



## INSIGHT: Is bio-based BDO for real?

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By **Brian Balboa**

HOUSTON (ICIS)—One of the biggest questions coming out of the NPRA International Petrochemical Conference (IPC) in March this year was from the butanediol (BDO) market regarding the emerging bio-BDO sector.

“Is bio-BDO for real?” asked a BDO consumer on the sidelines of the IPC.

Although the development of a commercial-scale bio-BDO plant is still in the works, trade participants are still sceptical and remain interested in how this may impact the market.

“Would consumers be willing to pay a premium for bio-BDO?” one major BDO producer asked. A consumer reckoned no-one, “unless there was a directive to go green”.

The consumer added that if the specifications for a petrochemical-based BDO and a bio-based BDO were similar or equal, then bio-BDO may be a good alternative feedstock source, especially if supply in the market remained tight.

But some have said bio-BDO may not necessarily be more expensive than petrochemical-based BDO.

“I don’t see that there will be a cost delta between hydrocarbon-based BDO and bio-based BDO,” another North American consumer said. **“Bio-based producers are approaching the market at par with their competition.”**

The consumer also said some producers are savvier about the demand and opportunity than others and expects there may be more announcements about that in the coming months.

**Market participants have described the current BDO market as globally tight, with strong demand in all regions.** In North America, suppliers said during the first quarter that demand was so strong they declined requests for extra volume outside of contractual obligations.

This year, there have been some major announcements about the development of bio-BDO, and its potential impact on the BDO market.

***One company at the forefront of this is biochemical company Genomatica.***

After stopping development of sugar-based methyl ethyl ketone (MEK) in 2010 to [pursue bio-BDO](#), this California-based company has made a string of announcements, grabbing the attention of producers and consumers alike. In March, Genomatica and Tate & Lyle signed a [joint development agreement](#) for the demonstration-scale production of Genomatica's bio-BDO.

Under the agreement, Tate & Lyle would dedicate a demonstration-scale production facility in Decatur, Illinois, for the exclusive use by Genomatica for the scale-up of the bio-BDO process.

The Genomatica process produces BDO the same as that made from a variety of petroleum-derived feedstocks, but uses 100% renewable feedstock instead.

In April, Genomatica also said it had signed a broad [strategic partnership](#) with Italian polyethylene terephthalate (PET) producer Mossi & Ghisolfi (M&G) to produce sustainable chemicals from biomass.

As part of the partnership, Genomatica said it will set up a biomass-based BDO demonstration plant in Rivalta, Italy, a unit anticipated to come online in 2012.

"It fits our strategy to look at intermediates, and not fuels," said chief business development officer William Baum, when asked the reason behind the push for bio-BDO. "We found a direct route to bio-BDO."

Baum added that the company had seen demand for bio-BDO and felt the best markets to look at were in Europe and North American because of the demand for quality.

"They appear to have the most pragmatic and realistic approach to bio-BDO," a global BDO producer said.

But Genomatica is not the only company hopping on the bio-BDO bandwagon.

Myriant Technologies and Davy Process Technology also announced in February that they had signed a [memorandum of understanding](#) (MOU) covering the use of succinic acid as a bio-derived feedstock for the production of BDO, tetrahydrofuran (THF) and gamma-butyrolactone.

Currently commercial-scale bio-BDO production does not exist.

But on 28 April, Genomatica signed a broad memorandum of understanding (MOU) with Mitsubishi Chemical outlining [multiple potential areas of collaboration](#). This includes the study of a joint venture for bio-BDO production in Asia by building the first commercial plant in the region, using the Genomatica's direct, one-step technology and Mitsubishi's BDO applications and business side.

Also last week, renewable chemistry company BioAmber [raised \\$45m](#) (€32m) in a series B financing that will accelerate the commercialisation of succinic acid and modified polybutylene succinate. The company said part of the fundraising will also fund ongoing development work in the field of succinic acid, and the technology licensed from DuPont that converts succinic acid to BDO.

There are three major BDO producers—BASF, ISP and LyondellBasell. None have unveiled plans to look at bio-BDO production.

“There is always an opportunity for those producers to move into bio-BDO,” said Genomatica’s Baum. “We have a good opportunity to partner with North American producers, where we’ve tried to establish a position to work with them rather than against them.”

Baum said that BDO producers and consumers will probably wait until demonstration plants are up and running before taking a serious look.

He also acknowledged that bio-BDO would have to be cost effective, a sentiment shared by other industry participants

A global producer said, “I could see it [partnering] if it works, it could be of interest. They could partner with anybody because it is getting you into BDO. But the key thing is it has to be competitive.”

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(\$1 = €0.70)

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