

June 2, 2008

TERRA HUMANA Clean Technology Engineering Ltd.  
WEB: <http://www.terrenum.net> General Manager: Edward Someus

**ISO 9001 & ISO 14001 CERTIFIED**  
√ pyrolysis technology design √ fine carbon production √ carbon surface modification √  
carbon regeneration √ agricultural biotechnology

Industrial and Scientific Research  
COAL & CARBON FACILITY AND EQUIPMENT RESOURCES  
to Support EU FP7 RTD Participation

**FACILITY RESOURCES** of COAL & CARBON

Terra Humana Ltd. owns industrial site, highly suitable for FP7 programme implementations:

**Renewable Energy & Agricultural Biotechnological**

**Innovative Technology Research, Demonstration,**

**Validation and Training Center**

- **Location: West Hungary**, 80 km W. of Budapest at M7 highway (2 kilometers from the site) and Balaton Lake East, 170 km East from Vienna.
- **Area: 8000 m<sup>2</sup> land area, 642 m<sup>2</sup> build** in area (recently rebuilt for RTD use, including 100 m<sup>2</sup> conference room)
- **Infrastructure utilities: full** (natural gas, industrial electricity, municipal water, own water well with large capacity, sewage water treatment facility, fire protection water pipe lines, fire protection water tank 100 m<sup>3</sup>)

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**3R Environmental Technologies**

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- **Industrial permits: the site is fully permitted** by ten Authorities for coal & carbon, renewable energy and agro biotechnological industrial production and interrelated RTD-Demonstration programmes. The permitting Authorities as follows:
  - Environmental Protection Authority
  - Industrial Safety Inspection Authority
  - Health Inspection Authority
  - Fire Protection Authority
  - Municipal Building Construction Authority
  - Plant and Soil Protection Authority
  - Chimney Inspection Authority
  - Water Works
  - Gas Works
  - Electric Installation Works
- New add-on buildings under construction: green house 300 m<sup>3</sup> for plant tests.

**Edward Someus have specific and full permit for:**

PERMIT FOR ENVIRONMENTAL ASSESSMENT AND DOCUMENTATION 1005/161/1997 (issued by Ministry of Environmental Protection): full permit for assessment of environmental impacts on air, water, soil, waste (incl. hazardous waste), biosphere and noise.

**EQUIPMENT RESOURCES** of COAL & CARBON carbonization & thermal treatment systems

- **Carbonization - pyrolysis rotary kiln**, comprehensive installation, continuously operated (up to 6000 h/year) indirectly heated, capacity 100 kg-250 kg/h up to 1000 t/year input (depending on the feed material qty), treatment temperature up to 850°C, incl. process control automatization and comprehensive field instrumentations.
- **Post burner** of pyrolysis gas-vapors, operational temperature up to 1150 °C, with 2 sec residence time
- **Off-gas treatment scrubber**, capacity up to 1000 Nm<sup>3</sup>/h
- **Carbon cooler** heat exchanger capacity 250 kg/h cools solid products in reductive environment from 850 °C to 20 °C.
- **Heat Exchangers**, gas-air, gas-water

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- Pneumatic solid material transport and material storage
- **Air selector of materials** (0-5 mm), capacity up to 250 kg/h

**LABORATORY RESOURCES** of COAL & CARBON on site laboratory for prompt physical characterization of solid and carboniferous materials:

- **Laboratory carbonization** – pyrolysis thermal treatment test oven (4 litre), up to 1150 °C
- **Sieve** – selection 50 micron to 5600 micron
- **Ball mill**
- **Drying, moisture, weight and volume standard on site measurements**
- When accredited and/or additional laboratory analytics are needed, than samples submitted to an very modern and well equipped accredited environmental laboratory 10 km from the site at an multinational chemical industrial factory. Mobile measurements are also available. Other labs and university research lab facilities are also connected to our works.