Downstream gas-based industrial development

By David Renwick

After a three-year hiatus in Trinidad and Tobago's highly successful downstream gas-based heavy industrial development programme, there are signs that it may be springing back to life

There has been a hiatus in Trinidad and Tobago's internationally acclaimed US$10 billion downstream gas-based heavy industrial development programme since 2010, when the last such plant came on stream, but the signs suggest it may be springing back to life in 2014-2015.

The most recent such investment was Methanol Holdings Trinidad Ltd's (MHTL) US$117 billion ammonia-urea ammonium nitrate melamine (AUM) 1 plant at the Point Lisas industrial estate in October, 2010.

This pushed the gas-based industrial sector further down the value chain for the first time, because the 60,000 tonnes of melamine it made available can be used to manufacture consumer products, such as melamine moulding compounds, dinner-ware laminates, adhesives, coatings and plasticisers.

The gas-based industry-promotion agency, the National Energy Corporation, now rebranded as National Energy, lost no time in trying to induce manufacturers into taking advantage of this situation by producing its "Profiles for Derivative Melamine Manufacturing Business Opportunities" which is expected in due course to lead to some manufacturing activity employing melamine as a raw material.

An AUM 2 complex by MHTL was also on the cards, to cost US$1.9 billion and add ammonium sulphate and urea formaldehyde resin to its production line, but a final investment decision is still pending because of a legal dispute between MHTL's 56.3 per cent majority shareholder, which is, in effect, the Trinidad and Tobago government, because of its control of the failed conglomerate, CL Financial which held that share and a company called Consolidated Energy, comprised of three German companies, that hold the other 43.7 per cent.

CL Financial spokesmen point out that "both parties" are "still interested" in going ahead with the complex, which will add another 32,850 tonnes a year of melamine to local production capacity, but are unable to do so once court proceedings remain unresolved.

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Existing primary ammonia or methanol producers – there are 10 of the former (excluding AUM 1) and seven of the latter – can obviously not be forced to follow suit. That's not how any Trinidad and Tobago government operates.

Some of the existing ammonia-only producers, such as Point Lisas Nitrogen Ltd (PLNL), which, according to government spokesmen, "have, in the past, indicated an interest in developing a downstream project," were sent "requests for proposals" (RFP) by the Ministry of Energy and Energy Affairs (MEEA) in relation to AUM 2, though they lost out to MHTL.

The seven methanol producers, for their part, have displayed little interest in going further downstream. For example, John Floren, president and chief executive officer (CEO) of Canada-based Methanex, which has 2.5 million tonnes of methanol capacity in Trinidad and Tobago, by virtue of its holdings in the Titan and Atlas plants, told this writer categorically that "our focus is strictly on methanol. I think you will see us stay focused on methanol."

The rest of the methanol industry in Trinidad and Tobago is controlled by MHTL and company officials have spoken in the past of "getting something deeper from methanol, say acetic acid" but no firm move has been made in that direction.

An entirely new investment that would have gone that route was the Saudi Basic Industries (Sabic) and China Petrochemicals Corporation (Sinopec) joint proposal for methanol to petrochemicals and methanol to olefins plants in Trinidad and Tobago.

The former would have used methanol to go to acetic acid and then further down the production chain to acetic anhydride and even pharmaceuticals, like aspirin.

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produce propylene and then polypropylene and eventually plastics, which opens a whole new realm of light manufacturing possibilities.

But Sabic/Sinopec and the MEEA could not agree on the "fundamental issues" of a natural gas supply and the terms attached to it. Despite its fervent desire to see such key value chain investments, the MEEA insisted in a statement that "the natural gas assets of the country belong to the people and, as such, the MEEA is charged with the responsibility of ensuring that the country gets optimal value in the utilisation of its resources."

The cancellation of an investment in an aluminium smelter after the People's Partnership (PP) government came to office in May 2010, the hold-up of the AUM 2 complex and the termination of negotiations with Sabic/Sinopec for the two methanol derivative projects, basically explain why the prized gas-based industrial programme has been in abeyance since late 2010.

But a resurgence is now at hand, one of the outstanding elements of that being the investment by one of Japan's leading companies, Mitsubishi and local conglomerate Massy Group in a methanol-to-dimethylether (DME) complex. About one million tonnes of methanol a year will be produced of which 140,000 tonnes will be converted into DME, which can be used as a diesel substitute and as a fuel in power stations, and even in transport.

Other phases of the investment will be the conversion of ethane to ethylene to mono ethylene glocol (MEG) and the conversion of propane to acrylonitrile (AN) for additional MEG and acetic acid from methanol.

So the acetic acid part from the aborted Sabic/Sinopec proposal may be saved and opens the way in future for the production of derivatives from acetic acid.

This project is a clear example of the type of gas-based, value-chain investment that National Energy is keen to see come to pass. Others are in the offing, such as Chemtech Ltd, a local company that wants to combine methanol, formaldehyde, melamine and wood to make such products as melamine ►

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Methanex Trinidad's methanol manufacturing facility, Point Lisas with the mega Atlas Plant in the foreground

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▸ resins, oriented strand board and veneer.

It will be the first known use of melamine in a manufacturing activity locally and the developers have presumably been influenced by the guidance provided by National Energy in its "Profiles" publication mentioned earlier.

Dr Vernon Paltoo, National Energy's new President, is an enthusiastic backer of this initiative.

He told us that "methanol, formaldehyde and melamine are all available locally and the rest would come from a Caricom country, probably Suriname. So the project is both local and regional. It's a real thrust into energy-based manufacturing, that's why we are very excited about it."

He regards the Chemtec project as "a prime example of our mandate to go as far downstream as possible."

The company is now also moving abroad, offering the same expertise it has employed to help create the only heavy industrial sector based on gas that currently exists in the Caribbean.

Suriname, an oil and gas producer like Trinidad and Tobago, though on a much smaller scale, is one of the first targets, under what president Paltoo has dubbed a "Suriname Engagement Strategy."

National Energy was a platinum sponsor of the first Suriname Mining, Energy and Petroleum Conference (SuriMEP) in June, 2014.

Aspects of the Suriname Engagement Strategy will include the use of the forthcoming Galeota port in south east Trinidad to facilitate transport links between the two countries, the supply of "resources" for inputs to a new 200MW power plant by electricity company, EBS, "cooperation initiatives" between NE and Suriname state energy company, Staatsolie and opportunities for the manufacture of renewable energy (RE) equipment in Trinidad and Tobago.

Another investment going forward that fits that bill also involves Massy Group, which, after decades of shying away from the gas-based sector, is now jumping into it with both feet.

This is a US$116 million steel plant and rolling mill in which Massy's partner is Metaldom of the Dominican Republic, probably the first investor from that non-Caricom Caribbean country to become involved in the Trinidad and Tobago economy.

The items to be produced include billets, reinforced bars, flats and angles which, as Dr Paltoo

Field monitoring at the Methanex Trinidad methanol manufacturing facility at Point Lisas

explains, "is a conversion operation, to convert scrap metal into steel products which can then be used in innumerable manufacturing activities."

One of the new gas-based projects going forward has no downstream component but is nevertheless being strongly backed by National Energy, and that is the 500,000 tonne a year small LNG train proposed by a company called Caribbean LNG for the LABIDCO industrial estate near Point Fortin in south west Trinidad. Point Fortin, of course, is the site of the four huge LNG trains, operated by Atlantic, that turn out 15.2 million tonnes a year, which is sold to international markets.

The sponsor of the investment, Gasfin Development SA, whose Chief Executive Officer is Roland Fisher, thinks it sees an entirely new LNG market emerging in the Caribbean and wants to take advantage of it (similar to the opportunity that the UK's Centrica Energy believes it has spotted in Puerto Rico for compressed natural gas – CNG – carried by ships, though this is temporarily in abeyance).

As the high price of fuel oil puts severe pressure on the (generally small) Caricom countries, Mr Fisher believes they will turn to natural gas to obtain relief from the strain sky-high electricity costs is putting on their economies.

He has estimated that the majority of Caribbean states will need no more than about 50,000-250,000 tonnes a year of LNG to satisfy their power demand.

Mr Fisher believes the La Brea LNG plant will require no more than around 70 million cubic feet a day (mmcfd) of gas for an output of half a million tonnes of LNG a year.

National Energy, which conducted a joint feasibility study with Gasfin and gave the project the green light, would like to see it go ahead as another aspect of gas-based development.

National Energy seems confident that all the new projects mentioned here can be in the construction stage before the end of 2014, so it seems safe to conclude that gas-based development in Trinidad and Tobago will be back on track in due course, (see separate page).

Gas-based development projects, of course, need gas – Mitsubishi/Massy's methanol-to-DME investment alone will require 100 mmcfd.

The good news in this regard is that the future for the Trinidad and Tobago gas industry seems assured, judging by the outcome of the most recent gas audit conducted by the US's Ryder Scott company, relating to the year 2013.

According to Herman Acuna, Ryder Scott's Managing Senior Vice President international, "the balance between supply and demand remains sustainable." He adds: "This sustainability will continue with cooperation between the companies and the government. The reserves-to-production ratio is about 9 years and Trinidad and Tobago needs to maintain it at that level, as a sort of 'comfort zone' for the country."

The actual figures provided by Ryder Scott show:

- Proven reserves – 12,240 billion cubic feet (bncf);
- Probable reserves – 5,526 bncf;
- Possible reserves – 6,116 bncf.

This compares with the 2012 total of:

- Proven reserves – 13,106 bncf;
- Probable reserves – 6,142 bncf and
- Possible reserves – 5,987 bncf.

That's an overall 3P figure of 23,882 bncf (or 23.8 tcf, if you prefer) in 2013, as against 25,235 bncf in 2012.

The proven gas reserves figure fell by 866 bncf or 7 per cent but that does not worry Mr Acuna.

"What is needed is continuing investment and the de-risking of reserves so they can continue to be moved into the proven category".

A heartening feature of the audit was the amount of "unrisked exploratory resources" highlighted by Ryder Scott. This is the gas that, when converted to reserves through drilling, can keep the development momentum going well into the future. The 2013 figure was 39,867 bncf, 8,251 bncf greater than the amount in 2012 (31,616 bncf), reflecting the inclusion of more companies in the resources category "and other opportunities identified by the companies previously included." ▪

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