reached new records of \$87 billion in 2011, 24.4% higher than in 2010, partly due to the rise in average export price.

Soy complex was the principal export sector with \$22.95 billion, an increase of 38.9% in the year, followed by sugar/ethanol complex with sales of \$14.99, an increase of 18.9%. Meat remained in third position totaling \$14.35 billion, up by 14.8%.

The availability of natural resources in Brazil is the country's primary competitive advantage. Brazil is one of the few countries with available land for cultivation, a large supply of water and a favorable climate across the country. On the other hand, these favorable conditions lend themselves to the prevalence of insects, diseases and weeds. "Snow is the best and cheapest herbicide, insecticide, pesticide and fungicide, yet the bonus to being a tropical country is we can produce sugar cane. We run two crops every year for soybean, wheat and corn and in an irrigated area we can run five seasons of beans every two years. This means we grow between two to three crops per year and produce more for the same space of land. However, when



For more than 30 years, the agricultural research station of BASF has the ability to perform about 350 tests per year. Photo courtesy of BASF

comparing productivity to a country such as Canada and US we are much lower for wheat and rapeseed," comments Eduardo Daher, executive director of ANDEF (Brazil's National Association of Crop Protection).

In Brazil, the agricultural chemicals sector is led by 15 affiliates of ANDEF, including Arysta LifeScience, BASF,

Bayer CropScience, Chemtura, Dow AgroSciences, DuPont, FMC Brazil, Iharabras, Isagro, ISK Biosciences, Monsanto, Brazilian Herein, Sipcam Isagro Brazil, Sumitomo Chemical and Syngenta, the world's largest agrochemical producer.

In the crop protection market in Brazil, Syngenta, Bayer and BASF dominate, together holding a 60% market share, followed by FMC, Dupont, and Monsanto. Increased food production and major growth in the local market are key drivers for FMC. FMC Corporation is one of the world's foremost diversified chemical companies with leading positions in agriculture and is the number one sugar cane and cotton energy producer in Brazil. According to Antonio Carlos Zem, Latin America's general manager for FMC: "FMC reached this position because in 1996 all our peers found it fashionable to be growing soybean, corn, fruits and vegetable and we were the first company to take a serious approach to bio-energy. At that time, cotton prices were erratic and risky; no one expected bio energy to be booming. Brazil is adding almost 2.2 million acres every year of new cropping area, showing a large growth in the size of the industry. In parallel, there is also growth related to technology in the industry and we are seeing Brazilian growers become more professional and larger in their operations. The overall agriculture business is growing around 15% per year and we expect this growth to continue until at least 2020. There are some expectations that global food demand from now until 2020 will grow 40% and from this growth Brazil will be supplying 20%, so half of all growth will be seen in Brazil. In line with these developments, Brazil is becoming a more important part of our global business and we expect that by 2014, we will have a \$1 billion dollar operation here."

Pesticide production is predicted to grow at 4.1% annually and Brazil is the top market globally. Brazil's pesticide market is estimated to grow from \$7.3 billion to over \$11.77 billion in 2020 (based on export projections of soybean, corn, sugar cane, coffee and cotton). However, Brazil has a huge gap in pesti-

cide production. Comparing worldwide pesticide use to production ratios, Japan uses ten times more, followed by France, Argentina and US. Increased use of pesticides, resulting in better productivity, coupled with conversion of unused land for agricultural, will enable Brazil to meet its demand upswing.

Julio Borges Garcia, president of Ihara Chemical Industry Co. has capitalized on these trends: "Ihara is very confident

with the agriculture industry in Brazil and in fact the market has hit our forecast for this year of \$8.3 billion in revenue. In the next five years, we believe we will reach revenue of \$10 billion and demand will continue to be strong despite the situation in the US and Europe. Farms in Brazil need the support of agro chemicals in order to: (i) fight diseases; (ii) control fungus activities, which are very active here; (iii) reduce the impact of pests in

Making more for the field means knowing and understanding its needs.

FMC is your reliable partner in the country. For this, it works to improve your farming with technological solutions, products for portfolio expansion and high value-added services, delivering high productivity and maximum profitability. Contact FMC. Together, we can make more for your business.

FMC

www.fmc.com

Making More for the Country

IHARA brings Japanese technology and you increase the productivity of Brazilian Agriculture.

IHARA being a quality conscious Japanese Company, investing in high technology and innovation. Works diligently to develop products with the cooperation of Brazilian Agriculture. For this reason, IHARA performs many scientific and technological tests, constantly finding solutions that creates efficient productivity, also creates profitability and gives healthier lives to the farmers of Brazilian Agriculture. All these issues, always, because Agriculture is our life.

IHARA

Agriculture is our life

www.ihara.com.br

productivity; and, (iv) help to protect crops with other problems that are typical to tropical countries. In the last 10 years, we have increased our sales on an average of 25% annual growth rate.”

Ihara draws on the technical expertise of its Japanese shareholders, Nippon Soda, Kumiai Chemical, and Sumitomo Corporation.

Regulatory uncertainty, as it pertains to crop protection and its impacts on the distribution business, directly influences producers. However, while complex, it can be overcome, as Thomas Britze, managing director of Helm do Brazil, explains: “businesses need to register and receive approval of crop protection products with several institutions in Brazil including Anvisa, the Ministry of Agriculture and Ibama, the Ministry of Environment. In addition there is state legislation, which in Brazil varies considerably. In the south of Brazil you have more of a cooperative system, while in other parts of the country you have more private distributors or direct sales to farmers. Mato Grosso is the most important agriculture region in Brazil with huge farms and the industry is selling directly to these farmers. Therefore, you need a tailor-made approach in each region. The business model and the market access are different as well as your portfolio of offerings needs to be tailored to the various regions.”

Helm do Brazil is part of the larger HELM AG German, a family-owned



Soybean fields in Mato Grosso, Brazil. Photo courtesy of Ihara.

company with over 110 years of experience as one of the world’s major independent chemicals marketing enterprises. “Brazil is going to be the most important market, surpassing the US this year for the first time. The market is enormous, with very good potential, but it also includes some risks. Climate and financial risks, commodity prices and volatilities all have to be considered. There are many factors that make our life interesting. For Helm, I am optimistic that we can contribute more to the growth of Brazil, helping our customer to get products and solutions with cost-benefit to improve their productivity and profits.”

Dr. Alfred Hackenberger, president of BASF South America, comments on the

importance of the agro-business to the Brazilian operations: “in Brazil we have three pillars, 30% agro business, which is very important in Latin America and much higher than BASF global trends, 20% decorative paint, and the core business in BASF worldwide is in plastics which represents 50% of the business in Brazil.”

In addition, while Dr. Hackenberger laments the lack of an R&D tradition in Brazil, the agrochemical sector proves an exception: “in my opinion, Brazil is the strongest country worldwide when it comes to R&D for the agro sector. BASF is very strong on that front in Brazil; the first transgenic soybean developed outside of the US was from BASF in partnership with a local company.”

INNOVATION AND SUSTAINABILITY

Investment in research and development (R&D) is fundamental to increasing the competitiveness of the Brazilian chemical industry.

Previous reports have indicated that companies in Europe, Japan and the US invest 5% of annual revenue into R&D initiatives, while Brazilian companies spend on average 1%. Yet Eduardo Estrada, president of DSM Latin America, a global science-based company, and vice-president human nutrition and health, talks of a shift in focus for DSM and the culture on innovation: “we invest more than 5% of our sales in research and development and 10% of our people globally work in innovation. DSM’s target is to increase innovation sales from 12% towards 20% of total sales by 2015. DSM surpassed its innovation targets in 2010 and we aim to repeat this in the next five years. In Brazil we are building a solid platform to replicate DSM’s business model throughout Latin America... and the sale of DSM Elastomers (we had a plant in the south of Brazil) completes our Vision 2010 strategy to become a focused life sciences and materials sciences company. DSM has now entered a new era of focused



Eduardo Estrada, president, DSM Latin America



Croda's lanolin plant, located in Campinas, Sao Paulo. Photo courtesy of Croda.

growth and this allows us to be a larger player in technologies of the future... we closely follow global shifts, climate and energy and health and wellness, and these global shifts shape our strategy. Our strategy lands in four different areas: the high growth economies (50% of our sales by 2015), innovation (including open innovation and collaboration with other companies, including biotechnology), sustainability, and acquisitions and partnership.” Lanxess completed the acquisition of the DSM Elastomers in 2011.

Croda’s managing director, Marco A. de M. Carmini, also stresses the importance of R&D to the local operations: “we spend about 2.5% to 3% of our local turnover in R&D. Among our key initiatives is to increase our presence in the

industrial specialty markets and animal care. Croda hosts in Brazil an Animal Care Excellence Center. We see in this area a lot of collaboration in the future with Asia. This is becoming less important in the US or Europe, but Brazil has potential in processed meat and raw meat production with Argentina and also with China. Secondly, we also see a lot of opportunity in biodiversity. The Brazilian biodiversity act is the first one in the world, although this act has many flaws that need to be corrected, Brazil’s biodiversity is a strong source of innovation for companies. We have six to seven biomes and so far we have only invested in the rainforest biome, but there are some others that can provide a unique innovation solution for the chemical industry.”

Looking for a Solution?

Croda offers a complete range of high performance excipients for the veterinary market such as: High Purity Oils, Esters, Surfactants, Emulsifiers, Lanolin and Derivatives, among others, that can be used in topical, oral and parenteral applications.

For more information, please, visit our website at www.croda.com/healthcare

CRODA

Veterinary Excipients

Beauty from Biodiversity

Crodamazon is a naturally derived product range composed by oils, butters and derivatives obtained from the pulps and fruits seeds such as: Andiroba, Buriti, Brazil Nut, Cupuaçu, Passion Fruit and Pequi.

When searching for natural products, obtained from the Brazilian biodiversity and with outstanding properties on the skin and hair, contact Croda.

For more information, please, visit our website at www.croda.com/la/pc

CRODA

Innovation you can build on™

Crodamazon

Croda is a global leader in specialty chemicals, in personal care, health care, crop care, coatings and polymers. Croda employs a variety of 'traditional' chemical processes to convert natural based raw materials into fatty acids and glycerol, and then further refine and process them into a range of products, which has led the company to be the world's number one producer of lanolin.

Innovation and technological development have played a part in Brazil's economic history in one form or another for over thirty years. Between 1982 and 1992 Brazil closed its market from the import of digital products, with the goal of all digital technology to be developed locally. The move was aimed at restabilizing the internal market, and was a part of a larger economic plan to combat the country's hyperinflation. Yokogawa Electric Corporation is a Japanese company that provides technology solutions in measurement, control, and information, which was selected by the Brazilian government

as one of a few firms to develop digital technology in Brazil at that time. Nelson Ninin, Chairman & CEO, Yokogawa South America, reflects on the company's history in the Brazilian market: "in 1973, Yokogawa opened its first affiliate located outside Japan in Brazil. The military government at the time strategically placed the petrochemical industry in São Paulo, Bahia and South of Brazil as main priorities for development, which helped to launch new products from Japan quickly into the Brazilian market... When the market re-opened in 1992, Yokogawa bought a Brazilian company to take care of our operation here and put together our business for field instruments, testing and measuring instruments to offer as a solution a package for our customers in Brazil. Our plan is to continue with the last 10 years' average annual growth of 15%; in 2010 we were 38% up on new contract business and we foresee that 2011 to 2015 will show a larger increase in new contract business because there

are some large projects on the horizon. The new projects we see upcoming for Yokogawa South America will be in pulp and paper, oil and gas, power, petrochemical and chemical, mining, ethanol, but the majority will come from oil and gas."

BRASKEM PAVES THE WAY

While a long path of investment and challenges confronts the development of the industry, local businesses such as Braskem, Oxiten and Unipar are stepping up to the mark. September 2010 marked an important milestone for Braskem, as they inaugurated their new ethylene plant in the Triunfo petrochemical complex in Rio Grande do Sul. For Brazil, this meant a huge leap forward towards achieving their position as a leader in green chemistry.

The new plant is the first commercial scale green ethylene project to use 100% renewable raw materials (the plant uses ethanol produced from sugarcane as feedstock). The plant has an annual

capacity of 200,000 tons and consumers have shown they will pay more; some agreed to pay a premium as high as 66% for the polyethylene (PE) made from renewable sources.

The global demand for green PE is growing and will continue as pressure mounts for chemical companies to position themselves as "sustainable".

Braskem is also planning to build another green ethylene plant, this time fully integrated, to tap into this huge demand. The first plant, non-integrated, enabled the rapid launch of its products in the industry far ahead of its peers. The project was conceived and installed in less than two years based on Braskem's proprietary technology. In partnership with a local Brazilian company, Novaenergia, Braskem will also produce 1.4 million liters of naphtha annually from post-consumer recycled plastic at its Camacari complex in Bahia.

ACCESS TO RENEWABLE MATERIALS

Brazilian ethanol has inevitably been a major ingredient in some new biopolymer investments, and thanks to its unique combination of climate and available land, Brazil is the world's largest sugarcane producer and the second-largest bioethanol producer, preceded only by the US. Brazil, unlike countries in the northern hemisphere, has a competitive advantage due to its larger biomass avail-

ability at lower prices and its lower carbon footprint than the corn-based ethanol produced in the US. This, added to more efficient support for the development of new conversion techniques, could lead the country to becoming the pioneer in cellulose-ethanol production and other advanced biofuels.

While Braskem's plant has paved the way, Belgium's Solvay is evaluating an ethanol-based polyvinyl chloride (PVC) project with an annual capacity of 60,000 tons, and the US-based Dow Chemical, in partnership with Japan's Mitsui & Co., has invested in an integrated sugarcane to PE project and M&G plans to invest in a biofuels and biochemicals project.

Braskem is not the only local chemical company investing huge capital in R&D. Oxiten, a subsidiary of the larger Ultrapar Group that operates worldwide and is a leading manufacturer of surfactants and the largest producer in Latin America as well as a leader in specialty chemicals, received the Kurt Pritzker Technology Award for its case "Changing the Properties of Ethanol for Feasibility and Use in Diesel Engines". The company's R&D department developed a formula that uses ULTRAFLUIDTM Eco, allowing the use of hydrated ethanol in diesel engines of heavy-duty vehicles, such as trucks. The company has made several other marked contributions to green chemistry. Joao Benjamin Parolin, CEO for Oxiten, discusses Oxiten's innovation platform: "Oxiten has



João Benjamin Parolin, CEO, Oxiten

achieved 20% of raw materials from renewable sources and 35% of its materials contains renewable ingredients."

Oxiten has research, development and technology centers in three countries, Brazil, Mexico, and Venezuela, and invests approximately 1.5% of its annual billings in R&D. "Oxiten has also pioneered several innovations, including the oleochemical production plant. This was a first and significant milestone in Brazil and Latin America... Another important sector in Brazil is of course the agrochemical industry and Oxiten has specially formulated agricultural pesticides that provide greater stability and higher performance. The end result is greater productivity and safety for the farmer," says Parolin.

Other investments include the alkoxylation units based on the most recent

Interview with Rui Chammas, Polymers Division - Executive Vice President, Braskem

Key to furthering growth in the petrochemical industry is localization of the supply chain. How is Braskem's contribution to this expansion?

Today we are the sole producer of polyethylene and polypropylene in Brazil. We are not the only company selling, but we are the only company truly committed to the market. We have a bigger responsibility in terms of developing the plastic value chain in the country. We need to assist our customers to develop and grow their business because this is the only way we will be able to grow in our business. It is clear that Braskem has a bigger responsibility to develop the local market and this is part of our mission. We also need to help our customers in the rest of Latin America to develop their position in their market.

There is an increased emphasis globally on sustainability within the chemical industry. What steps has Braskem taken in the polymers business to follow this global drive?

Our vision is to run the business in the most sustainable way. In addition, Braskem is developing a complete range of bio-based materials that are perceived by the market as more sustainable. At the end of 2010 we started the green polyethylene plant, which positioned Braskem as the leader in biopolymers globally and we are also bringing to the market an additive for gasoline that is based on ethanol as a raw material. Braskem is also investing a lot of money in R&D to look for new products that are based from renewable raw materials. We understand that as a country we have the advantage of a very competitive bio-based raw material and with our investment in R&D Braskem will leverage this

to position ourselves favorably in the global sustainable arena. We understand there is a demand from the market for renewable materials and Braskem is prepared to deliver these products.

How would you describe the investment environment in Brazil?

In terms of raw material, we will have a lot of material from the pre-salt oil fields coupled with economic growth and we are experiencing a rise in internal market demand. The question is how to build the basic infrastructure needed for this potential growth. The focus is now on what should be done to bridge these gaps; including transforming into reality the potential we have in the country through tax incentives, raw material availability and cost, innovation incentives, and capital expenditure incentives. This, together with improvements in energy costs and infrastructure, will lead to a promotion in investment. However, as we now stand, there is a lot of room for improvement. Braskem faces the same challenges as new investors, but we are committed to lead the market growth in the next years.

How do you expect the polymers business to evolve over the next five years?

We believe Brazil will continue to grow and we foresee future market growth in South America. In five years, our plastic industry will be much more developed in the region and Braskem will be doing our best to serve the market with materials and services. Innovation will be key and in the bigger sense we will continue to look for new biomaterials, new technologies and new applications of our materials. At Braskem we are very positive for the

Growth

Global commitment, sustained investment

Eastman welcomes Scandiflex to the family

The worldwide leader in non-phthalate plasticizers now has local manufacturing capability in South America with the acquisition of São Paulo-based Scandiflex.

Plasticizer production in Brazil—Latin America's largest market—means that Eastman now has nine plasticizer manufacturing locations on four continents, strategically positioned to provide timely supply to customers.

Eastman is committed to the global plasticizer industry, with an 80-year history of providing

- A reputation for excellence
- Superior products
- Reliability of supply
- Excellent customer service

Contact an Eastman representative today to find out more
800-EASTMAN or www.EastmanPlasticizers.com.

The worldwide leader in non-phthalate plasticizers

Eastman and Scandiflex are trademarks of Eastman Chemical Company. © Eastman Chemical Company, 2011.

EASTMAN

SCANDIFLEX
A subsidiary of Eastman Chemical Company



Pedro L. D. Fortes, general director,
Eastman Brazil

technologies for producing high-purity surfactants intended for applications such as cosmetics, detergents, pharmaceuticals, and food and the green solvents obtained from sugarcane, which create a series of derivatives with outstanding sustainable attributes, enabling the replacement of synthetic solvents and the specialty chemicals which have valued attributes in the formulations of shampoos, soaps, creams, and lotions.

Whilst national companies spearhead R&D investment, many well-established multinationals have made large investments into Brazil, establishing centers of innovation or R&D laboratories. America's Eastman has developed a research lab in São Paulo in this regard. Eastman's general director of the Brazilian operations, Pedro L. D. Fortes, reflects on the entrepreneurial skills that have long been associated with Brazilian culture: "if you look at our past, Brazil did not have a lot of resources; we had to improvise and this has created an entrepreneurial talent in Brazilians. At Eastman, we have many examples of new innovations and sustainable products and Brazil is leading this effort worldwide. For example, Eastman has a special water treatment program that was developed for poor people in Africa who do not have access to water. This is also useful for military use in rural and remote areas. The inflatable bag can be thrown into a body of water such as a river and the cellulose filters the water and removes all the impurities and bacteria. It has been used in emergency situations, such as the earth-

quake in Chile. Fifty helicopters taking drinking water can be replaced by one helicopter with this product solution. It was launched this year, first in Brazil, then in the US. Those are the creations that Eastman is developing, which separate us from any other chemical company in the market."

French chemical giant Rhodia, recently acquired by Solvay, has a long-standing reputation for commitment to sustainability. In 2011, US-based Cobalt Technologies, a developer of next-generation bio-based chemicals, and Rhodia announced a Memorandum of Understanding for a strategic alliance to develop bio-n-butanol refineries throughout Latin America. Marcos A. De Marchi, president of Rhodia Latin America and head of fibres for Rhodia globally, has taken advantage of Brazil's raw materials: "in Brazil we have access to another kind of raw material that the rest of the world does not have. We have recently launched a solvent based on glycerine, which is a sub-product of biodiesel production. It is very difficult to be sustainable in the chemical world. It is easier and less expensive to do things as they were done in the past. However, this has to change and Rhodia sees this as a responsibility; to be sustainable and to be more proactive both at a global and local level. The second point is a source of business opportunity. If you transform your business into a sustainable business before your competitors, you are better positioned for the future. Sustainability is an obligation and an opportunity. In order to translate this vision into something more concrete, the Rhodia Way program was introduced with great results: Rhodia has been awarded on the Dow Jones sustainability index for the third consecutive year."

GE is also making a significant commitment to furthering the development of the industry through the establishment of a new R&D centre in Rio de Janeiro. Currently GE has laboratory capabilities throughout the country and facilities in Brazil that allow the company to tailor products developed in the headquarters to local market needs. An R&D facility planned to be fully operational by early 2013 has seen invest-

ment of around \$200 million from the company. This innovation center will be GE's fifth research facility worldwide and will initially focus on serving the oil and gas, biofuel and health care sectors. Tadeu Justi, regional executive for GE Latin America says the investment is "not just a commitment to the Brazilian market but a clear indication about GE bringing more capabilities to fully develop technologies in Brazil for Brazil, pure R&D focused." The Brazilian research center will house as many as 300 engineers, making it the company's second-largest R&D facility outside the US, according to a company statement.

COLLABORATION

The chemical industry requires support for technological development and innovation. In many instances a pilot-unit to test processes and products requires support from public governing bodies to reduce investors' risk and foster innovation. In 2011 the Brazilian Development Bank (BNDES) disbursed BRL43.8 billion to industry, with BRL7.1 billion to the chemical and petrochemical sectors. Together with the Research and Projects Financier (FINEP), BNDES will support industrial technological innovation in the sugar-based energy and chemical sectors, allocating BRL1 billion for the 2011 to 2014 period. Its purpose is to stimulate projects that aim to develop, produce and commercialize new industrial technologies designed for processing sugarcane biomass.

In many cases, companies are supported by public policies, both from federal and state governments. The "Lei de Inovação" ('Innovation Act'), the "Lei do Bem" ('The Goodness Act'), mechanisms for economic subsidies, financing programs from institutions such as FINEP and BNDES, as well as the instruments and resources utilized by Fundações de Amparo à Pesquisa dos Estados ('State Research Foundations'), all represent important sources of financial support to research and development of innovative technological solutions. Paulo Schirch, Solvay's general manager for Brazil and Argentina comments: "Brazil has been publishing and increasing research in a significant

The nature of our business is to provide the best solutions for yours.

Petrom began its history in 1953 and today is an important Brazilian petrochemical company, with the abilities to meet the most diverse and challenging needs of its customers through solutions that meet rigorous quality, safety and environmental standards. Petrom is the largest manufacturer of phthalic anhydride in Latin America and maintains a wide portfolio of products whilst also striving to innovate in the areas of alcohol, fine and green chemistry. A recent example of this is the launch of PLS Green, a new range of plasticizers developed from renewable sources such as sugar cane derivatives that meets the growing global demand for environmentally sustainable products. Petrom. A company whose main business is to contribute to the success of its clients wherever they are in the world.



To learn more about Petrom, visit: www.petrom.com.br

Rodovia Dom Paulo Rolim Loureiro, Km 9 - Vila Moraes
08766-500 - Mogi das Cruzes - SP - Brasil
Phone: (55 11) 4798-7500/7600 • Fax: (55 11) 4798-7501/7610
petrom@petrom.com.br

PETROM

PETROQUÍMICA MOGI DAS CRUZES

way. Brazil has surpassed European countries in the amount of technical publications in the past years. In certain areas, for example R&D in the agricultural and forestry industry, we are very strong. It is a matter of how we allocate resources and how the government and institutions see themselves in terms of return and competitiveness. The support we have received from the government, for example, the BNDES, and through agencies such as FINEP, has been key to supporting not only the chemical industry, but also the clients of the chemical industry. Solvay is committed to becoming one of the leading companies in the sustainable industry and Brazil is a strategic platform for us to achieve this; the country can provide us the resources to do so."

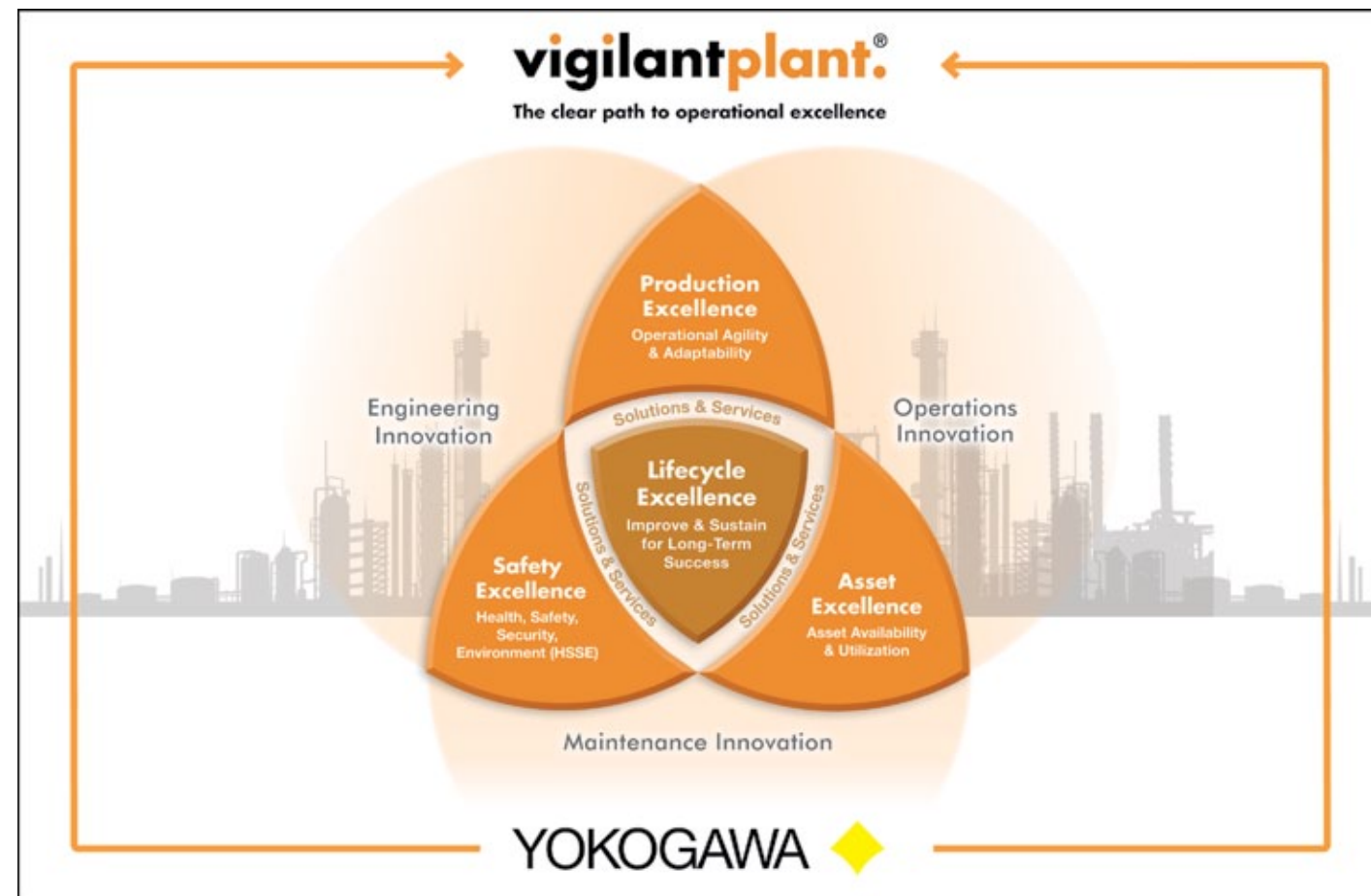
Brazilian company Petroquímica Mogi das Cruzes (Petrobrás), controlled by Cipatex, is a perfect case study of the academic partnership with industry to foster innovation. The company has begun producing 10,000 mt/y of a green plas-

ticizer based on epoxidized soybean oil and primary alcohols at its plant in São Paulo, in partnership with the University of Campinas. The product, PLS Green, has now been tested and proved to be highly compatible with PVC. Milton Sobrosa, industrial director at Petrobrás, explains: "it is the vision of our shareholders to follow the highest environmental standards and to continue to expand and increase capacity with a strong focus on developing more sustainable products for the industry. Seven years ago Petrobrás began research and development for renewable plasticizers. Since the end of 2008 we contracted Desantis and we opened an onsite laboratory to understand the behavior of these plasticizers in the final products. This unraveled in 2008 during the financial crisis, but according to our shareholders it was strategic to have a pilot plant, even at that time. In 2009 Petrobrás patented the renewable plasticizer BLGS. Petrobrás began industrial production in 2010 and we are rapidly introducing these plasticizers globally and have

already received approval in the US. This plasticizer is specifically designed for sensitive products, including medical devices, food and children's dolls. We are in the process to attain FDA approval and we should be approved by the end of 2011."

Extensive research to find alternative plasticizers for adhesive and sealant formulations are driven by global demand for alternative plasticizers with greater sustainability through reduced toxicity and the elimination of the use of environmentally harmful raw materials.

Sobrosa adds: "now many multinationals have acquired a license to use this plasticizer. Earlier this year Solvay, one of our principle users of this product, asked for samples of the product to be tested and presented in a seminar. They compared several properties and concluded that our plasticizer was one of the best in the world. We have achieved the creation of a renewable based plasticizer with a competitive cost. This is a revolution in the industry."



The professional training profile in Brazil is presently inadequate for an innovation-oriented culture and the country needs to take concrete steps to improve co-operation between universities and industry. As a relatively new entrant in Brazil, DSM's president of Latin America, Estrada, highlights the importance of utilizing local talent and industries: "there is no way to grow without investing in Brazil and local content is a unique driving factor for any company's success. The Brazilian government's ambitions to increase local content across the industries are even more apparent since the recent oil discoveries. Acquisitions and partnerships are very relevant for high growth economies, particularly in Brazil. For example, currently, we are collaborating with oil exploration companies with our Dyneema® technology, the world's strongest fiber, to enhance performance of their deep sea platforms by replacing heavy steel cables for deep-ocean drilling. In Brazil, DSM will also be involved in biomass conversion. Brazil is best positioned on this front and DSM has unique enzymes and yeast technologies to help us become the preferred partner for second generation fuels, biogas and biomaterials. The life-cycle impact of these industries is very favourable. So it is important for Brazil that the government has key initiatives through their National Development Bank (BNDES) PAISS programme that

aims to invest up to BRL1 billion to accelerate new technology adoptions in biomass conversion. Only few selected players will become part of this front and DSM is in the running."

He continues: "Brazil plays an enormous role in renewable sources of material...with innovation platforms created by industry together with established regulations around intellectual property and the right financial incentives we can accelerate biosolutions for the chemical industry. To be able to accompany the growth and local trends you must be locally present with local talents."

Investment from leading players and governmental backing, along with the development of locally owned Brazilian technology and an abundance of raw material, position Brazil to lead the global drive in green chemistry. "We are forecasting to become the fifth largest chemical industry worldwide. We have a huge raw material base and we will find a way to tap into this to become competitive... Brazil also has a leadership role in the green chemical and renewable industry. Brazil has a way of rising to the occasions," remarks Henri A. Slezynger, president and CEO of Unigel.

REGULATIONS

For the chemical industry to fulfill its innovation investments, changes in the regulatory regime, improvements in the analysis processes and efficiency in the

release of credit have all been flagged as concerns. For ASK Chemicals, Renato Addas Carvalho, managing director for South America, further regulation and the drive for sustainability are an important growth area for business: "a major differentiator is our environmentally friendly products. The more restrictions the government and companies implement the better it is for our business. For instance, our products have zero formaldehyde, which is much safer for the employees. Companies now see value in this and we are the only company in the market to produce this product."

ASK Chemicals is the result of a joint venture designed to create a larger company with one focus; the foundry market. Carvalho adds: "combining the three businesses we have a truly global presence, a very complete product line and the strength of a combination of all the technologies from Ashland, Sud Chemie and ASK Chemicals." For ASK Chemicals and others supplying to the automotive industry, Brazil represents some of the greatest growth opportunities. "Currently, 58% of the foundry business is related to the automotive industry and, as you know, the automotive industry is growing very fast and will continue to grow. If you compare the number of habitants in Brazil to the number of cars, it is still very high. We are six habitants to one car as compared to Mexico which is four to one and below two to one in developed countries," says Carvalho.

ENGINEERING – A SHORTAGE OF SKILLS

Brazil is home to many well-established companies in the engineering services sector, which provide the integration and management of projects in Brazil's chemical sector and related segments.

Engineering companies, both national and international, have brought their state of the art technology, innovation and intellectual capacity to Brazil to help drive the growth in current and new chemical plants that have resulted from the country's economic boom over the last decade. Engineering in many related fields such as oil and gas, pulp and paper, and infrastructure have also fuelled the growth that Brazil's chemical industry is seeing today.

When it comes to the chemical industry, the quality, safety and compliance of companies in this field are vital. From pesticides, petrochemicals, paints, and industrial gases, chemicals and the products made from them are everywhere and in order to bring them safely to the end user measures must be taken at several steps along the way. The chemical industry is a highly complex business, which requires intricate equipment, dangerous logistics, and highly skilled labor to ensure the finished products are produced without any disruption or security concerns.

This is why as chemical use in consumer products and industry continues to grow, companies like SGS, headquartered in Switzerland, play an important role in inspection, certification and testing to verify the safety of goods and help control chemical use and transportation across many sectors.

SGS began its operations in Brazil 70 years ago in the grain and international commodity-trading arena, but today is



Marcelo Garcia Stenzel, executive vice-president, SGS

quite diversified, with the largest portion of its businesses related to the chemical industry. SGS offers lab analysis and commissioning services to companies in the field as well as certification for transporters of chemicals under the Responsible Care program, as outlined by the ABIQUIM association.

A common theme for any company

operating in this highly technical arena is the need for more skilled entrants to the labor market; companies in Brazil's engineering fields are especially feeling the pressure. Despite the great growth potential that Brazil's rising lower class is bringing to the nation's economy, the lag in rising education levels is felt by companies such as SGS. Marcelo Garcia Stenzel, executive vice president for SGS Brazil explains: "the main challenge now is in finding qualified labor in all areas of our business, so we are making a large investment in the training of our personnel. We are running training programs, apprenticeships and sending professionals to the US to train at our laboratories in bigger facilities."

According to a study carried out by the Institute of Industrial Development Studies (IEDI), Brazil is facing a lack of qualified engineers and is not producing either the quantity or quality of engineers required to compete in the world's hi-tech markets. The IEDI report states insufficient education as



BASF is the market leader for polyurethane and elastomers systems. Photo courtesy of BASF.

a source of the problem, in addition to the cost of engineering programs at the university level, which are restrictive for students. This deficiency in the local market has led most large Brazilian firms to create their own internal training programs.

Edson Bouer, president of Associação Brasileira de Engenharia Química

(ABEQ) and vice president of the engineering firm Engevix, describes the situation facing his company: "a growing challenge for Engevix has been a skill shortage of highly qualified labor. What Engevix has done is to take experienced employees with 20 to 30 years of work to coach new hires from universities in Brazil and provide training on-site. We

WE DO NOT PREDICT THE FUTURE, WE BUILD IT.

Fine Chemicals
Animal Technology
Industrial Chemicals
Food Ingredients
Laboratory
Argentina
China
Pharmaceuticals

www.mcassab.com.br
Av. das Nações Unidas, 20.882 - Vila Almeida
04795-000 - São Paulo - SP - Brazil
+55 11 2162-7788

Grupo
M.CASSAB

SGS BRASIL

SGS IS THE WORLD'S LEADING INSPECTION, VERIFICATION, TESTING AND CERTIFICATION COMPANY.

- Trade Inspection
- Laboratory Services:
 - Petrochemical, Crude Oil, Petroleum Products, Gas and Biofuel Testing
- Used Oil and Lubricant Analysis
- Laboratory Outsourcing
- Sample Management & Distribution
- Asset Integrity Services
- Assembly Services
- Local Content Certification - Resolution ANP 36

MAIN OFFICES
Aratu - Fortaleza - Macaé
Maceió - Paranaguá
Porto Alegre - Recife
Rio de Janeiro - Rio Grande
Santos - São Mateus
São Paulo - Vitória

PLEASE, CONTACT US
S. Paulo - Tel.: 11 3883-8800
Santos - Tel.: 13 2105-9550
sgs.brasil@sgs.com

www.br.sgs.com

WHEN YOU NEED TO BE SURE

SGS

Engevix, intelligent services and solutions with Know-How and technology.



Engevix Engenharia is growing hand in hand with Brazil. We are over 5,000 employees dedicated to a wide range of projects, such as oil and gas, chemical and petrochemical processing units, subway lines, renewable energy generation and transmission, ports and airports, industrial facilities and infrastructure in general. We operate in more than 13 Brazilian states and the Federal District, with units in other Mercosur countries, the USA, Africa and Asia. We employ cutting edge technology and develop knowledge based on over 45 years' experience in engineering consultancy. Today, Engevix Engenharia is growing hand in hand with tomorrow's Brazil.

ENGEVIX

Intelligent Engineering
Projects of Value

www.engevix.com.br
+55 11 2106.0100

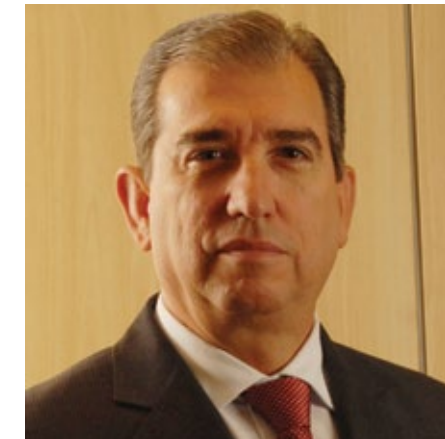


Edson Bouer, vice- president, Engevix

are aiming to make these recruits productive in a short amount of time so we have accelerated the training process by showing them life in the plants, and providing them with a realistic preview of work in the EPC industry."

Engevix is a company that is distinguished in the implementation of engineering, procurement and construction projects and which has maintained its focus on the engineering side rather than shifting its focus to construction, despite similar moves by competitors. In terms of global operations, Brazil represents more than 95% of Engevix's business; the company also has operations in Angola, Columbia, Ecuador, Peru and Central America. Bouer is adamant about the company's continued focus on Brazil: "even with the onset of the global economic crisis, Brazil provides attractive opportunities in the chemical and infrastructure sectors. These industries are profitable and Brazil is developing a solid investment base, with many exciting projects in the pipeline to make the country's chemical market an attractive investment opportunity."

Brazilian engineering company Odebrecht has a revolutionary approach to human resource management: one that has been applauded by Harvard University. "Odebrecht has a long tradition of employee satisfaction. Those seeking employment with us plan to retire with us. Our management philosophy is very specific: we work with total autonomy, 'a small contract is a small company'. The decentralization level is incredible. A Mexican director, for example, will



Marcio Faria da Silva, president of industrial engineering, Odebrecht

behave and make decisions as the business owner and is rewarded based on results. Few companies in the world have this level of independence," comments Odebrecht's president of industrial engineering, Marcio Faria Da Silva.

Odebrecht was a key contributor to the success of Braskem's Green Ethylene Plant in Triunfo- the first in the world to manufacture plastics from 100% renewable sources. "This project has a very important meaning, image and practicality for Brazil. This was the first commercial scale plant to produce green plastic from ethanol and from this, new projects will be executed worldwide. It was very important milestone for Odebrecht; we were able to complete the project on time and in budget. This first production was all sold to Toyota, who aspired to make the first green car at that time," said Da Silva.

Today, Odebrecht operates on a truly global scale with important projects in Argentina, Mexico and a refinery being built in the US in partnership with Petrobras.

The São Paulo Industry Federation (Federação das Indústrias do Estado de São Paulo - FIESP) in December 2010 estimates investments in civil construction around \$150 billion a year until 2022 to accompany industrial growth. This includes major investments in industrial facilities and energy plants, as well preparations for the World Cup and Olympic Games. "We need the support of major multinational companies in partnership with local players and this is part of Odebrecht's strategy," concludes Marcio Da Silva.



Royal DSM N.V. is a global science-based company active in health, nutrition and materials. By connecting its unique competences in Life Sciences and Materials Sciences DSM is driving economic prosperity, environmental progress and social advances to create sustainable value for all stakeholders.

DSM delivers innovative solutions that nourish, protect and improve performance in global markets such as food and dietary supplements, personal care, feed, pharmaceuticals, medical devices, automotive, paints, electrical and electronics, life protection, alternative energy and bio-based materials.

LEARN MORE AT DSM.COM



INDUSTRIAL GASES

Gas products are not only essential to the chemical industry as a whole, but also play a vital role in our everyday lives. They are critical to the creation of vehicles, buildings, technologies, food and beverages, and pharmaceuticals, to name but a few applications.

It is therefore no surprise that Brazil's chemical sector is home to several major players in the industrial and specialty gas segment, with four major multinationals (Air Liquide, Air Products, Linde, and Praxair's Brazilian subsidiary White Martins) and only one local player (IBG).

The German based company Linde Gases, provides extensive application know-how, expert services and state-of-the-art equipment to help chemical companies improve their operations.



Clemis S. Miki, director and president for South America, Linde

Clemis S. Miki, director and president for South America discusses the company's focus in the local market: "here in Brazil, Linde is focused mainly on our gas business and we also provide engineering services to petrochemical companies. We have a strong reputation and are well positioned in the South American market. We are finding specific opportunities for investment and



Magnus Karlson, business manager and chairman, Brazil industrial gases, Linde

growth here, and we believe in the future of the whole region." Linde has been in the region for close to 100 years and has become the market leader in hydrogen applications.

Linde Gases provides extensive application know-how, expert services and state-of-the-art equipment to help chemical companies improve their operations. Magnus Karlson, Linde Gases' business

manager, explains how gases can be used in a number of sectors to help improve productivity, lower costs and environmental impact for their customers: "the molecules that our competitors are selling are not different to ours so we focus on gas applications. A bulk portion of our business is now in the application of air gases, but also gases such as hydrogen and CO2 that can be applied in many different ways. For instance, you can use oxygen for furnaces in a steel plant as well as medical gas in hospitals or water treatment for our chemical customers. Gases are also used to recover products that would normally go straight into the atmosphere or gas can be used for the treatment of water."

Pedro Manuel Riveros, managing director of Air Products, outlines some of the key constraints faced by industrial gas companies: "electrical power is a significant part of the cost for production of gases in Brazil, which account for more than 50% of the cost structure. Brazil has the third most expensive power costs in the world and with the power potential that Brazil has, this is the topic of constant discussion in the industry. In addition to high costs, distribution is also a challenge and fairly expensive from a productivity standpoint. There is an opportunity to increase productivity by improving our roads, because where the most industry is located high level of congestion is regularly encountered."

Founded in 1940, Air Products provide large and small volumes of nitrogen, oxygen, and hydrogen as well as gas separation and purification technologies and technical support to the chemical processing industry, but they are also a chemical company, unique among the major industrial gas suppliers. "Luckily for Air Products, gases do not have a 'China effect' because you cannot import gases. With that being said, Air Products' customers compete against cheap Chinese products, so we are impacted indirectly and must remain competitive. Taxes in Brazil are relatively high for any type of importation, which gives incentive for companies to import chemical concentrate and make the mix here, which is cheaper. In

terms of our products, even one drum of our additive makes a large volume difference to our customers' product line. Air Products is known for its innovation and operational excellence in addition to high its ethical standards and health and safety," says Riveros.

These qualities have translated into a very successful operation in Brazil, specifically in the Camacari area. "We are the leader in hydrogen production. Our

customers need reliable sources of hydrogen so we sell on-stream, high reliability plants and use our global expertise to avoid any interruptions to production. We also provide capital efficiency and a strong value proposition because we are not only selling a gas, we are selling a solution. Air Products has an entire staff team focused on using gas to improve our customers' business processes."



A Leading Gases Supplier with Over 35 Years of Commitment to Brasil

Air Products Brasil is a wholly-owned subsidiary of Air Products and Chemicals, Inc. (NYSE-APD), a Fortune 500 Company and a leading global supplier of gases and performance materials serving customers in chemical processing, metals, pulp and paper, steel, glass, electronics, food and many other markets.

Some facts about Air Products Brasil:

- Full range of gas supply: cylinders, liquid bulk, on-site gas generation
- More than 20 production facilities and depots
- Strong commitment to safety and the environment

Let our world-class experience and local knowledge help you achieve productivity, environmental performance and quality.

tell me more
www.airproducts.com.br

AIR PRODUCTS

Air Products Brasil Ltda
Tel (11) 3856-1700/1770
Fax (11) 3856-1670/1781

Customer Service
Tel 0800 111 600

Innovation is key for a successful global player.

As a world-leading gases and engineering company with the ambition to set new standards, we develop innovative ideas that play a key role in creating a sustainable future. We manufacture and distribute industrial, specialty and medical gases and provide a range of related services including the installation of gas equipment, pipelines, on site plants and associated engineering services. From a large number of production sites at various locations, Linde Brazil serves customers across a variety of industries, in particular the chemical and petrochemical, and is committed to delivering quality and reliable services that create value for our customers. Our business offices are strategically located in Brazil's main customer centers. Please contact us at +55.11.3594-1793 or cliente.lg.br@linde.com.

Linde – ideas become solutions. www.linde-gas.com.br

DISTRIBUTION

Brazil's distribution business has been through several changes, from the liberalization of the industry in the 1990s to the introduction of the Responsible Distribution Process and the current trend of consolidation.

Mario Grumach for Sulatlantica, describes the rollercoaster of the past decades: "Brazil emerged from hyperinflation and in the last fifteen years we have endured an inflation rate of only 150%. Although this inflation is nine times higher than Americans, Europeans or Canadians, for Brazilians, who have been used to having huge inflation, it was a much easier percentage to run a business with. Companies with a structured business were the only ones to survive and Sulatlantica was one of them, but for many years, the business stagnated. The industry did not have a way to buy, there was an abnormal protection that did not allow the competition into the industry. Then in the 1990s we opened our ports and our market opened and we began a 'quality phase': more quality and more competition."

On the other hand, for producers the liberalization of the market threatened smaller operations and Brancotex felt the competition. "Brancotex had a complicat-



Appropriate warehouse to receive liquid products with all licenses required by Brazilian legislation. Photo courtesy of Trust Trade and Logistics.

ed moment in the 1990's because of the entrance of low priced Chinese products, which caused our sales to fall drastically. After 1999, we started growing and gaining new types of clients from other business areas. We also invested in our production capacity," accounts Jairo Simoes Peixeiro Jr., director of Brancotex.

Brancotex is a 100% national company that celebrated 40 years of operation in 2011. The company is active in the textile industry and markets products for various segments in the domestic market, such as paints, self-adhesives, textiles and pigments. Brancotex is in the midst of expanding its industrial structure and increasing its productive capacity.

While the market is attractive to international players, a shift in manufacturers' mindset is still required. "A challenge we

face as distributors is with the culture of the local producers. The average distribution participation in the chemical industry is around 20% but in Brazil we are close to 12%, this means there is a lot of space to grow in the market, but we need to change the mindset of the producers. We are seeing progress, and producers are learning that distributors have a very important role in the market; previously it used to be only 7%," says Victor Cutait, director of M.Cassab.

INTERNATIONAL PRESENCE

Associquim, the National Association of Chemical and Petrochemical Distributors in Brazil, was founded in 1960 and at present has over 120 member companies



Jan Felix Krueder, general manager, Quimica Anastacio

involved with the distribution of chemical and petrochemical products, accounting for more than 50% of the consumer industry. Composed predominately of family owned-businesses, with the exception of a handful of multinationals, Brazil's distribution industry is led by five or six major players. The largest, with a market share of 10% to 12%, is

the Brazilian chemical distributor QuantiQ, now owned by Braskem after the acquisition of Ipiranga. Globally, QuantiQ is amongst the 20 largest distributors according to a 2010 study by ICIS.

The large and rapidly growing Brazilian chemical distribution market means multinationals are paying close attention and locals are being propositioned. This was apparent in the recent acquisition of Arinos Química by Univar, a leading global chemical distributor. Another successful family-run distribution business established in 1952, Coremal, is among the top 10 largest in the country. Coremal's director, Romero Dantas, has also seen the enthusiasm from abroad: "we have an expression in Brazil, 'a bola da vez', meaning that everyone wants to come to our country. Only a handful of distribution businesses are international; Univar (recently acquired Arinos), Brenntag and Pochteca; the remaining players are, with the exception of QuantiQ (owned by Braskem), mostly family businesses."

Across the globe one can see this trend of market consolidation amongst distribution companies. According to Dantas: "now this trend is stronger in South America and Brazil is prepared for it. When Brenntag entered Brazil in the 1970s, the larger distribution companies worldwide started paying more attention to South America and now everyone wants to come to Brazil. Coremal, as with many other companies, is open to discussing a deal that may bring value to its operation."

IMPORTS

As Brazil lowered some domestic market barriers to allow more competition from products manufactured abroad, which of course resulted in the opening up of trade, the industry saw large spikes of import growth amongst the chemical industry as well as the automotive, textile and food sectors. The chemical industry also experienced high export growth rates. In light of these changes in the marketplace, Jan Felix Krueder, director



SULATLANTICA
IMPORTADORA E EXPORTADORA LTDA
PRODUTOS QUÍMICOS



Committed to achieve your success since 1954

Looking for a reliable distributor in Brazil? A partner that constantly invests in technology and its advanced facilities? A qualified team committed to customer success?

Fully integrated with suppliers and customers, we can develop long standing partnerships and deliver an outstanding service. With ISO9001:2008 & Prodir certifications, we ensure the quality of all our processes and prove commitment to operational excellence of our services. We combine experience, tradition and technology to offer a specialized technical staff and a team of highly trained and motivated sales representatives. We have a permanent inventory and a logistic service, always ready to deliver to any part of Brazil. Excellent business is waiting to serve you!




Rua Furquim Mendes 100. Rio de Janeiro-RJ, Brazil
ZIP Code: 21241-340 Phone/Fax: +55 21 2472-9004
E-mail: contact@sulatlantica.com.br
www.sulatlantica.com.br





TRUST IMPORT AND EXPORT.
YOUR BETTER WAY TO ENTER IN BRAZILIAN MARKET.

- Regulatory issues (company's constitution, registration, licenses, accounts and reports)
- Executive search service
- Service of import and storage of chemical raw material
- Warehouses with all required licenses
- Logistics service



TRUST
Trading & Logistic

+55 (47) 3405-8313

www.trustlog.com.br | www.taglog.com.br



**QUALITY, EFFICIENCY, EXPERIENCE,
INNOVATION AND RESPONSIBILITY.**

ALL THE ESSENTIALS ELEMENTS FOR A PERFECT CHEMISTRY.

- ✓ 70 years of experience and currently one of the Brazil's largest distributors;
- ✓ NBR ISO 9001:2008 Certification;
- ✓ More than 3500 active customers in the personal care, industrial process and food segments;
- ✓ 4 distribution centers;
- ✓ Importing from over 35 countries;
- ✓ Logistics for distribution throughout Brazil;
- ✓ Physical-chemical analysis and application in a well-equipped laboratory;
- ✓ Maintenance of safety stocks for "Just in Time" attendance service;
- ✓ Bulk structure and tankage.
- ✓ "Clean Room" for packaging and GMP standard storage

Visit our website:
www.quimicaanastacio.com.br
and see our complete
raw material line.
T.: 55 11 2133 6600



of Quimica Anastacio, a local Brazilian distribution company, reconstructed the face of his business from a producer of fatty acids to exclusively a distribution business: "our annual sales in 1997 were \$3 million. Over the next five years we invested in new equipment to increase production and in 2001 we decided to expand our business into the distribution of imported products with a similar product line to ours. This business grew so quickly that after two years we decided to stop production of glycerine and fatty acids and to focus solely on the distribution business. In these eight years we expanded to be one of the biggest distributors in Brazil, with sales in 2010 reaching \$200 million."

Such growth is difficult to sustain. Anastacio has added a complimentary segment to their business to continue expanding and servicing their customers. "We have decided to import products from around 30 different countries, to buy from local producers and to buy local or imported materials and outsource them in six different industries. The outsourcing business has been successful, as we have found a lot of companies with good technology and good quality but lacking the financial structure to run by themselves and with our strong sales department we can offer very competitive purchasing. We are very fast in making decisions and one of our biggest strengths is our agility... there is also a plan to make partnerships with local distribution companies in other countries in Latin America. The next step would be to explore opportunities for fusion with these distributors and at that time we will need a bigger capital injection



Vopak Brazil's Alemoa terminal at Santos, São Paulo. Photo courtesy of Vopak.

to buy participation and expand in Latin America," adds Krueder.

2011 foreign trade results reveal the largest volume of imports came from the European Union (29% of total imports), followed by North America (27%) and Asia (17%), whilst 22% is exported to Mercosur (only 5% imported), and followed by 21% to the EU and North America respectively and only 9% to Asia. "Distribution grows alongside the industry and international growth. If consumption in Brazil increases, so does the distribution. Distribution companies have a lot of variations in their operations. For instance, if it is cheap in China, we bring it from China; if it is better in India, we import from India. However, there are two sides to this, if you start bringing too many foreign products, your client will stop buying your products because they are imported or else they will stop producing. Therefore, we have a dilemma in Brazil. We have the exchange rate favoring some products that come from abroad and use cheaper labor, including China and India. I do not think it is a good option to stop these imports knowing that Brazil also exports to these countries. One of the largest consumers of our products is China, so if you stop these imports you can also stop China from buying our products. There are a series of nuances and variables but Brazil has big opportunities," explains Leonardo Roisman, board assessor for Sulatlantica.

The national consumption of chemical products for industrial use showed a growth of 9.68% in 2011, according to the Situational Monitoring Report (ABIQUIM). The problem is the inability of local production to keep up with domestic demand. Even as consumption increased in 2011, there was a fall in production of 3.83% and a 4% decrease in domestic company sales, which meant a heavier reliance on foreign products. Purchases of foreign chemicals have grown as a result of state tax incentives for imports and due to the appreciation of the real against the dollar. The international crisis has consequently led to a global surplus in chemicals, which in turn drives import growth. Rubens Medrano, president of Associquim, cautions: "im-

ports are a big risk to the chemical distribution industry, considering the commitment of capital, risk of exchange rates, logistic costs and competition."

Medrano is also president of Makeni Chemicals, a family owned distribution business celebrating 30 years of operation. The exchange rate, with the real overvalued, inevitably stimulates imports. He continues: "Brazil is competitive to the door of the plants, and then everything is more expensive with tax and miscellaneous costs."

A drastic reduction of the so-called 'Brazil cost' would inevitably increase productivity.

For Brazil's abundance of chemical distributors, a lack of infrastructural investment, capacity and time delays at ports make it harder to achieve efficient delivery. M.Cassab's director and shareholder, Victor Cutait, affirms: "when products arrive in Brazil, they take 15 days to clear the ports. This is in comparison to a country like Singapore that takes one day."


M.Cassab is one of Brazil's largest distribution companies, having achieved this position by being accommodating of Brazil's unique hurdles. "We pride ourselves on our service division and we offer packaging and finance solutions. For instance if we import from China, the time it takes from shipment date, to transit to clear the ports can be lengthy. Therefore, we pay the suppliers one or two months before we receive the payment from the customers."

M.Cassab is a Brazilian business group, established over 80 years ago and known mainly for its diversity and international presence. This family owned business has more than 15 business units including distribution, trading, retail and services sectors has expanded its international footprint to strategically position itself to capture the trade with offices in Asia, Middle East, South America and the US.


RESPONSIBLE DISTRIBUTION PROGRAM

Distribution was marked by another key milestone; Brazil's Responsible Distribution Program (PRODIR), which has since been ameliorated in 2010 in line

With you, always!



Wherever you are in Brazil,
Coremal will be at your side
distributing quality.



Coremal

much more than chemistry

Main Distributions

www.coremal.com.br

with the standardizations of the Canadian and US practices. The program requires members to continuously improve performance in protecting health, safety, security and the environment. Recognizing this important milestone, Rubens Medrano, president of Associquim, can safely comment: “now, producers worldwide can find distributors in Brazil with the same level of service quality. This facilitates new trade agreements and strengthens Brazil’s commitment to sustainability in the sector.”

TRANSPORTATION AND LOGISTICS

In recent years, the Brazilian government has focused its attention on the strategic ports of Brazil. The largest port in Brazil, the Port of Santos, remains a major bottleneck. In Santos, the port is congested, costly and highly inefficient. Sulatlantica’s Leonardo Roisman, board assessor of a local distribution company that has over 55 years of

experience and is headquartered on the outskirts of Rio De Janeiro, explains: “there is a need for the creation of an efficient logistic system by the government. Today we are failing; ports and cargo loads cannot be delivered on time and they are extremely expensive. The roads are in terrible conditions and trains, that should be the main part of a logistic plan because they are cheap, are almost non-existent in Brazil... The way things are now, we pay less to bring something from China to Brazil than from Rio to São Paulo.”

While upgrades and expansions are currently underway and a new port is being constructed in Rio de Janeiro state, Trust Trading and Logistic built their business around the port of Santa Catarina to take advantage of the lower operation costs. Managing director Juliano D’Almeida Victorino describes the company’s business approach: “as a part of our solution, we look for the port with the best tributary cost for that specific operation. At this point the best

port in terms of costs has been Santa Catarina. That’s why we opened a unit there, with an area of around 80,000 m² and 8 km from Itajai and Navegantes ports where we receive the raw materials. We have built a business center for our customers to open their branches. Our facilities are ready to receive any chemical products.”

Trust Trading and Logistic offers clients personalized solutions in trading, import and logistics in Brazil, working with many clients from abroad that have no structures of their own in Brazil.

Cesari, a storage, transport and logistics solutions provider, shares the belief of Sulatlantica’s Roisman that railways are the solution to Brazil’s infrastructure challenges. The company is in the process of extending a railway line from their terminals to Santos and Guarujá ports, which will stretch 20 km from the ports in either direction. Francisco Spina Borlenghi, president of Cesari, explains: “we need to modernize the infrastructure in Brazil to be com-

petitive in the international market. In Cesari’s logistics area we have a team of over 500 employees where their focus is on developing new services for logistics solutions and prospecting new customers. We are also active on the road, sea and air, and now, with our new railway project, we are active by train. Most of our customers do not have space to store their own inventory on-site, so they need speedy and efficient delivery of their goods, which is why we are investing in railway logistics.”

In addition, the company is planning to use a duct system to connect all ports to Cesari’s bases in Cubatão and Santo André within three to five years.

Cesari has around 200 isotanks for leasing in the internal market and the area to support 80 million liters of liquid, in addition to over 100,000 square meters of storage space in its warehouses. Cesari’s business has adapted with the development of Brazil’s regulatory framework in the chemical industry and the company has recognized the re-



Photo courtesy of Cesari.

quirement for companies in the sector to tighten their environmental policies to remain not only compliant, but also competitive.

Borlenghi states: “we have today terminals where we receive and distribute other chemicals derived from liquid bulk. We often store the ISO tanks here to export to customers in foreign markets, which is an important part of our business. In addition to the terms of

delivery, we perform the maintenance of the containers, sanitation and decontamination of the equipment because today’s environmental regulations in Brazil are very strict in both transport and terminal legislation. Cesari is certified by a number of international organizations and is one of the few companies here in Santos that has the quality and environmental certification necessary to provide this service, and we see

Complex Logistics, Simple Solutions.

ISOTANK LEASE ROAD TANKER TECHNOLOGY LIQUID BULK TERMINAL RAILROAD TRANSPORTATION SOLID BULK TERMINAL SOLID BULK TERMINAL

Base 1 Brasil / São Paulo / Cubatão Tel. 55 13 2102.8000 - Fax 55 13 2102.8013
www.cesari.com.br
comercial@cesari.com.br

CESARI
 Multisoluções em Logística.

STORAGE

Four centuries of experience

Vopak is the world's leading independent service provider of conditioned storage facilities for bulk liquids. We operate in 30 countries worldwide, offering storage and transshipment solutions at more than 80 terminals, 15 of which are in Latin America. With almost 400 years of experience in storage and transshipment, our contribution to our customers' success is what drives us when we conduct our business. The essence of our business is connecting companies with clients, countries with products and people with success.

Vopak Brasil Telefone: 55 13 3295 1001 | E-mail: atendimento@vopak.com | www.vopak.com

it as an area of growing need for our customers.”

Andre Luis Façanha, executive director of Grupo Toniato, agrees that Brazil's infrastructure leaves much to be desired in terms of efficiency. In trying to deal with this lack of infrastructure, Grupo Toniato has taken the lead in the transport sector by acting as a liaison between companies and the government. “Year by year, we promote meetings with the supply chain directors of our clients to discuss the very important issues for our business. We lay out the main points on the table of government initiatives that concern the chemical industry. We need the power of the industry to demand certain actions from the government. Infrastructure, modes of operation and legal framework are not up to par here.”

Façanha believes that it is necessary for companies related to the chemical industry to lobby for the changes they desire. Problems vary from access to railroads which, when existent, are used almost entirely by mining companies, to

the state of the roads which the chemical industry so heavily relies on. Many of the high-capacity trucks that companies such as Grupo Toniato have in their fleets are not able to successfully pass because of restrictions on size. With 90% of the load in the chemical industry transported by road, this reality needs transforming sooner rather than later.

In addition to working with clients to address their concerns with the industry as a whole, Grupo Toniato also prides itself on providing a thorough portfolio of services. Established over 35 years ago, the company holds a strong presence throughout the southwest region of Brazil and has developed its capabilities alongside the chemical industry. Where Façanha feels that the company stands out in comparison to others is in its relationship with its clients going beyond transport: “we are really a full-service oriented company. Instead of just calling us to arrange for transport, clients call us to discuss their projects, their needs, and the best way to handle logistics.”

By creating four separate companies under one umbrella, Grupo Toniato has managed to specialize its services to meet the widely varied needs of their clients. “We have special chemicals, paints, varnish, agrochemicals, gas and liquids, logistics, and glass. Our management team consists of experts who are knowledgeable in every one of these fields in order that we can provide specialized and personalized services to our clients, rather than just simple transport.”

As multinationals begin penetrating the Brazilian market further, Façanha sees Grupo Toniato maintaining its position as a key leading player in the transport industry. “There are a lot of Brazilian companies in each industry and sector that provide transport, but we are still ahead. Many multinationals are buying local companies in joint ventures, but they remain Brazilian managed and operated. We have had many people knocking at our doors yet. At the moment remain focused only on building our company and maintaining our clients' satisfaction.”



Daniel Lisak, managing director, Vopak Brazil

Despite these challenges, Vopak, the global market leader in the independent storage and handling of liquid oil products, chemicals, vegetable oils and liquefied gases with operations in more than 31 countries, has identified Brazil as a major opportunity for growth. Recently appointed director for Vopak Brasil S.A., Daniel Lisak, comments: “Brazil is one of the most important countries in the Latin America region for Vopak. Looking at the GDP growth and related increasing logistic product flows, the main possibility for larger volumes and larger cubic meters in Latin America exists in Brazil, thus Brazil is a major focus for the group... Vopak has been in Brazil for over a decade through the acquisition of two familial companies and is present at the Aratu Terminal, which is strategically located to supply the fast growing region



Load out of 6000 Te offshore platform onto barge at Bahia state, Brazil. Photo courtesy of Mammoet.

of the north-eastern Brazil. This is a key site to serve Camacari, the biggest petrochemical complex of South America. The Alemoa and Ilha Barnabe terminals in Santos are strategically located at the fast growing number one port in Brazil; and in Paranaguá through a joint venture, União/Vopak, the second most important port for liquid bulks in Brazil. Thus we are well positioned to build on the foundation we have in Brazil and grow the

operations to be the leader in our field.”

IC Transportes works in the states of São Paulo, Minas Gerais, Goiás and Paraná, providing top tier solid and liquid bulk transportation services to the area. The company's main focus is the transportation of raw material for fertilizers, such as sulphur, potassium chloride, phosphate rock, MAP, nitrate, and urea, and they use technology to help secure their place in the market. The company

We are here to help you sell

At Grupo Toniato, we are committed to developing complete solutions in transportation, logistics and engineering, with warehouses built to suit.

Almost four decades of experience in providing excellence to our customers in the segments in which we operate.

We are trusted by the chemical industry's leading players. They choose Grupo Toniato to safely transport their valuable assets.

People

Process

Infrastructure

Sustainable development means economic success with environmental protection and social responsibility

GRUPO TONIATO
www.grupotoniato.com.br

ISO14000 ISO9000

Integrare Na mão certa

Credibilidade e Competência
Credibility and Competence

IC TRANSPORTES
30 ANOS

Transportes de Granéis
- Sólidos
- Líquidos
- Gases do Ar
- Gases Liquefeitos

Bulk Transport
- Solid
- Liquids
- Air Gases
- Liquefied Gases

www.ictransportes.com.br

Na mão certa

NOS PRATICAMOS

ISO 9001

SASSMAQ

TOP 500

has implemented a state of the art GPRS tracking equipment and satellite technology to the company's 1,000 vehicles that provide its customers with online information about the logistics and safety positions of their goods. Director and owner Ivan Camargo says: "we have telemetrics on board each of our trucks which provides us with total control. We have the ability to know specific details on the truck and the load at any given time; for instance, we can monitor the weather and see the conditions for the journey. This information is then fed back to our customers every 10 days, but in some cases our customers can even receive real time information, 24 hours a day.

Camargo explains the impacts that Brazil's challenged infrastructure brings to his company: "the port infrastructure needs a lot of improvements, and the management of roadways in Brazil is an issue for us, as toll fees are our second highest cost in the company. The road tolls are very high in the state of São Paulo and this is directly impacting the

operation of our business and ability to offer our customers competitive prices."

As the country develops and new complexes are constructed, service companies are expanding their geographical footprint. Lisak of Vopak is just one example of companies seeing opportunities in areas that were previously thought less profitable. "The southeast region has typically been the rich area and the focus of companies in Brazil. However, today the north and northeast region are a key focus, as the new refineries create a lot of space for growth opportunities. This has been the poor region in Brazil but today it is growing at a rate of 12% to 15% per year and Vopak Brazil foresees a lot of business potential in this area."

Another multinational expanding its footprint in Brazil, Mammoet, entered the market 10 years ago in a joint venture with a local company called Irga. Under the terms of the partnership, the market has been split into three segments. Irga oversees telescopic range equipment and over-the-road transport, equipment

ranging from 200 metric tons to 600 metric tons is distributed and operated jointly, and work involving larger loads is done exclusively by Mammoet. Michel Booden, director of Mammoet Brazil, discusses some of their pioneering equipment being used in the country: "we have just mobilized the newest generation of PTC cranes, which is a 3,200-metric ton cap crane. It is in Rio Grande do Sul, and once it is assembled it's going to lift heavy modules up to 1,600 metric tons onto a FPSO ship." Mammoet has an advantage as the only multinational in its line in Brazil for the past decade. Booden hints at the potential for further growth, saying: "we are currently still relatively small compared to other parts of the world in Brazil. The expectation for the coming years is to make a big jump. There is no one in the market that supplies the truly heavy equipment that we do. Our clients realize this and have confidence in us; we have proven ourselves to the Brazilian market, so we are very well positioned at the moment."

CONCLUSION

Many major expansion projects and new investments in the chemical industry have been announced and are underway, but as the Brazilian economy continues its growth at reasonable rates, a cumulative effort from government and industry is needed to reduce production shortfalls and decrease reliance on imports. Otherwise, Brazil will face serious curtailments to growth in important sectors of its economy.

Marcos A. De Marchi, president of Rhodia Latin America explains: "Brazil is a country of opportunities. We still have 15% of homes without access to running water. We still have one car per seven people, compared to one car for 1.2 people in developed countries; you can imagine the opportunities you have in the automotive industry, so it is not surprising the car industry has grown from 4 million to 6 million cars production in a period of five years. We still have a consumption of electricity that is eight times smaller than the US, basically half of South Africa in terms of kilowatt per person per year. The former President announced the country had brought 30 million people from D and E to C class. This means essentially a whole country brought to consumption and this is the reason for the growth in the country. Five years ago, Brazil was the 10th largest chemical industry worldwide and today we are the seventh... Brazil needs the PACT between the government and the private sector to ensure we do not lose the opportunities that we have in front of us. We need access to raw material at competitive prices and assured volumes. We need a reform of our tax system; Brazil has imported products paying less taxes than the home made products... this has to be addressed, as well as the logistics and infrastructure, including the ports and roads and if we address these issues on time, we will be in a position to

be amongst the top five chemical industries worldwide in the next five years."

Alexandre Bertoldi, from leading law firm's Pinheiro Neto concludes: "Brazil offers a very good and valuable financial sector, a legal system that is reliable, stable institutions, political stability and a huge internal market. Brazil is a place that any player with ambition of being a global player has to be. There is no way to be global and not be in Brazil."

Despite any current challenges facing the Brazilian chemical sector, the companies that make up the country's growing industry agree unanimously that Brazil is home to determined business profession-

als that have led their companies through high inflationary times and economic busts in the past, which has helped to create the resilient and innovative culture that is widespread in the sector today. Optimism for Brazil's growth is not only coming from foreign observers, but it is felt on the local level of business from producers to suppliers, and logistics and service providers. If Clemis Miki of Linde Gases is right, Brazil will maintain its spotlight for some time to come: "for those who know how to survive, they will take the best wave. It is a good wave we are in now, in Brazil: the future is not tomorrow, it is already here."


Worldwide specialists in heavy lifting and transport





SPECIALISTS IN HEAVY LIFTING AND TRANSPORT

Mammoet
Brasil Guindastes Ltda.
 Phone: +55 11 3942 8189 - info@mammoet.com
 Visit our website for worldwide Mammoet offices and local contact details.

www.mammoet.com



Internal view from warehouse "B", which shows TAGLOG structure and goods organization. Photo courtesy of Trust Trade & Logistics.