



Description of the Organisation: Terra Humana Clean Technology Development Engineering and Manufacturing Ltd.



Terra Humana Ltd. is one of the world leader for scientific development and industrial design of low temperature carbonization technology for specific Coal & Carbon applications.

COAL & CARBON zero emission solution: Industrial engineering of advanced carbonization technology for industrial production of added value Clean Coal energy, agricultural and eco application carbons.

AGRO SOIL SCIENCE & AGRO BIOTECHNOLOGY: Recycling and upgrading of bone meal and agriculture refuse materials for environmentally friendly crop protection and nutrition in horticultural vegetables industry. Development of advanced solid state fermentation and formulation (SSFF) technology.

Web: <http://www.3ragrocarbon.com> , <http://www.terrenum.net>



PROTECTOR-AGROCARBON EU FP6 Project: Recycling and upgrading of bone meal for environmentally friendly crop protection and nutrition in horticultural – vegetable industry. (2005-2008)



OBJECTIVE: added value upgrading and valorisation of food/agro industrial organic by-products into safe and useful soil amendment products by integrated thermal and biotechnological zero emission recycling means, used in the horticultural industry for safe vegetable productions.

THE 3R PROCESS is a horizontally arranged and indirectly heated low temperature zero emission carbonization system which is directly integrated into the novel agro-biotechnological solid state fermentation and formulation processing units.

The OUTPUT PRODUCTS are soil biotechnology specific solid carrier and formulated microbiological strain consortium. Depending on the different soil/climate application scenario conditions, different types of relevant AGROCARBON products made.

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





PROTECTOR – AGROCARBON Results

- (1) **Semi industrial scale “product like” Solid State Fermentation and Formulation method** and technology developed/optimized with <400 kg capacity.
- (2) **Detailed Authority permit test investigations** (from 2005 to 2008) by different independent departments of the Soil and Plant Protection Authority under EU legislation.
- (3) The PROTECTOR-AGROCARBON product and technology **full scale APPLICATION PERMIT** for open field and greenhouse vegetable cultivation in conventional, low input and organic system (2009).
- (4) The European Union **AGRINET** has been published a **success story** about the project. http://ec.europa.eu/research/agriculture/success_protector_en.htm
- (5) **First industrial application**, scale up, industrialization and real life test production (25 tones of PROTECTOR substance). Up to 8 m³/batch solid fermentation capacities will be expected by mid 2010 in the frame of the EACI CIP Eco-innovation Grant (2009-2012).
- (6) Creation of strong business case for the exploitation of the results.

END RESULTS: PROTECTOR-AGROCARBON Market Replication and Licensing.



Experiences made:

PROTECTOR EU FP6 and Eco-innovation project Statistic

- **18 YEARS RTD**, engineering and business background directly related to the PROTECTOR – AGROCARBON subject.
- **5 YEARS** preparation to enter EU FP5 and FP6 programmes. Extensive and very active learning of EU structures, systems and regulations.
- **4 YEARS** intensive work on the implementation of FP6 PROTECTOR RTD project for achieving proven demonstrated, transferable and adapted applied RTD results towards industrial application.
- **1 YEAR** intensive preparation of the first industrial application and scale up programme concept based on the FP5/FP6 RTD results.
- **2010: extensive marketing**, business plan writing and full scale industrial project organization in 5 countries.



Experiences made

The problems of the SME partners:

- Lack of key staff with sufficient high end scientific and technical qualifications.
- No experience for management of international projects and partners.
- Lack of sufficient economical resources.
- Too busy with the daily operations to innovate.
- No will or opportunity to take development risk.

The problems with Academic partners:

- Lack of true innovative personal: known scientific knowledge is NOT equal with innovative capability and new knowledge creations.
- Too busy with the daily university or academic operations.
- Lack of practical experience and/or knowledge to turn scientific knowledge/lab results into industrial practice, commercial / true market values and products. High class scientific + lab results with non competitive economical performance means overall bad RTD results. „There is no applied science, only application of science” (Louis Pasteur)
- "Until you commit your goals to paper, you have intentions that are seeds without soil."

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Recommendations for other SMEs

- Have **true innovative character**: Money never starts an idea; it's the idea that starts the money.
- **Definition of clear goals** from market driven innovation to targeted potential commercial end products: „**if you don't know where you are going, every road will get you nowhere**” (Henry Kissinger).
- Provide and **demonstrate significant and high replication**, market and licensing potential.



Recommendations for other SMEs

- The proposal is in line with the relevant EU policies and Call priorities.
 - Coherent and clear presentation of the project objectives**, proposed activities technical and project management perspectives.
 - Clear work programme with **complementarity** among participants.
 - Clear environmental and economical sustainability and benefits.
- Cost effective project solution and implementation** with delivery of high quality efforts towards economical industrial scale ups.