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## INVESTMENT PROPOSAL OFFER for 3R ZERO EMISSION CARBON REFINERY

Polgardi W. Hungary – EU enviro tech demo & training center



### INVENTOR/TECHNOLOGY OWNER

**Mr. Edward Someus:** Swedish environmental engineer with core competence of COAL/CARBON, organic waste added value recycling and valorization by advanced pyrolysis/torrefaction and carbon negative reuse applications. Born 1951, graduated in 1978, M.Sc. University of Lund (SE). Inventor / designer of the 3R indirectly heated rotary kiln carbonization technique and other related carbon refining process solutions, incl. activated carbon processing & regeneration, liquid bio-fuels, recycled N/P fertilizers. Coordinator/key tech designer for large EU enviro programmes since 2002.

### BACKGROUND:



The 3R Group (since 1989) is a Swedish origin innovative technology development/industrial engineering organization, one of the leading pyrolysis and torrefaction carbon-refinery international knowledge centre fully owned by the inventor Edward Someus. Over the past 20 years the inventor has taken up an unique leading intentional role in the RTD and industrial engineering activities in the field of animal bone meal and meat/bone meal (processed animal protein) thermal treatment (carbonization), activated carbon processing & regeneration and integration into a specific biotechnological process.



Providing an highly economical, high efficient, environmental safe and sustainable **3R ZERO EMISSION CARBON REFINERY** technology solution with unique new perspectives for valorized recycling and reuse of rapidly growing organic waste streams into high added value products.



**Tags:** zero emission carbon refinery / pyrolysis / bio-fuel and bio-oil / animal bone charcoal / natural fertilizer / organic by-product recycling. **Activity:** private organization with innovative clean tech industrial engineering product, applied research and industrial scale up, licensing. **Technology Sectors:** Geographic: EU – USA - Asia.



**Sectors of Expertise:** zero emission pyrolysis (carbonization - torrefaction - activated carbon processing & regeneration), clean technology industrial engineering, pyrolysis oil bio-fuel processing for green energy, transport fuel, high grade carbon production and carbon biotech formulations (organic fertilizers) and water treatment adsorbers.

**Targeted sectors:** horticultural organic and low input farming for natural NPK supply, renewable energy for transport biofuel supply, animal waste rendering industry, slaughterhouses with own on-site rendering processing units, low input & organic food crop farming, especially horticultural. Adsorbent: drinking water and sewage water treatment industries, environmental decontaminations, especially for large organic molecules and heavy metals.

### CONTACT

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**TECHNOLOGY:** Added value recycling and reuse of food grade animal bone meal and manure for advanced horticultural food crop nutrition (natural Phosphorous and recycled Nitrogen fertilizer), transport quality biofuel / synthetic bio-oil productions and high efficient water treatment adsorbent.

The objective of the 3R ZERO EMISSION CARBON REFINERY is the **valorisation of food grade animal by-products (category 3) into high added value products by advanced pyrolysis technology**. The 3R technology is a zero emission process, combining pyrolysis, bio-fuel catalytic and biotechnological processing for comprehensive recycling and reuse of process materials and gases.

The 3R is based on a revolutionary design **horizontally arranged indirectly heated rotary kiln**, providing reductive thermal decomposition of biomass up to <850 degree C in vacuum. The INPUT FEED STREAMS are low value animal - organic by-products; such as high Phosphorous content food grade (category 3-2) animal bone meal and *low moisture content manure from herbivorous animals, such as poultry, sheep, rabbit, goat and horse*. Standard input capacity is >4 m<sup>3</sup>/h or >30,000 m<sup>3</sup>/y (20,000 t/y bone meal). The 3R provides high feed flexibility and efficient carbon conversion for animal by-products. The output products are all natural.

Phosphorous content animal bone charcoal in different biotechnological formulations, recycled Nitrogen fertilizers and transport biofuels produced. The 3R is patented original solution/industrial design, which development is priority supported by the EU since 2002 (EU FP5, FP6, FP7, CIP Ecoinnovation).

#### The 3R integrated carbon processing:

- ✓ **3R Carbon recycling:** zero emission pyrolysis – **reductive thermal processing** for refined carbon recycling.
- ✓ **3R Carbon formulation:** solid state fermentation/**biotech formulation** of specific carbon biotechnological carrier for agri/enviro applications ( **“PROTECT microORGanizations”** [http://ec.europa.eu/research/agriculture/success\\_protector\\_en.htm](http://ec.europa.eu/research/agriculture/success_protector_en.htm) )
- ✓ **3R Carbon conversion:** **chemical conversion** of crude pyrolysis oils into **synthetic fuel** green energy (transport fuel quality bio oil) and N fertilizer from category 3 and category 2 bone meal, meat & bone meal “MBM” and processed animal proteins “PAP”.

The 3R synthetic fuel technology (with different catalysts) is also applied for conversion or refining of crude pyrolysis oils obtained from coal (3R Clean Coal processing), oil shale or biomass, while the **3R synthetic derived fuel** is targeting conversion of crude pyrolysis oils obtained from other solids such as plastics or scrap auto-mobile tire crumb rubber waste.



The production per unit is to cover the increasing world market demand with the following market accepted and market demanded high quality natural products at low price. **OUTPUT PRODUCTS:**

- ✓ 10,000 t/y **animal bone char**
- ✓ 6,500 t/y **transport fuel bio oil**
- ✓ 3,500 t/y liquid **Nitrogen fertilizer**
- ✓ 5,000 MWe **green electricity** to the grid

**LOOKING FOR: Qualified business partners**

- **JOINT VENTURE SET UPS:** Qualified business partners searched, organizations and knowledgeable individual persons as well, for year 2012 commercialization, market replication and industrialization cooperation of the 3R technology. This objective driven open international call aims to identify, contact and negotiate potential cooperation partners for uniting efforts and possibilities, - all in order to **organize country / region specific and local market specialized joint venture start up companies for 3R industrial and commercial market replication implementations.** The objective is to set up national registered joint venture companies and business structures in different countries worldwide. Advantageous high rewards to be discussed.
- **CAPITAL - EQUITY INVESTMENT partners:** business expansion partners searched for added value biomass-to-refined carbon and biomass-to-liquid bio-fuel green energy projects. **US\$ 5 million CAPEX add-on investment is searched for 20,000 t/y input bone char production installation system** (ROI <3 years). Any exit strategies or strategic business cooperation proposals are flexibly discussed. 3R set up any any other countries (preferably in temperate climatic zone) flexibly discussed.
- **LICENSING** possibilities are flexibly discussed with potential strategic partner(s) in any other countries, preferably in the EU, USA, Canada, Australia, Japan and S-Korea.

The integrated 3R is a proprietary operating technology system, including confidential and well IPR protected construction equipment design and process control software, where the **strategic components are supposed to be owned by the 3R strategic investor** group, including the original solution revolutionary pyrolysis rotary kiln and its full construction, process control software, pyrolysis catalytic conversion and catalyst materials.

DOC STORE: <http://issuu.com/3ragrocarbon>  
<http://se.linkedin.com/in/3ragrocarbon>

The 3R is about to coherently unite Life and Environmental values with conservative economical and market driven business values for high return on investments under short time (<2-4 years) of period.



Agrocarbon field applications

**The new 3R technology – organic waste valorization system - opens new technical, economical, environmental and climate protection opportunities, while providing sustainable win-win solutions for all stakeholders.**

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