



EDITORIAL

BIOTEC IN PANDEMIC TIMES



By Philippe Conil, Biotec, CEO

The 2020/2021 COVID pandemic has generated a world economic crisis, rather due the crisis management (fear and lock down) than due to the virus itself. Nevertheless, the sectors where we are involved (agriculture, agro-industry, renewable energy) have not been so affected than others. Production is stable. Negative impacts rather came from the governments' decisions. Investments have been reduced, out of prudence or fear, production costs have increased by new regulations, but at the end our sector maintained a certain stability.

On BIOTEC side, we have been able to finish large projects in the middle of the Pandemic and the lock down measures (BTB + MSE -2x2,4 MW - both in Indonesia). Congratulation to the operational and management teams. We have also been able to start and finish complicate projects in less than one year (CAME paper-mill in Colombia - 11 months), faster than before the confinement regulations.

In 2020, BIOTEC focus has been redirected to consultancy. This is not due to the Pandemic, even if our new consultancy companies (EVE and POME) have been set up during it. This was an earlier decision as we felt a little frustrated all these years by the bad quality of the tenders receive d:

Sustainable production and circular economy are in our BIOTEC's DNA for 37 years so that these objectives and the tools to get them are familiar to us. But they are definitively still not familiar to the Agribusiness which has the daily stress of the obligation of short-

term profit and has little time to look to long-term profit. Rules of the Economy are still basic and focused on (only) financial short-term profit for each company, independently of the society where they are living (their "ecosystem"). This is nearly the only KPI for a company's CEO. It is therefore difficult to project a company into the future. Short-term and long-term profit can sometimes follow opposite ways. The only "financial" profit is additionally not a sufficient indicator for a business to assure its sustainability, among so many environmental and social constraints. Consequently, BIOTEC decided to share its long experience in sustainable agro-industrial production to its clients through high-level consultancy services, basically to avoid the present disaster: millions of dollars wasted in wrong technical choices about effluents and waste management. The "agro-industrial by-products" are one of the key stones of the environmental and financial sustainability of the industry. A wrong management decision regarding investments in that field can mortgage the business for decades.

With its worldwide engineers and specialists, and with around hundred effluents valorization plants built and operated on four continents, BIOTEC is offering, directly or indirectly through its new consultancy companies (EVE and POME Consultancy), services the agro-industry needs to assure its environmental sustainability and the highest medium and long-term profit. It is certainly not sufficient to save Humanity facing the collapse of its economic system in the middle of a weak epidemic but of a real destruction of the climate and of the biodiversity, but it is definitively a valuable contribution to the common good from a SME and its collaborators.



APRIL 2021

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SECTORS

Paper Mills



CAME Plant in Colombia

CARTONES AMERICA (Colombia)

BIOTEC designed, directed the erection (project management), commissioned, inoculated and started-up a WWTP for 12 T COD/day, with two UASB biodigesters, in the middle of the city of Cali.

Construction method: Bolted glass-fused (Enamel) metallic tank.

Despite the Pandemic, two months of confinement and very strict sanitary regulations since Mid-March 2020, the first phase (50% of the project – 6 T COD/day) could be commissioned in April, 2021. Full biological operation is expected for the end of June.

Congratulation to the CAME and BIOTEC teams in Colombia!

In 2021, BIOTEC will provide O&M assistance and will supervise the assembly of the second unit.

PAPELERA DEL SUR (Peru)

The company PAPELERA DEL SUR, located in Chinchá, Peru, called BIOTEC early 2020 to upgrade a small UASB WWTP (old BIOTEC design) and optimize its operation.

In February 2021, these UASB reactors arrived again at full load.

At March 21, 2021, KPI were:

- organic load: 8 kg COD/m³-day
- COD removal: 85%



Lemon Industry (SPAIN)



After 10 years of operation of its CITRUSVIL biogas plant in Argentina using, as main feedstock, peel washing water and peel press effluents, and after two years of R&D on complete (entire) peels, skin and seed methanization, BIOTEC is now focusing its energy into a better peel valorization (pectin, animal feed, herbicide, biogas, fulvic acids and/or (liquid, concentrated or powdered) biofertilizer).

BIOTEC is presently assessing a lemon factory in Spain, to valorize the lemon peel/skin/seeds, transforming them into:

- steam and electricity for energy self-sufficiency
- organic animal feed
- concentrated biofertilizer / bio-stimulant for sale

Valorization options are many. The art is to find the best one for each specific case, looking for zero discharge and circular economy, which are objectives of most of the European agro-industry presently.

Sugar mills/ Bioethanol distilleries



In 2020, no industrial move in that sector, despite the breakthrough technology developed with SSP (India) for vinasses bio-evapo-drying up to powdered biofertilizer (25% K₂O) rich in fulvic acids. This new technology is an impressive answer to the necessities of Zero Liquid Discharge for distilleries. Next step for BIOTEC will be to work with the biofertilizers/bio-stimulants/fulvic acids industry to incorporate this soluble powder in their mixtures.





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Palm Oil Mills

BTB - Nagata (South Kalimantan, Indonesia):

Congratulation to our Indonesian team who has been able to culminate the Batu Bulan (BTB) biogas plant in South Kalimantan (2.4 MW) despite the difficult conditions of the Pandemic.

At February 28, 2021, KPI were excellent, under a subnormal milling.

- COD removal: 96% vs. contractual objective >85%
- H₂S: 39 ppm vs. objective >200 ppm
- Gas moisture: 40% vs. objective > 60%
- CH₄ generation: 19 m³/T FFB (= 35 m³/m³ POME) vs. objective 15 m³ CH₄/T
- 99% of the gas consumed by the gas engines - less than 1% to the flare



MSE - MAL(Bangka Island, Indonesia):

The MSE biogas plant, at MAL mill, on Bangka Island (2.4 MW), was also completed by December 31, 2020, and the gas engines put into service.



EL ESPINO (Peru):

INDUSTRIAS EL ESPINO (Peru) has a BIOTEC biogas plant since 2007 (14 years) for steam and electricity generation. EL ESPINO called BIOTEC back for a review and upgrading of that biogas plant for a milling of 300.000 T/year.



PALMEIRAS (Colombia):

PALMEIRAS (Colombia) had a BIOTEC biogas plant since 1999 for electricity production, but had to close the mill 10 years ago due to a severe attack of Phytophthora palmivora (= PC = Bud Rot), a disease which destroyed a large part of Colombian and Ecuadorian plantations in the last 12 years.

Thanks to hybrid palms (Elaeis Guineensis x Elaeis Oleifera), the fruit production resumed these last three years and PALMEIRAS is now considering resuming the biogas project also, with the main objectives of capturing the Greenhouse Gases (GHG) to reduce Carbon emission per ton of CPO, generating steam, reducing air pollution (chimneys particulate emissions), and possibly generating electricity again (500 kW), despite being the mill connected to the grid.

BIOTEC is pleased to revive an old project and to adapt it to a new effluent, as hybrid palm fruit is definitively different than traditional Elaeis Guineensis palm fruit.



POME CONSULTANCY Sdn Bhd

NEW COMPANY FOR SPECIFIC / SPECIALIZED CONSULTANCY



The company POME CONSULTANCY Sdn Bhd (www.pome-consultancy.com), set up by BIOTEC founders in 2020, is part of the BIOTEC Group and dedicated to drive plantations and mills to higher yields, better KPI and profitability, and environmental sustainability:

- zero discharge
- very low or negative carbon emissions
- improvement of soils fertility
- renewable energy generation

Most of mills do not know how to manage POME and EFB and therefore take decisions in function of external pressure while they have an insufficient knowledge of the pro and contra of the different alternatives. By the way, many projects fail, have no ROI but only O&M costs (POME open ponds, EFB dumping,...), or have a very low ROI. POME-Consultancy wants to avoid this repetitive trap for the agro-industry.

Fundamentals:

Environmental as well as financial sustainability of the palm oil business implies changing the concept of "Waste and Effluent TREATMENT PLANTS" (ETPs) by the concept of "By- products VALORIZATION UNITS".
Some possible high-value products: Animal feed, Mushrooms, Insect meal, Biogas, Liquid and Powdered biofertilizers.

Four main services:

- Audits of POME & EFB treatment and valorization plants (existing projects)
- Conceptual Engineering for POME & EFB valorization (new projects)
- Project management for EFB and POME valorization plants (undergoing projects)
- Operation improvement

First worldwide alliance: ABS

ABS (www.abs.global) is a Malaysian consultancy company, enabling palm oil plantation and mills to drive higher yields and profits through digital transformation (sensors + apps). ABS is already supporting with its digital technology around 2 million hectares of oil palm in S-E Asia.

Business Development: ENTOBEL

POME Consultancy Sdn Bhd is supporting ENTOBEL, a specialized Singapore based company producing insect-meal and insect oil, with the upcycling of various organic by-products of the palm oil industry.

The high value of the insect-meal generated, competing with fish-meal for aquaculture, is opening attractive new valorization options for palm oil co-product, like PKE, and by-products, like Decanter Cake and POME R&D + FS are now underway for a first implementation in Malaysia (ENTOBEL already runs a commercial scale site in Vietnam for 3 years).

