



BIO-PHOSPHATE RECOVERY from unexploited biomass

“3R zero emission pyrolysis technology: converting trash into cash”

**"ABC" Animal Bone Char: recovered and concentrated
bio-phosphate innovative fertilizer**

Edward Someus / Terra Humana Ltd.

www.3Ragrocarbon.com

biochar@3Ragrocarbon.com

Terra Humana Ltd.

Evolution 1989 – 2018



- Industrial organization since 1989 (ALSTOM subsidy JV).
- Specialized on bio-refinery with advanced 3R zero emission carbonization process:
 - ✓ Added value utilization of unexploited biomass streams for
 - ✓ Recovery of the **critical raw material Phosphorus** and bio-energy by carbonization process.
 - ✓ Simple & transparent ownership structure.

**TRUSTED EU
recommendations &
references since 2002**



Problem statement, Customer pain points



- **Mineral phosphate (P) resources** with higher quality already **depleted**, while food production **demands expanded**.
- Mineral P is highly contaminated with Cadmium/Uranium.
- **Mandatory EU regulation change 2020** = contaminated mineral P will be phased out <2025.
- **No recovered + safe P-products on the market.**
- **Farmers are highly affected by the volatility in fertiliser prices.** Price increase have been +700% in 2008.
- **EU farmers dependent (>95%) on imports.**

**CRITICAL raw material with high SUPPLY RISK:
No Phosphorus => No Agriculture => No Food**

The solution: advanced clean technology & products

- ✓ **3R TECHNOLOGY:** unique high temperature (850°C) carbon refinery processing.
- ✓ **High efficiency** & autothermal.
- ✓ **Zero emissions:** meet strict EU norms >2020.
- ✓ **Combined recovered fertiliser & bioenergy.**
- ✓ **Market demanded** products.



The Bio-Phosphate system is an original solution
IPR legal protected technology & specialized products
Comprehensive full value chain industrial management

Value proposition & USP



- ✓ Safe, natural
- ✓ Eco certified
- ✓ Less costly

- Prime Markets: DE, FR, IT, ES.
- EU market size: >€126 Billion/year.
- The only Bio-Phosphate product that meet new EU regulations after 2020.

- ✓ Recovered natural fertiliser.
- ✓ Fully organic certified.
- ✓ Improving yields ↑ >10%.
- ✓ Improving fruit quality ↑ >50%.
- ✓ Decreasing horticultural production costs by 15% - 25% ↓

- ✓ Resource efficient
- ✓ Market competitive
- ✓ Flexible for users

Business modell

| | I. TECHNOLOGY FRANCHISE | II. PRODUCT SALES |
|------------------------|---|--------------------------------------|
| 2019 | 3R industrial franchise replication model implementation | Bio-Phosphate Green energy |
| Product Sales | 3R franchise model | >€ 15 M/y product sales by 2021 |
| Franchise Sales | 10 replicates <2025. franchise fee = 15% | +€22.5 M/y franchise fee 2025 |
| ROI | <3 years for investors | <1 year for users |

Competition

What makes it different?



| Performance | Bio Phosphate* | Mineral Phosphate | Struvite Mg-Phosphate |
|---------------------------------|------------------------|------------------------|------------------------|
| P ₂ O ₅ % | >30% | >30% | >20% |
| Contamination | Pure, natural, organic | Cadmium + Uranium +... | Pharma + illicit drugs |
| P-nutrient release | Controlled release | Rapid Release | Low solubility |
| Agronomic efficiency | P Utilization >90% | P Utilization <20% | P Utilization <5% |
| P utilization cost €/kg | 1.75/kg | €1.98/kg | €8.75/kg |

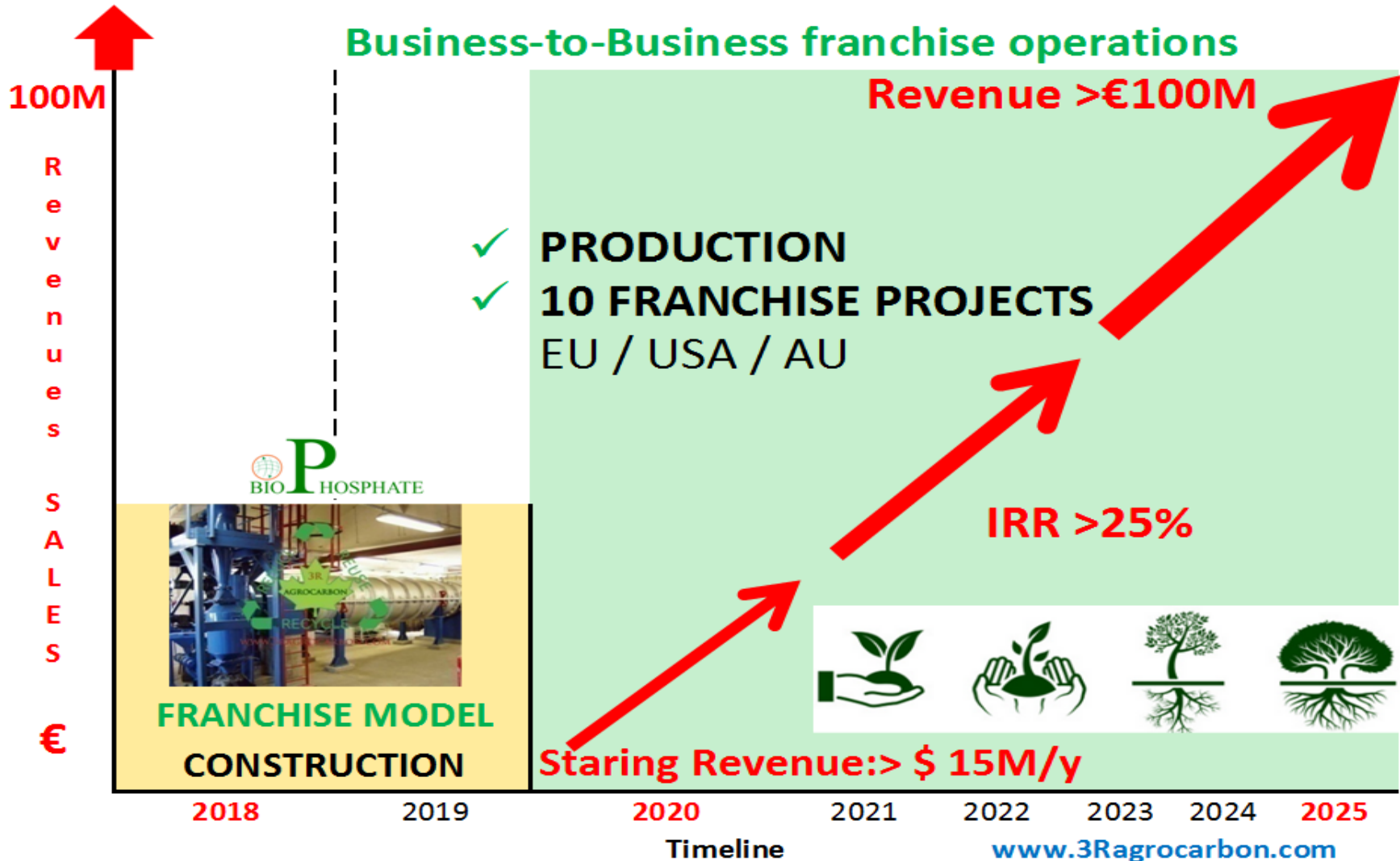
*** Terra Humana Ltd. is only one Bio-Phosphate specialized development & industrial organization in the EU.**

Are there any potential barriers?



| | |
|------------------|--|
| MARKET | NO, there are no market barriers. The recovered, contaminate free, safe and concentrated Bio-Phosphate is strategic product for the organic and low input farming in the targeted high end markets (EU, USA, AU). The Bio-Phosphate is price competitive under any conditions. |
| KNOWLEDGE | NO, there are no knowledge barriers. Edward Someus is the original inventor and the specialized development is covering all fields from science through full industrial applications into all elements of commercialization and markets. Terra Humana Ltd. is a specialized EU knowledge center for P recovery. |
| IPR | NO, there are no IPR barriers. Protected original solution. |
| LEGAL | NO, there are no legal barriers. Meet all the EU, US and AU norms/standards beyond 2020 for long term. |
| FINANCIAL | YES. Finding right financial Partner with reasonable conditions in €10M dimension for TRL9 industrial replication franchise model investment is challenging for any innovative technology. |

Financials: CAPEX expansion investment € 10M (series B)



Bio-Phosphate Team

with high implementation ability



**Edward
Someus**
(age 67)

Director & owner. Inventor, senior industrial process engineer, designer, pyrolysis/carbon specialized.

Experience:
+ 40 years



**Prof. Dr.
Jozsef Valyon**
(age 72)

Material and environmental chemistry. Green chemistry analytical specialized.

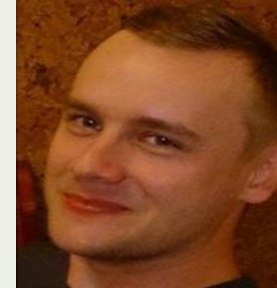
Experience:
+ 45 years



**Prof. Dr.
M. Pugliese**
(age 41)

Large scale agri industrial applications of recovered fertilizers. Agronomy, agri economy.

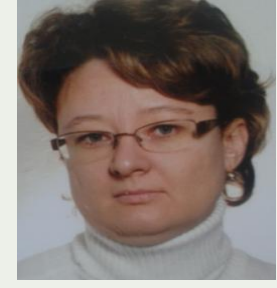
Experience:
+ 17 years



**Sandor
Somfai**
(age 40)

Chief accountant. Marketing, sales and economy of horticultural products. Farmers/agri market networks.

Experience:
+ 16 years



**Magdolna
Halasz**
(age 43)

Bio-engineer. Solid state fermentation and formulation of Bio-Phosphate for added value upgrade.

Experience:
+ 18 years

Use of Funds



Expansion finance €10M investment searched for hard-ware implementation of TRL9 full industrial BIO-Phosphate franchise replication model 2019.

- **Equity investment.** Conditions tbd.

Use of funds: CAPEX 12 months:
(manufacturing, installation, training, production start up & marketing/sales at 12,500 t/y output capacity.

- **International marketing:** already ongoing in the EU, USA and Australia.

Closing remarks:



- ✓ **Phosphorus is a critical raw material** with high supply risk in EU dimension. Phosphate price increase in 2008 = +700%. Similar + new price increase expected in the early 2020s.
- ✓ **The recovered Bio-Phosphate is a key strategic product for the agriculture to produce safe food already in short term.**
- ✓ **No Phosphorus = No Agriculture = No Food.**
- ✓ **Commercial implementation** of breakthrough, evidence-based and innovative technology.
- ✓ **Targeting social and environmental impacts:** improved food quality & safety for less cost.
- ✓ **Exceptional international team:** senior experienced and able to create sustainable and viable businesses.
- ✓ **Attractive financial position:** demonstrating sustainable growth of the business to deliver impacts with a realistic exit strategy and returns.

CONTACT



Edward Someus

Biochar S&T senior engineer

biochar@3Ragrocarbon.com

<http://www.3Ragrocarbon.com>

The Bio-Phosphate is the right product with the right price at the right time for the sustainable agriculture in the EU, USA and AU.