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**EUROPEAN COMMISSION**

**DIRECTORATE-GENERAL FOR ENERGY AND TRANSPORT**

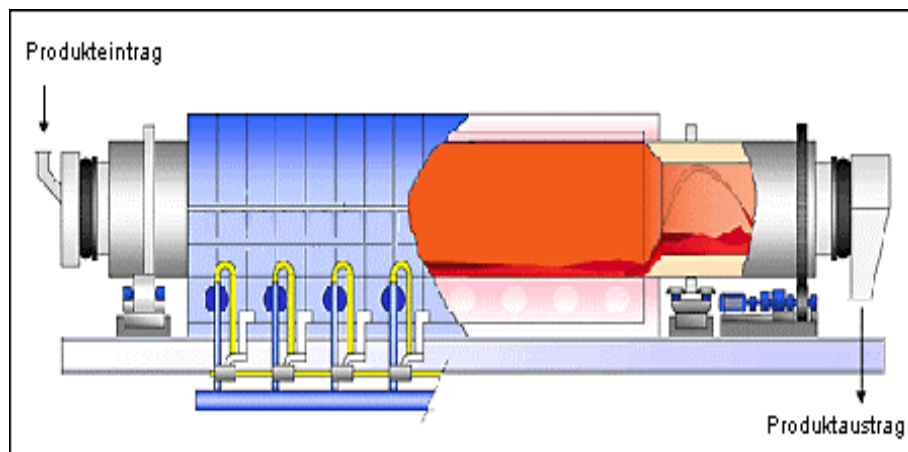
**CONTRACT No. NNE5/2001/363**

**MULTI FUEL OPERATED INTEGRATED CLEAN ENERGY PROCESS:  
TDT-3R MULTI FUEL**

**Summary**

Coal users are faced with an ever increasing need to reduce both fuel costs and emissions. One cost-effective solution could be to use new biomass solid fuels containing carbonised lignite (clean coal) as a substitute for coal in existing coal fired boilers. Such a multi fuel must be similar to coal in price, have acceptable combustion performance in existing boilers and reduce emissions such as  $\text{SO}_2$ , Cl, and  $\text{CO}_2$ .

The project aim is to produce high quality clean coal (CC) and clean multi-fuel (CMF) based on low temperature carbonisation in the patented TDT-3R Rotary Kiln Reactor.



**Rotary kiln reactor**

Through this process low grade lignites and other carbon based residual materials are refined to high quality fuels suitable for combustion in solid fuel power stations and for other industrial and domestic applications. The carbonisation process allows for the creation of defined fuels designed to meet specific end user requirements.

# University of Rostock Chair of Energy Systems

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**PROJECT DURATION:** 3 YEARS: (01.08.02 TO 31.07.05)

**PROJECT PARTNER:** UNIVERSITY OF ROSTOCK (URO)  
FACULTY OF MECHANICAL ENGINEERING AND MARINE TECHNOLOGY  
CHAIR OF ENERGY SYSTEMS  
Dr.-Ing. Rolf Strenziok  
Dipl.-Ing. Tristan Vincent

## **PROJECT CONSORTIUM:**

- (1) Terra Humana Clean Technology Development, Engineering and Manufacturing Ltd., ("TERRA HUMANA"), as project coordinator
- (2) Centre for Research and Technology Hellas, Institute for Solid Fuels Technology and Applications ("CERTH/ISFTA")
- (3) Netherlands Energy Research Foundation ("ECN"),
- (4) University of Rostock ("URO"),
- (5) CEREOL Group Research & Development Centre, ("CEREOL")
- (6) Latvian State Institute of Wood Chemistry ("LSIWC")
- (7) United European Environment Controls Ltd. ("UNECO"),
- (8) Aristotle University of Thessaloniki ("AUTH"),

## **Completed task University of Rostock**

- 1 Market survey of biomass production and supply in Germany**
- 2 Combustion and Emission Characteristics of Waste Vegetable Oil in the Thermal Flame Tunnel at the University of Rostock**
- 3 Raw coal dust combustion**  
**Test series 1: Coal dust combustion in the experimental combustion facilities**