Technology Offer

Title:

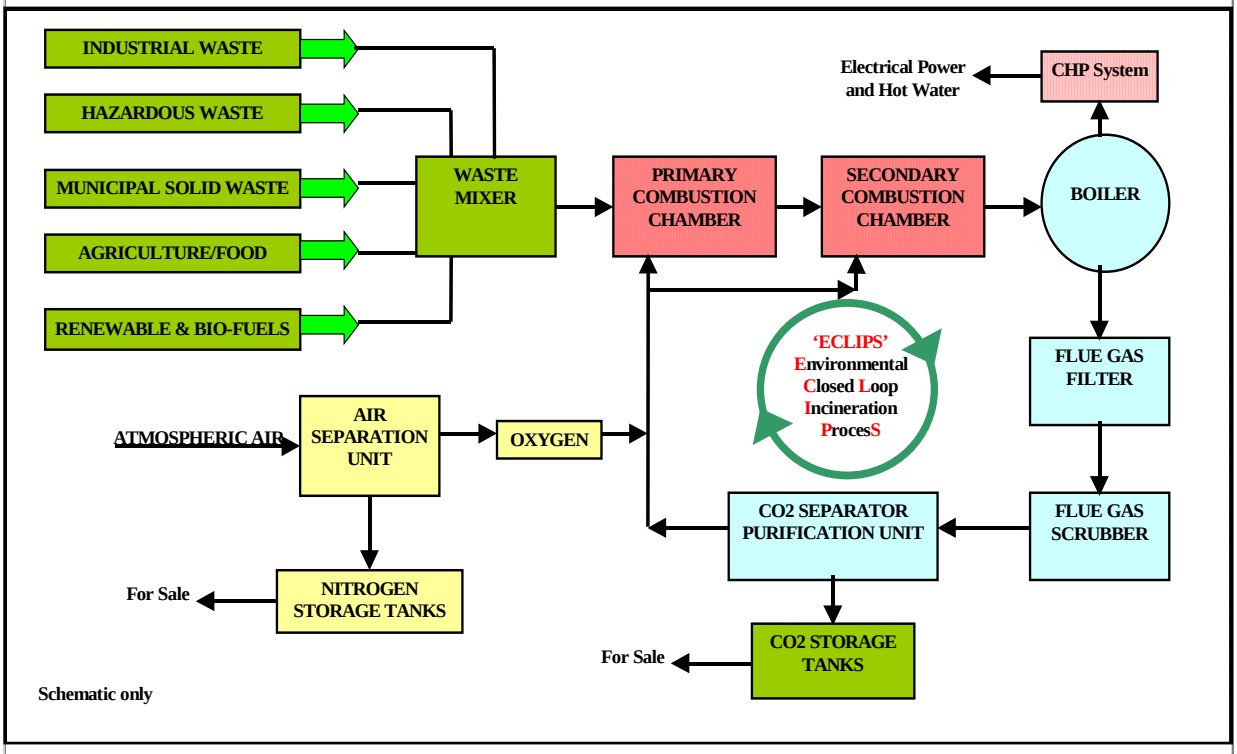
ECLIPS - Emission Free Environmental Closed Loop Incineration Process

Eclips Corporation (UK) Ltd.

A South East England SME company, which has developed a new energy from waste technology combining an oxy-fuel fired fluidised bed combustion system with closed loop oxidation process and post combustion CO2 capture. It is reliable and safe with no environmental pollution, disposing of waste in a unique manner with no smokestack or air emissions. JV partners/investors are sought to co-develop the core or associated technologies, and invest in the next stage of development.

Technology Description:

The project is based on a sealed combustion system. Waste is fed in through a purged interlock, eliminating air, and combusted at a high temperature using recirculated flue gas thus eliminating nitrogen and all polluting nitrous oxides from the exhaust gases. After combustion the flue gas passes through a heat exchanger to reduce the temperature, then through a set of filters (bag house filter) to remove any dust present in the gas. The flue gas is then enriched with oxygen and returned to the combustion chambers. The flue gas is contained and circulated within the system with a portion continually being removed and converted to produce valuable by-products in a pure form for commercial sale. This reduces the size and cost of exhaust gas filtration equipment and the requirement of a smokestack is eliminated.



Innovations and advantages

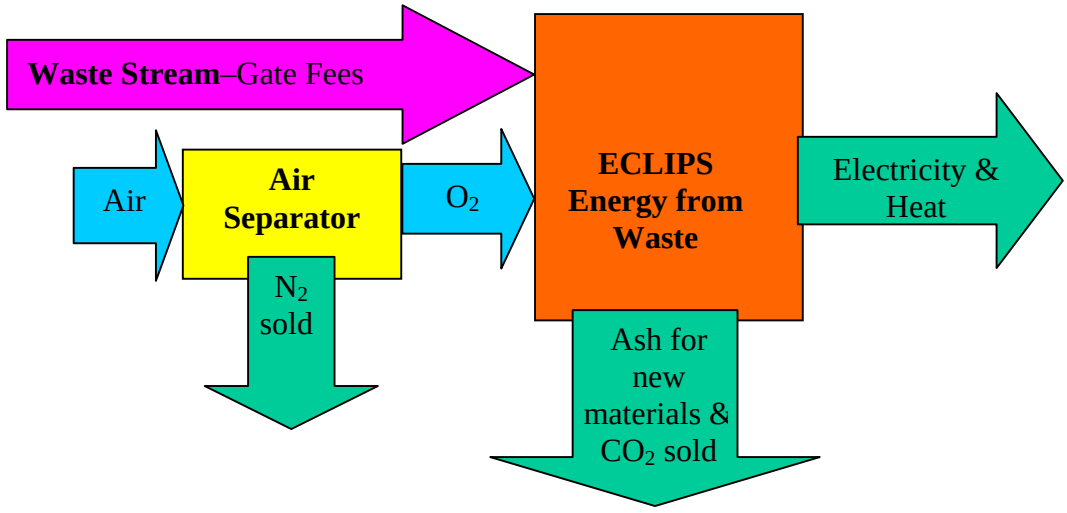
Major advantages over current conventional EfW and new advanced gasification and pyrolysis combustion technologies include but are not limited to:

No smokestack- no air emissions - no GHG emissions
Exact oxygen for combustion - No air in combustion process - Self-sustaining combustion
Uses standard equipment (low cost) - Single stage process
No pre-treatment of feedstock necessary
Gas by-products produced for sale - No operational subsidies required
Conversion old + new EfW processes
Sizes from 100kg/hr - 12,000kg/hr - fully scalable + small mobile units possible

Other technology advantages include:

Lower construction costs - reduced build time - modular construction - 10% capital saving
Higher energy production from commercial plants - 4%-6% higher thermal efficiency
Less planning permission - no air emissions, surpasses all EU emission standards.
Smaller filtration systems, no smokestack, smaller construction footprint & lower profile.
Safety features permit inner city location - lower waste transportation cost & imprint.

5 Revenue streams - '**DANCE**' - high profitability from valuable commercial by-products.



D - Disposal cost lower for HZW & MSW (aprx £350/tne medical waste)-allows lower taxes
A - Ash - new porous/high strength building materials developed from nanotechnology
N - Nitrogen - cheap supply for medical, agricultural/domestic industries - makes ammonia
C - Carbon Dioxide - cheap supply for enhanced oil recovery, food preservation/gardening
E - Energy - sustainable cheap energy supply - no subsidies required (See by-products below)

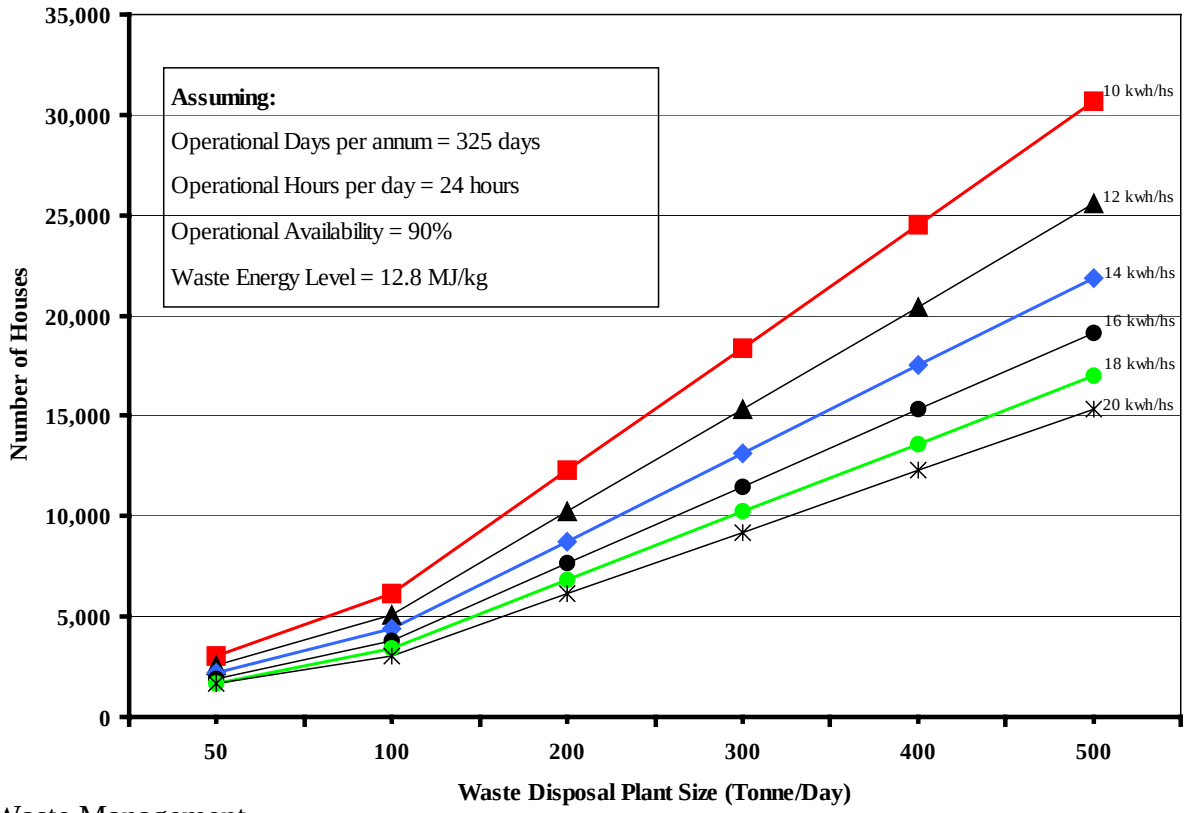
Wider social, environmental and economic benefit:

Clean waste management with reduced local environmental taxes
No smokestack, no air emissions - improved air quality, no downwind health risk/acid rain
Stimulation of industry from cheap by-products - associated increased employment
Clean up of old landfill sites - benefit to acquifers, marine food chain and water supply
Political & public solution for incineration pollution - overcomes 'nimby' objections.

Current and Potential Domain of Application

Waste to Energy

ECLIPS AVERAGE HOUSE ENERGY SUPPLY



Waste Management

A true re-cycling process treating waste as a valuable raw material, producing valuable by-products for industrial, agricultural & domestic commercial use.

ECONOMIC BENEFIT	BY-PRODUCT USES
CLEAN ELECTRICITY	Sold to grid/local industry or for internal use
HEATING	District community heating in CHP configuration
CLINKER/ASH	New porous building materials under nanotechnology development
WATER	Car batteries - distilled water Irrigation - Agriculture - Increased food production Drinking - with addition of mineral additives
OXYGEN	Eclips plant re-use - efficiency increase/excess for commercial sale
CARBON DIOXIDE	Cleaning - Clothes/Cars/Aeroplanes/Marine Parts - Buildings, bridges, infrastructure Fire Safety - Fire Extinguishers Fumigation - Wheat/Rice/Grain silos - increased food supply Food - Market Gardening - increased food supply - Refrigerated Transport - food preservation - Food grade ice for shops - Removes fat from milk - Removes caffeine from coffee Soft Drinks - Bubbles in “fizzy” soft drinks Oil Industry - Increased oil well production - energy supply

NITROGEN	Car/Bikes Aero Ind. Steel Glass Electronics Medical Agriculture Food Cleaning	- Pressurised suspension systems - Safety, pressurise empty fuel tanks - Annealing/softening steel - used in glass manufacture - Clean chip manufacture - Bio-technology research- blood/gene store - Manufacture of nitrates and fertilisers - Preservative, seals food in tin cans - Ammonia production for all house cleaning agents
HYDROGEN	Energy	- Fuel cell manufacture - car industry - Rocket fuel
OIL	Tyres	- Oil/fuel additives from tyre disposal
OTHER PRODUCTS	Acids & Gypsum	

Other Profile Details

Technology Risk

Verification of the technology has been confirmed by 2 international scientific research institutes, in the USA and South Africa, and an independent engineering study commissioned by the Canadian government in 2002.

Market

An extensive 6-year market research programme has already been completed in Europe, the Middle East and Asia where several projects valued in excess of US$400 million have already been identified and await prototype demonstration to secure.

Rapid market growth will be achieved by forming JV partnerships with local and national businesses to develop market share within their own territory; capitalising on the local business culture whilst sharing in the revenue stream of each new project.

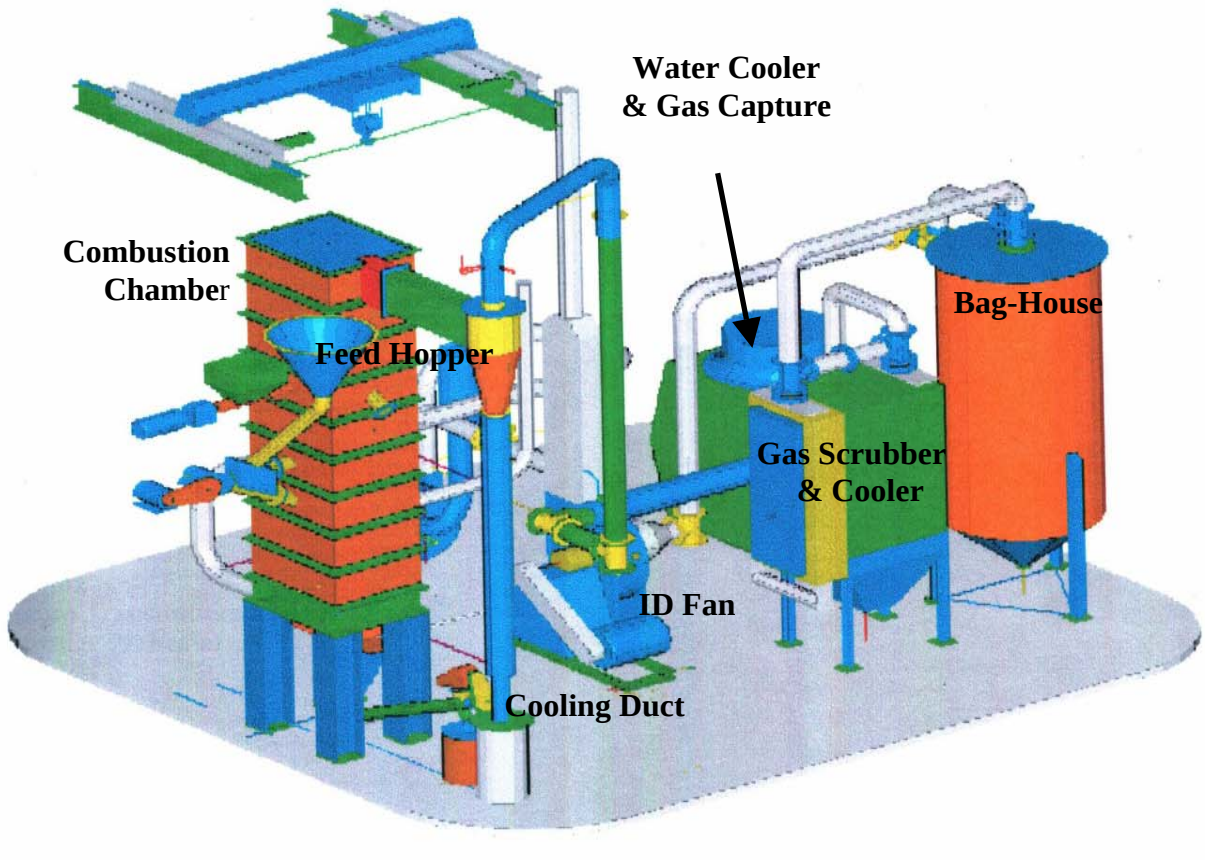
Current & Future Stages of Development

The process utilises standard tried and tested equipment configured in a unique way thus reducing financial, operational and development risk.

Significant engineering design work over several years by the company has resulted in planned future adaptations and modifications of the technology, which can be integrated into the normal EfW configuration. These future design processes are for:

Cleaning coal prior to power station use thus reducing power station emission pollution
Manufacture of hydrogen (future energy fuel) on a commercial scale.

Investment/funding now required to build working prototype as shown, reconstructed from containerised research incineration equipment, located within enterprise zone in SE England.



All pre-construction development work has been completed.

Project Timetable

Start Project @ Funding Date	stage 1 & 2			stage 3			stage 4			stage 5			Ongoing	
Months	1	2	3	4	5	6	7	8	9	10	11	12		
Stage 1 - Site and Permits														
Acquire Project Site & Site Preparation														
Apply for Permits - Environment, Waste, Planning														
Stage 2 - Engineering and Refurbish														
Engineering Drawings / Process(PIDs) & (MEs)														
Refurbish Purchased Plant+Equipment Procurement														
Stage 3 - Plant Assembly														
Equipment Assembly/Construction														
Systems Commissioning & Independent Audit														
Stage 4 - Plant Testing														
Process Verification and Testing														
Operating Licence/Permit Verification Inspection														
Reports & Results - Documentation														
Stage 5 - On-going Demonstration										Showcase			R&D	
Showcase' Plant - Research & Development														

Further Information (Technical Details Concerning the Profile)

Current issues to be investigated in the next stage of development lie in the following tasks. Task 1: Provide uniform waste feed, excluding air and nitrogen (N2) ingress from input feedstocks in order to aid combustion control and complete organic burn-out. Task 2: Deliver oxygen enrichment of the combustion process by O2 injection and control into the recycled flue gas for use as an oxidising agent under varying pressure conditions. Task 3: Maintain mass balance stabilisation of the recirculating flue gases by an integrated computerised control system to ensure waste inputs equal extracted outputs. Obtained by automatic damper control adjustment to maintain the correct operating pressures within the closed loop. Task 4: Prove carbon dioxide (CO2)/flue gas and other by-product capture and removal from the process.

Post RTD Facility Use

Post trials & testing, the completed facility will become:

a. An independent scientific high-tech research facility for industry and academia offering chemical and energy research at combustion temperatures in excess of 1000^{o}C.
b. An operational training simulator for operators of future commercial plants worldwide.
c. A market product demonstrator for future potential customers to 'TFS' (touch, feel and see), in order to win commercial contracts.

Exploitation of RTD Results

The commissioned prototype will immediately be showcased to selected VIPs and CEOs to demonstrate its capabilities, inviting interested parties from:

- Financial institutions with expressed interest in funding full commercial projects.
- Government officials from the UK and overseas including previous market contacts.
- Waste management sector, industry and commerce with significant waste disposal needs

Intellectual Property Rights

Secret know-how

Collaboration Type

- Joint Venture Agreement
- Financial Resources
- Joint further development
- Testing of new applications

Comments
Potential world leading technology with global market applications.

Targeted Countries

Worldwide