

Bio-on S.p.A.: Trouble in Bologna?
Equity Report by Quintessential Capital Management

Friday 19 July 2019



QUINTESSENTIAL
CAPITAL MANAGEMENT

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Executive Summary

Quintessential Capital Management (QCM) has completed its in-depth investigation into Bio-on S.p.A., a Bologna-based bioplastics company listed on the AIM market. After meticulous collection and analysis of information, **we came to the opinion that Bio-on is a "house of cards"**, a scheme conceived by management to **enrich themselves on at the expense of shareholders**.

A seemingly successful company boasting growing revenue and profits, **Bio-on** is actually a massive **bubble based on flawed technology** and **"fictitious "** sales thanks to a network of empty **shell companies**.

Despite high-sounding announcements and ambitious projects, several years after its IPO Bio-on **has not yet produced or sold anything** in significant quantities, except to shell companies controlled by or affiliated to itself. Of the many production facilities announced over the years, only one has been built at exorbitant prices and **it would seem neither completed nor in operation**.

The **real financial situation is precarious** and the accounting has **serious irregularities**. Given the facts as a whole, we believe that the Bio-on situation is **unsustainable**: the company is **heading towards total collapse** and its **equity is correspondingly worthless**.

Warning: the text contains important [hyperlinks](#) and footnotes

Quintessential and its goals

We are an American investment fund based in New York. Our main activity consists in **identifying, investigating and exposing catastrophic corporate situations** in publicly-traded companies, such as fraud, **criminal conduct** or **bankrupt business** models. We use state-of-the-art investigative techniques and only intervene after acquiring a **large amount** of overwhelming information to confirm our claims.

Since 2015, we have completed seven activist transactions exposing various dishonest companies with a **100% success rate**.¹ In May last year our campaign against the Greek giant "**Folli Follie**" led to the collapse and de-listing of the company in just three weeks, as well as the uncovering of a multibillion-dollar fraud. Last December, our action against **Aphria**, a Canadian cannabis company with a market capitalization of more than USD 4 billion, led to the immediate collapse of the stock and to the dismissal of the entire board of directors. In 2015, our report entitled "**A Greek Parmalat**" on Globo Plc led to the immediate and permanent suspension of the stock and the resignation of the executives after only 48 hours, with a full confession of their responsibilities (the event appeared on the Italian newspaper "La Repubblica").

We are a commercial enterprise and we work for profit. However, **we firmly believe in the moral character of our work** which has the effect of **removing dishonest companies from the markets**. These "bad apples" take financial and human resources away from legitimate companies and it makes sense to inform the public as quickly as possible to minimize the number of investors and creditors involved.

The unlikely science of Bio-on

To clarify the veracity of Bio-on management's statements about its technology, we consulted a substantial number of scientists, established executives from companies operating in the same sector, consultants and technicians. Their opinion, in some cases based on direct interaction with the company, was fundamentally **unanimous in a strong skepticism about Bio-on's statements**. In some cases, the technology has even been called "**absurd**" and management's statements "**rambling**."

Without going into too much technical detail (some complete documents will be made available on our website), we present the most important conclusions from our investigation:

1. **The concept is dated:** PHA technology is based on a discovery made almost a century ago in 1926. Bio-on claims to have an innovative method for PHA production processes, but our experts have expressed strong doubts about the validity of these claims, which have never been proven in practice.

¹In virtually all cases our theses have been confirmed by official inquiries. In several cases, the management of the target companies and/or the board of directors has been dismissed. In two cases, the companies ceased to exist weeks after our intervention.

2. **Production control is problematic:** PHA manufacturing processes are highly complex and the finished "product" is uncertain. This is because the variables in polymer chemistry are numerous and controlling them becomes haphazard. In addition, it involves working with bacteria which increases complexity. The experts with whom we have discussed are extremely skeptical that Bio-on has the resources to handle an operation of this type.
3. **The "scale-up" on an industrial scale is problematic:** although the production of small quantities (a few hundred cm³) of PHA is simpler, manufacturing tons of material would be highly challenging for various technical reasons such as contamination and interaction of different types of bacteria, temperature control, etc.
4. **Doubts about 'biodegradability':** several scientists have questioned the concept of biodegradability of bioplastics and it seems that their impact on the environment²³ may be, in many cases, even more harmful than that of traditional plastics.
5. **Numerous failures:** the production of PHA on an industrial scale is not a new challenge. It has been attempted by several industrial groups in the past, many of which have far greater financial, technological and scientific resources (e.g. Zeneca, Monsanto and Metabolix have tried and failed to carry out a similar project.) Many of these attempts have not been successful mainly because of the difficulty in finding demand for a plastic that is significantly more expensive than the traditional one.⁴ For example, Metabolix was forced to liquidate its business after producing a 50,000-tonne production facility due to a lack of demand. It's market cap reached a peak of \$500m, but in 2016 the company closed its doors, liquidating its patents and infrastructure for only \$10m.
6. **Lack of scientific talent:** several experts have pointed out that Bio-on does not have sufficient scientific talent to undertake the projects it claims to pursue. In 2017, for example, there were only 17 employees, most of whom had no scientific background.⁵ For example, Simone Begotti, Bio-on's "Chief Biologist", does not even have a PhD, only a simple college degree in biology.
7. **Lack of transparency:** several experts have highlighted the paucity of scientific information that Bio-on reveals to the public: our requests for clarification on this matter have been ignored by the Company.

Bio-on Accounting: Critical issues and violations of the Italian Civil Code

Quintessential has carefully studied the accounting of Bio-on and its related companies, both in-house and hiring experienced auditors and obtaining a formal opinion on the matter.⁶ The

²<https://www.nationalgeographic.com/environment/2018/11/are-bioplastics-made-from-plants-better-for-environment-ocean-plastic/>

³<https://blogs.ei.columbia.edu/2017/12/13/the-truth-about-bioplastics/>

⁴Source: Interview with various CEOs of companies operating in the same sector.

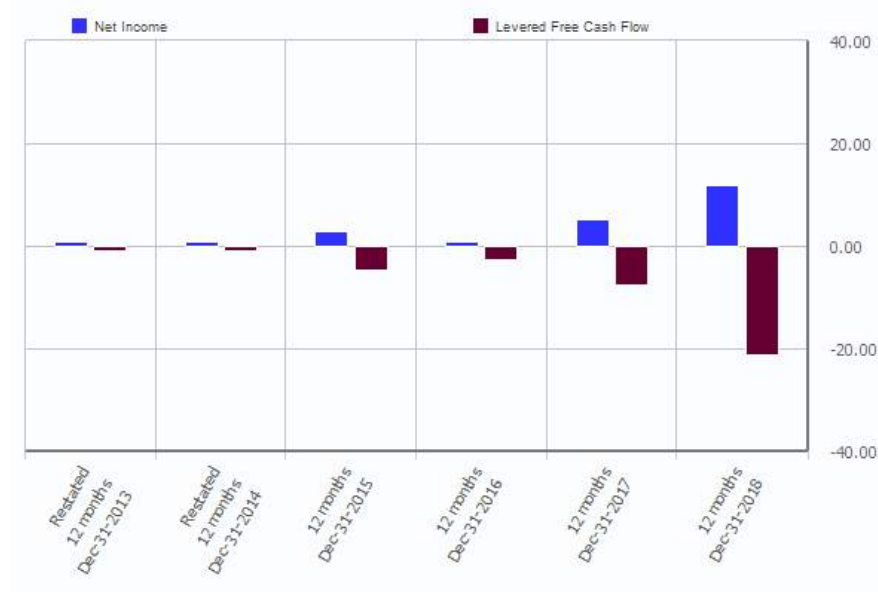
⁵Lately, Bio-on has significantly expanded its headcount, but it is still, in number and in quality, much lower than that of its competitors.

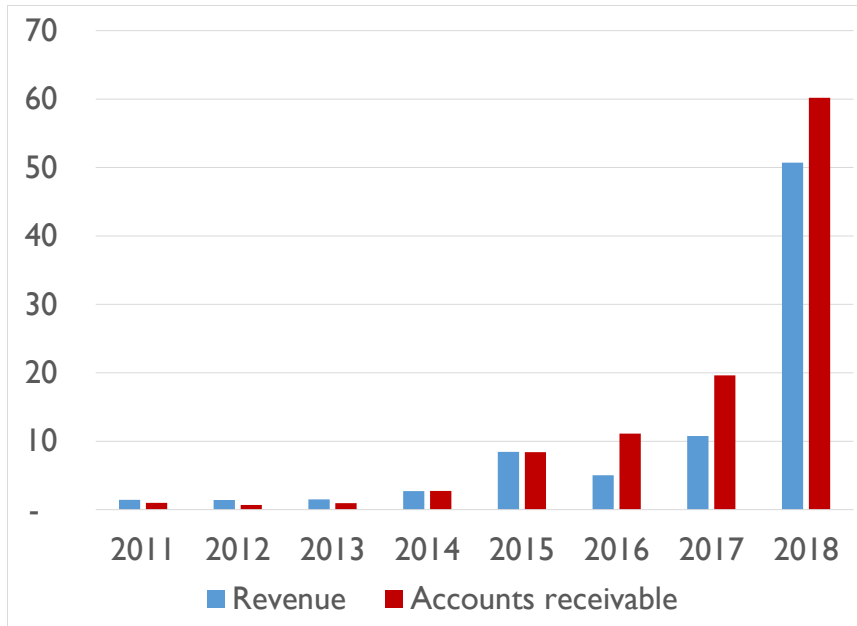
conclusions of our investigation are clear and confirm our fears: **Bio-on accounting is irregular** and does not reflect the actual situation of the company.

Presenting itself on the surface as a solid, high-growth company with over 50m sales, Bio-on in fact has a **questionable** turnover, consisting almost entirely of "**sales**" to **controlled or related shell companies**. In addition, **the balance** sheet of Bio-on is in our view **precarious**, being mainly made up of **highly uncertain receivables** and hard assets whose costs seem disproportionately high compared to its peers and that do not seem⁷ economically viable given the margins that can be reasonably obtained on the market.

In practice, Bio-on seems to generate revenue by setting up a series of **shell companies** to which it "sells" its technology as "licences". These "empty boxes" are partly or totally controlled by Bio-on, with which they share directors and registered addresses, and do not seem to have any operations, even years after their establishment. For example, they have no dedicated staff, they do not produce any products, nor do they sell to any third party.

These "empty boxes" buy licenses from Bio-on and capitalize them on their balance sheet, while Bio-on recognizes the sale immediately on its income statement. However, **the payment for such transactions does not take place** and the outstanding account receivables remain open, in many cases for years. Therefore, Bio-on accounts show revenue and earnings growth, which **are actually mostly non-existent**. This situation is evident by noting the large disparities that exist between profits and cash flows and the level of receivables (customer credits) with respect to sales:





The accounting audit we carried out also shows violations of Articles 2343 and 2343 of the Italian Civil Code regarding the sale and awarding of licenses. In fact, Bio-on should have followed a certain procedure in assigning the value of the licenses sold to its affiliates, which instead appear to have received an arbitrary value.

The value of Bio-on's "sales" and "credits" soared in 2018, as several new shell companies were formed that "acquired" Bio-on licenses at an exponential rate (as usual, such sales were not followed by payments).

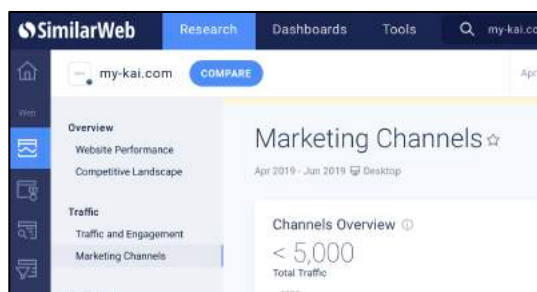
We report some subsidiaries mentioned by Bio-on in its balance sheet and their revenues and payables:

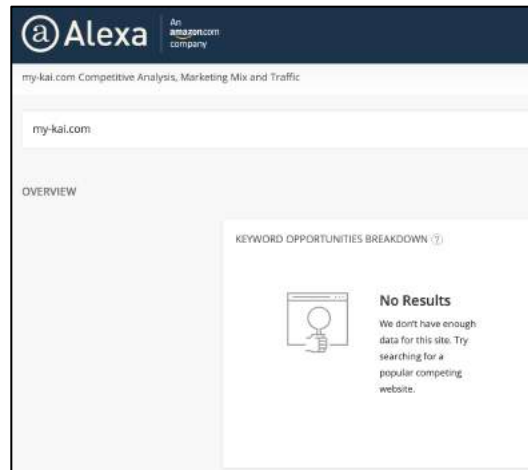
During the year we were entertained the following transactions with associated companies (joint venture):

(EUR thousand)	Credits		Debts	
	31/12/2018	31/12/2017	31/12/2018	31/12/2017
B-Plastic Sas	2,750	2,750	-	-
Aldia SpA	10,004	-	-	-
Liphe SpA	6,004	-	-	-
Sebiplast Srl	652	-	-	-
AMT Labs SpA	7	-	-	-
Eloxel SpA	4	-	-	-
Zeropack SpA	11,715	-	-	-
U-COAT SpA	2,507	-	1,335	-
Total	33643	2,750	1,335	-

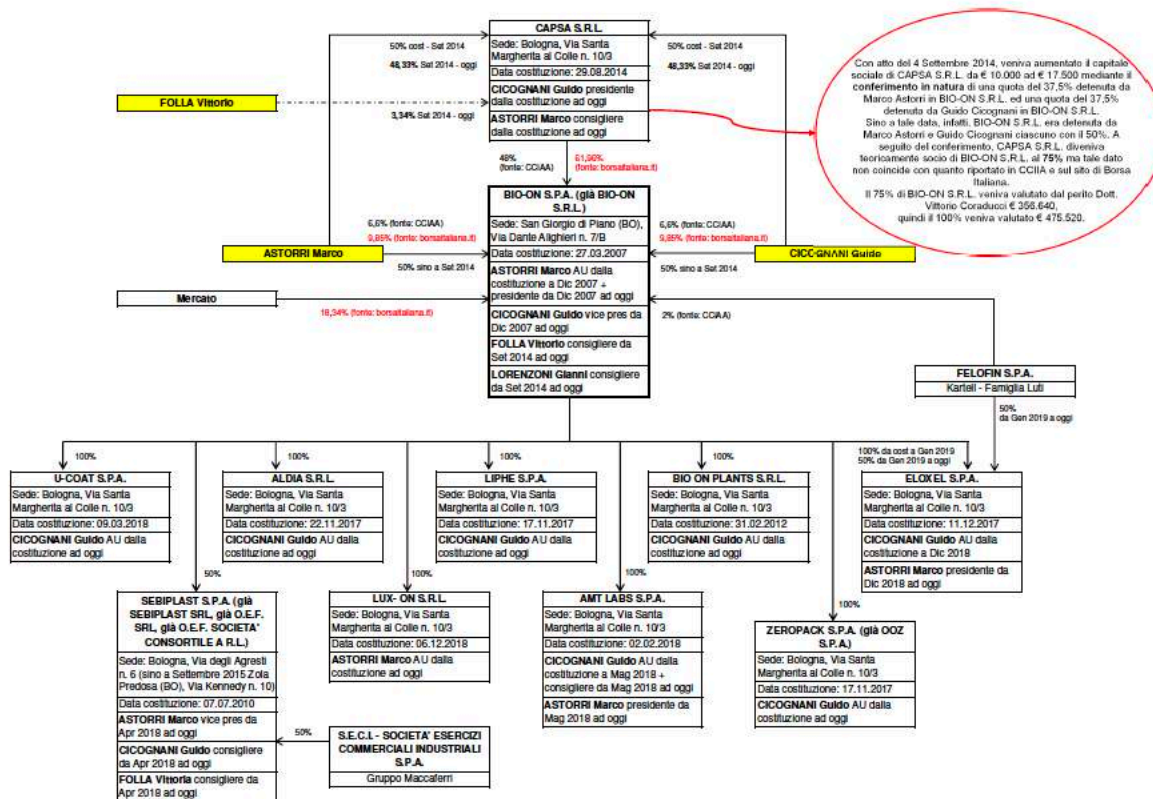
(In thousands of Euros)	Revenues		costs	
	31/12/2018	31/12/2017	31/12/2018	31/12/2017
B-Plastic Sas	-	-	-	-
Aldia SpA	10,003	-	-	-
Liphe SpA	6,003	-	-	-
Sebiplast Srl	270	-	-	-
AMT Labs SpA	6,006	-	-	-
Eloxel SpA	6,503	-	-	-
Zeropack SpA	10,000	-	-	-
U-COAT SpA	6,006	-	-	-
Total	44791	-	-	-

We have analyzed the balance sheets of all Bio-on's shell companies and conclude that **the vast majority (or perhaps all) of the revenues and receivable originates from them**. We did not detect any signs of production or sales to third parties in noteworthy quantities. The only activity that seems to be actually operational is the collaboration with Unilever in the production of My Kai sunscreens. The creams are distributed via Amazon.it, but we have verified the number of visitors on the brand's website and it is below the minimum threshold on both SimilarWeb and [Alexa](#). Therefore, we believe that sales of the product are probably modest (this has also been confirmed directly by Unilever, to whom we have reached out on this matter).





Rappresentazione del gruppo societario BIO-ON



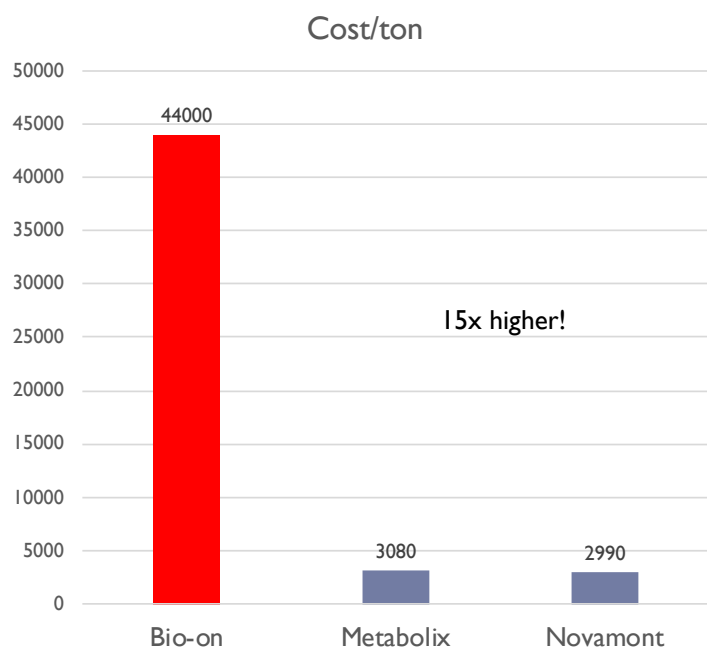
Disproportionate costs and no market

Bio-on claims it has completed the construction of a production facility with a capacity of 1000 tonnes in Castel San Pietro Terme, near Bologna, in 2018. The initial estimated costs for the project were around €15m, while the actual costs were around €53m (including patents). It is our firm opinion, reinforced by information gathered during our investigations, that these costs are heavily disproportionate: first, because they are much higher than those of competitors in the

same industry. Second, because they involve a cost per kilo of plastic produced well above the reasonably achievable price on the market.

The table and chart below compare Bio-on costs for the construction of a ton of production capacity with those of two competitors: Novamont and Metabolix:

Company	Capacity (tons)	Cost (€m)	Cost/ton (€)
Novamont*	80,000	234	2,990
Metabolix	50,000	154	3,080
Bio-on	1,000	44	44,000



It is clear that the costs for Bio-on production capacity (44,000/tonn) are enormously higher than those of the two competitors (about 3,000), to be **exact as much as 15 times higher**. In addition, we note that the costs of competitors are very close to each other, while Bio-on costs appear to be an anomaly.

There's more: our sources⁸ note that normal propylene on the market sells for around \$2/kilo. Bioplastics might fetch a little more, but probably not more than \$4/5 per kilo. Given the development costs of the Castel San Pietro Terme plant, we estimate that Bio-on's operating expenses are around \$6.5 per kilo of plastic and \$12.5 including overheads. It is then extremely difficult, or impossible, to sell industrial quantities of bioplastics with a cost base that is **about**

⁸Source: Interview with executives in similar companies.

six times higher than the cost of propylene (consider that Metabolix has been forced to liquidate having a cost base of \$5, less than half of that of Bio-on).

An expert⁹ surveyed by Quintessential estimates the value of 1000 tonnes of bioplastic production (the capacity of the Bio-on plant) at around \$4m. Since the plant cost more than \$40m and has a 10-year service life, the value of production would not even cover the development costs. Below our estimates about the operating and total costs for a kilo of plastic Bio-on:

Production plant (Castel San Pietro Terme) economics	
	Actual
Facility cost	50,736,000
Useful life (years)	10
Depreciation cost	5,073,600
Staff per facility	10
Annual salary	47,900
Labour cost	479,000
Sugar beet/tonne	49.82
Capacity (tonnes/year)	1,000
Conversion factor	3
Sugar beet required (tonnes/year)	3,000
Feedstock cost	149,460
Total operating costs	5,702,060
Capacity (tonnes/year)	1,000
Capacity (kg/year)	1,000,000
Opex/kg EUR	5.70
EURUSD FX	1.13
Opex/kg \$	\$6.42
Total production costs	11,104,953
Capacity (kg/year)	1,000,000
"All in" expenses/kg	11.10
EURUSD FX	1.13
"All in" expenses/kg \$	\$12.50

Doubts about the Castel San Pietro Terme plant

Work on the 1000-tonne Bio-on plant Di Castel San Pietro Terme started in September 2017 and were completed, according to Bio-on, in the fall of 2018. The final costs were approximately \$53m (patents and intellectual property included), which is about **three times higher than initial estimates**.

In January 2019, a financial research company contacted by Quintessential booked a guided tour of the Castel San Pietro Terme plant. Immediately before the scheduled time, **Bio-on cancelled the visit** citing some unconvincing reasons. However, the staff of the research company went to

⁹Consult the auditor's 2018 budget opinion on the www.qcmfunds.com website

the site and inspected and photographed the outside of the plant as seen from the road. Although the main structure was clearly completed, there were **unmistakable signs of work still in progress**, such as scaffolding, cranes, piles of building materials and construction workers (a large sign at the entrance also referred to the factory using the term "construction site"). Quintessential visited the plant on June 27, 2019 (six months later) and found it in almost identical conditions:

17 Gennaio 2019



27 Giugno 2019





CARTELLLO ALL'ENTRATA DELLE FABBRICA BIO-ON:

“Fermarsi in portineria prima di entrare **in cantiere** per il riconoscimento.”

L'impianto Bio-on non è economicamente sostenibile e sembra ancora incompleto!

Therefore, we have serious doubts as to whether, about nine months after the declaration of "end of works", the Castel San Pietro Terme plant is actually completed and in production.

Words, words...

Looking at the Bio-on website, it is obvious to anyone that it is a particularly "promotional" company. In fact, Bio-on issues "triumphant" press releases with a certain frequency, often announcing the beginning of ambitious projects and collaborations with prestigious companies.

However, of the dozens of projects announced, we strive to find any that seem to progress in any significant way: in most of the cases we have reviewed, the announced projects have not been implemented. In some cases, the project is no longer mentioned by the company, while in others it leads to the establishment of the "empty boxes" we have seen previously.

For example, in 2015 Bio-on announced the *Brasil Bioplastic* project with the Brazilian fund Moore Capital. This project involved the construction of a 10,000-tonne plant, an investment of 80m euros, and the purchase of a 5.5m in Bio-on licences. We contacted Moore Capital's founding partner: according to his statements, Moore Capital would only pay a total of **USD 200k** of the promised USD 5.5m and the **\$80m facility has never been started, let alone completed.** In addition, Moore Capital stated that it does not have the necessary financial resources to complete the project.¹⁰

Another interesting example is that of *Sebiplast*, a Bio-on/Maccaferri joint venture announced in 2015. The announcement included plans to build a €55m (5,000-tonn/year) facility for the "production of bioplastics from glycerol." We have reviewed the financial statements for this joint venture with the Italian company registrar: from the creation in 2015 to 2018 (date of the

¹⁰The owner of Moore Capital seems to have no clear ideas on how to obtain the financing, citing, for example, an unlikely IPO.

most recent filing) **Sebiplast did not generate any sales**¹¹ and the plant announced **does not seem to have even been started**.¹² However, Sebiplast has about €1.5m in licences (presumably "purchased" from Bio-on) that **have not yet been paid in four years**. The recoverability of these claims is also in strong doubt because Maccaferri is currently **undergoing bankruptcy**, with many of its subsidiaries (including SECI, bio-On partner in Sebiplast) in the Italian equivalent of Chapter 11.

Bilancio - SEBIPLAST S.P.A. 6/20/19, 9:54 AM

CONTO ECONOMICO		
	2018	2017
A) Valore della produzione	5.049	0
B) Costi della produzione	122.061	11.236
Differenza tra valore e costi della produzione (A - B)	-117.012	-11.236
C) Proventi ed oneri finanziari	-2.137	1
D) Rettifiche di valore di attivita' e passivita' finanziarie	0	0
risultato prima delle imposte (A-B+-C+-D)	-119.149	-11.235
Imposte sul reddito dell'esercizio, correnti, differite e anticipate	-11.443	0
Utile (perdita) dell'esercizio	-107.706	-11.235

Importi espressi in euro.

v.2.6.2 SEBIPLAST S.R.L.

Conto economico micro

	31-12-2017	31-12-2016
Conto economico		
A) Valore della produzione		
5) altri ricavi e proventi		
altri	0	1.930
Totale altri ricavi e proventi	0	1.930
Totale valore della produzione	0	1.930

¹¹Approximately 7,000 – negligible.

¹²In fact, there are no material fixed assets on the balance sheet.

We found a similar situation with B-Plastic, a joint venture between Bio-on and the cooperative French Cristal Union announced in August 2015. Although the press release was true to form with promotional language and ambitious plans, we've reviewed B-Plastic's updated financials and noticed that, four years after inception, the **company still shows zero turnover and material fixed assets of less than €1.5m** - a far cry from the announced €70m¹³.

Compte de Résultat (Première Partie)

B-PLASTIC

Période du 01/02/18 au 31/01/19
Édition du 17/02/19
Tenue de compte EURO

RUBRIQUES	France	Export	Net (N) 31/01/2019	Net (N-1) 31/01/2018
Ventes de marchandises Production vendue de biens Production vendue de services Chiffres d'affaires nets				
Production stockée Production immobilisée Subventions d'exploitation Reprises sur amortissements et provisions, transfert de charges Autres produits			1	
PRODUITS D'EXPLOITATION			1	

In total, we have identified about twenty projects announced by Bio-on, but not completed or even started. Among these, in addition to those already discussed, we highlight the following:

1. 2013: Bone regeneration
2. 2013: Metal replacement
3. 2013: Collaboration with "Magna"
4. 2016: Bioplastic to fight cancers (!)
5. 2016: agreement with unidentified "multinational"

Some of these are particularly bizarre and unlikely. For example, medical/healthcare initiatives typically require very long development times (even decades) and billion-dollar investments. In our view, these announcements are made by Bio-on for the purpose of fueling interest in the stock.

Sinister transactions?

We note that, in some cases, the "joint ventures" of Bio-on with some other Italian industrial companies, are preceded by transactions that seem suspicious to us. In one case, for example, Bio-on sold its stake to a certain holding company at a price about 10% below market,

¹³Bio-on cites delays in the development of the project due to bureaucratic glitches in obtaining permits.

effectively a €1m gift. A year later, this same company entered a JV with Bio-on. In another case, Bio-on awarded a contract for millions of euros to a certain Italian company: six months later this same company entered into an agreement of JV with Bio-on.


Then there is the interesting case of **Banca Finnat**, which seems to be the only bank to cover Bio-on stock. In addition, Banca Finnat provided a line of credit for *Capsa*, the holding company owned by Marco Astorri and Guy Cicognani (Bio-on founding partners). Meanwhile, in 2018 Bio-on had opened two more JVs, Liphe S.p.A. and Aldia S.p.A.

Contrary to other press releases, where Bio-on always seems eager to mention its counterparts, in this case the partner at 10% is only referred to as "*an important financial partner*". In its equity report, Banca Finnat also refers to these JVs without specifying the partner's name.

Quintessential consulted the Register of Companies and verified that the mystery partner turns out to be **Banca Finnat**! Given its role as an advisor and analyst on Bio-on stock (and creditor of its of managers) we find it astounding that **Finnat has not revealed such a clear related-party transaction**.

Finally, we are alarmed that Bio-on's management, in the years between 2015 and 2017, sold about €21m of warrants to 21 unknown individuals at a **value 50% below the market price**, apparently "gifting" millions of euros to these lucky investors. Despite our requests, Bio-on has refused to identify the beneficiaries of these transactions or even to confirm that they have nothing to do with Bio-on's counterparts in the "JVs". We fear that such transactions may have constituted a sort of "hidden incentive" to induce some counterparties to "collaborate."

Le Società Aldia S.p.A. e Liphe S.p.A., sono detenute per il 90% da Bio On, e per il 10% da un **importante partner finanziario**.

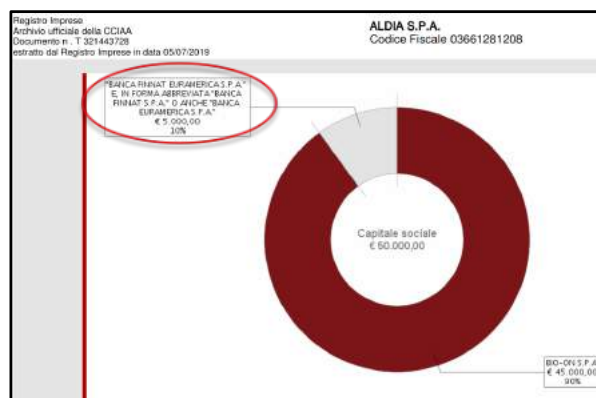
 BANCA FINNAT	EQUITY COMPANY NOTE UPDATE
<p>Conventional sun creams release many chemical substances into water and facilitate the growth of viruses. The new ingredients (micro powders made from biodegradable bioplastic microscopic spheres or capsules) will not only replace conventional microplastics but are also designed to significantly reduce the percentage of UV filters used in sun protection products and boost their water-resistance. The sun care sector is estimated to grow globally at an average annual rate of 5% in the period 2018-2022, taking 2.85 billion in sales by the end of the forecast period. Unilever will buy the production through sub-licenses and has options to acquire up to 100% of the company within a determined period of time.</p>	
<p>➤ Liphe S.p.A.: 90% owned by the parent company and the remaining 10% owned by a financial partner (fully consolidated). Together with Aldia it develops, produces and sells PHAs for Unilever's oral care products. The microplastics widely used in the oral care sector will be increasingly banned in the coming years.</p>	

Liphe S.p.A.



32

Aldia S.p.A.



Bio-on financial situation: a paper castle?

On the surface, Bio-on enjoys growing revenue and profits and has debt/capital ratio of around 40%, thus showing a fairly healthy financial profile. However, it is our firm belief that this profile is deeply misleading because it **is based on absolutely flawed numbers**.

The financial strength of a company is a function of two fundamental elements: liquidity and the solidity of its equity. Bio-on burns cash at a rate of about \$21m per year and has cash and bond reserves of only \$18m, which is enough for less than 12 months of operations at these rates. Equity is also doubtful since cash and bonds make up only 22% of assets: the remaining 78% are receivables (41%), plants (32%) and intangible assets (5%).

As we mentioned earlier, we doubt receivables because the **counterparts are mostly empty boxes** with no prospect of paying off debts themselves; we doubt plants because their high development costs make it **impossible** to sell at a reasonable margin, and we doubt intangibles because many experts have expressed very **strong reservations** about Bio-on technology. Excluding these three categories, we are left with \$89m of liabilities, \$18m of assets and a cash burn of \$21m euros per year: As a result, we believe Bio-on might be in serious financial distress and on the verge of insolvency.

Conclusion

In years of investigations and financial analysis, Quintessential has rarely encountered a corporate and accounting situation comparable to that of Bio-on. We are faced with a reality where **sales, fixed assets and receivables form a house of cards** consisting of a series of shell companies and **an uneconomical, tiny plant**. After more than seven years of operation (five of them as a listed company), **Bio-on still does not appear to have managed to produce any products in significant quantities or to sell anything** outside its network of shells. Despite this,

the company continues to boast exponentially growing sales and profits that seem totally fictitious: clearly the situation is unsustainable and sooner or later the structure is bound to collapse.

As on several other occasions before, Quintessential has felt a duty to inform the markets and the authorities about this state of affairs, certain that greater transparency will help to rectify the situation.

QUINTESSENTIAL CREDE E SOSTIENE L'ECONOMIA "VERDE"

- Il nostro intervento è finalizzato alla trasparenza nei mercati.
- Siamo favorevoli all'ecologia e alle aziende oneste che operano nel settore green.
- Le imprese "disoneste" sottraggono risorse a quelle legittime.
- **Quintessential** si impegna a donare parte dei guadagni derivati da questa attività al **Marine Conservation Institute**

