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# **EGM Environmental Solutions GmbH**

Presenting

New Breakthrough Technologies

ON

SUSTAINABLE RENEWABLE ENERGY

CARBON CAPTURE

**ABU DHABI – UAE    APRIL 2009**



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WARNING



**There are ongoing future ecological and economical  
problems affecting nations by utilizing different  
Conventional methods of generating water and energy**

## **Problems and driving forces of generating energy**

### **Conventional methods**

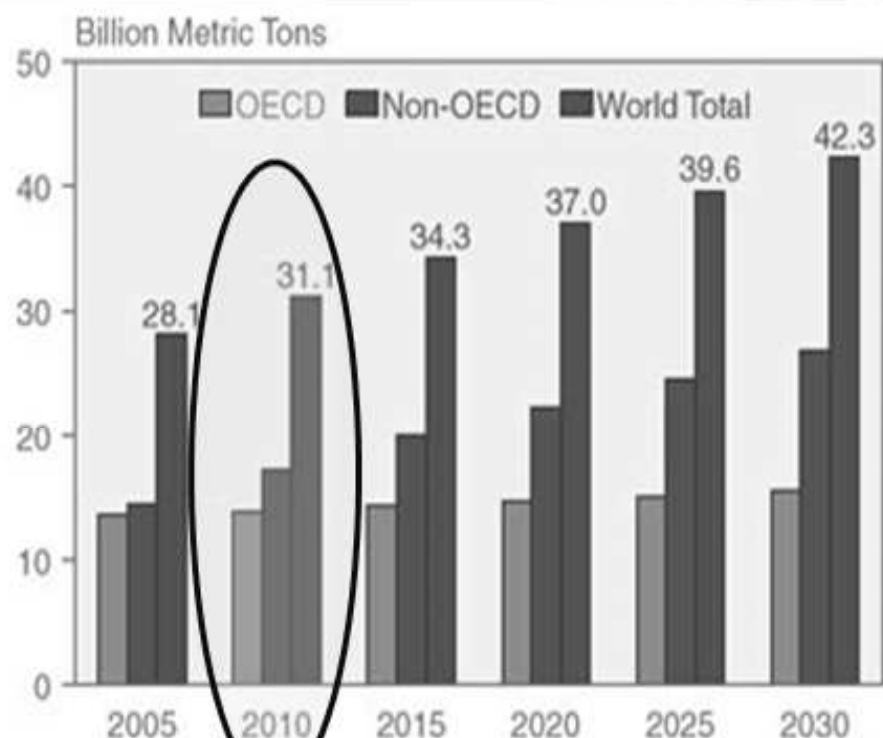
- 1. Availability.**
- 2. Sustainability.**
- 3. Reliability.**
- 4. Efficiency.**
- 5. Rapid depletion of fossil fuel.**
- 6. High Initial capital investment.**
- 7. High maintenance cost.**
- 8. High costs to poor countries.**
- 9. Negative environment impact.**
- 10. The Kyoto Protocol.**

### **Renewable energy methods**

- 1. Availability.**
- 2. Sustainability.**
- 3. Reliability.**
- 4. Scalability.**
- 5. Efficiency.**
- 6. High Initial capital investment.**
- 7. High maintenance cost.**
- 8. High production cost.**



## CO2 Emission World wide Projection (2005 – 2030)



Sources: 2005: Energy Information Administration (EIA), *International Energy Annual 2005* (June-October 2007), web site [www.eia.doe.gov/lea](http://www.eia.doe.gov/lea). Projections: EIA, *World Energy Projections Plus* (2008).

**By the year 2010 approximately (31.1) billion tons of CO2 will be emitted**

**Therefore the market share leads to huge revenues from carbon credits.**

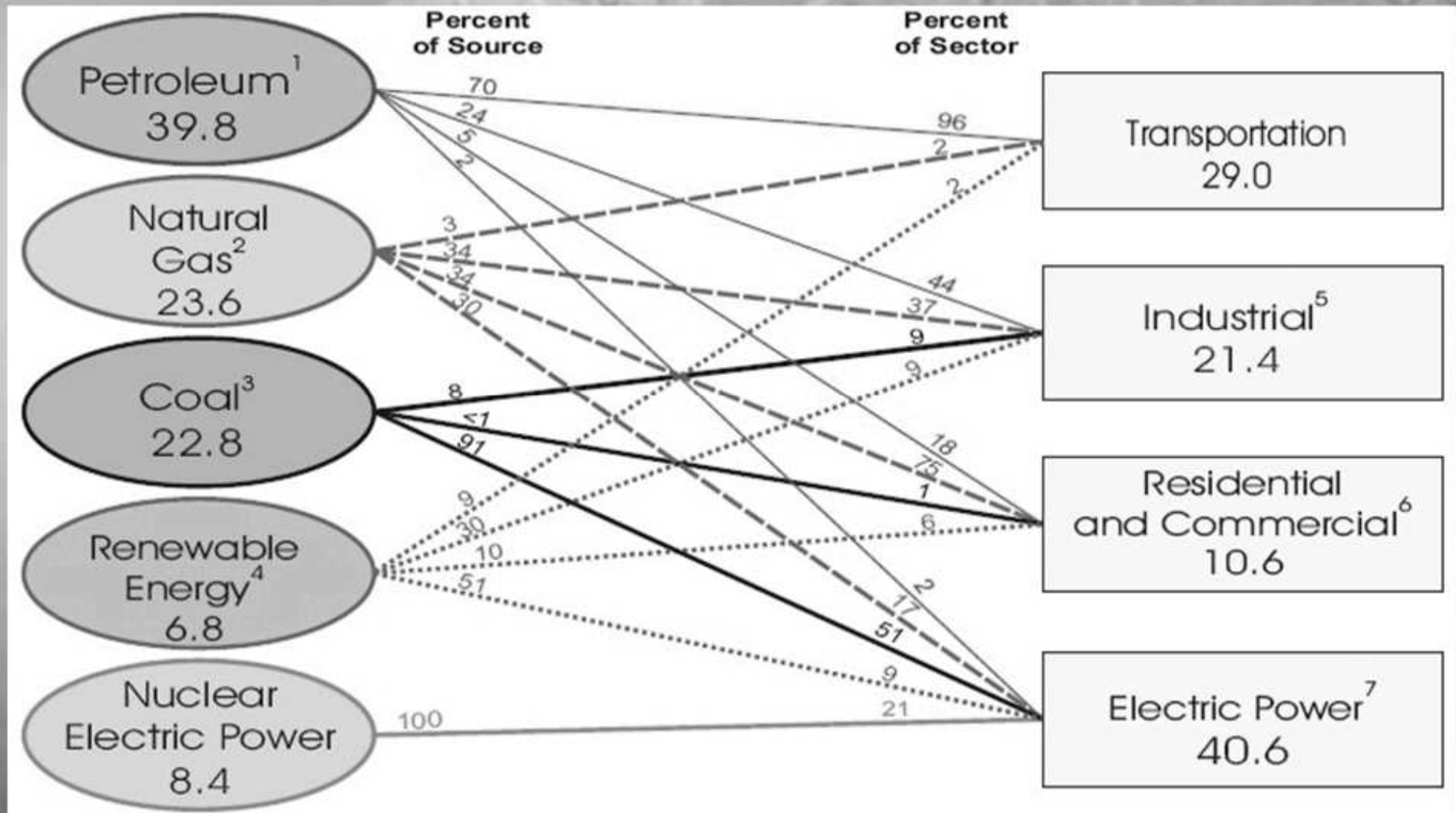
### Example:

**Global CO2 Emission in 2010 = 31.1 BI Ton**

**CO2 Emission Trading Price / Ton = € 22**

**CO2 Emission Trading value = € 684.2 BI**

# CO2 Emission World wide Projection (2005 – 2030)





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## **Serious Problem**

**most worldwide countries are suffering**

**From**

**utilising different conventional methods of  
generating energy**

**SO**

**The Current Leading Global Solutions Are**





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## **Current Leading Global Solutions**

### **Bio Diesel Production**

**Non food based Bio Diesel with natural occurring or chemically modified and used as a diesel supplement or additive.**

**AND**

### **Carbon Capture & Storage( CCS)**

**Based on capturing carbon (CO<sub>2</sub>) from industrial plants and storing it.**



## Current Leading Global Solutions

### Carbon Capture & Storage( CCS)

#### Advantages:

- Separation and storage of CO<sub>2</sub>.

#### Disadvantages:

- High cost on Capture & storage.
- Limited storage capacity.
- Potential risk of storage.
- High energy consumption.
- High Initial capital investment.
- High maintenance cost.
- High cost of disposal waste.
- Not a future final solution

### Bio Diesel Production

#### Advantages:

- Can be used as diesel.
- No waste.
- No ban by the United Nations.
- Can be grown in any countries.
- CO<sub>2</sub> could be injected to it.
- Many downstream products.

#### Disadvantages:

- Land requirement for ponds.
- scalability against diesel production.
- CO<sub>2</sub> generation cost.
- Maintenance cost.

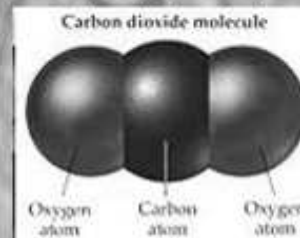


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# EGM- Environmental Solution GmbH

Presenting **New Breakthrough Technologies IN**



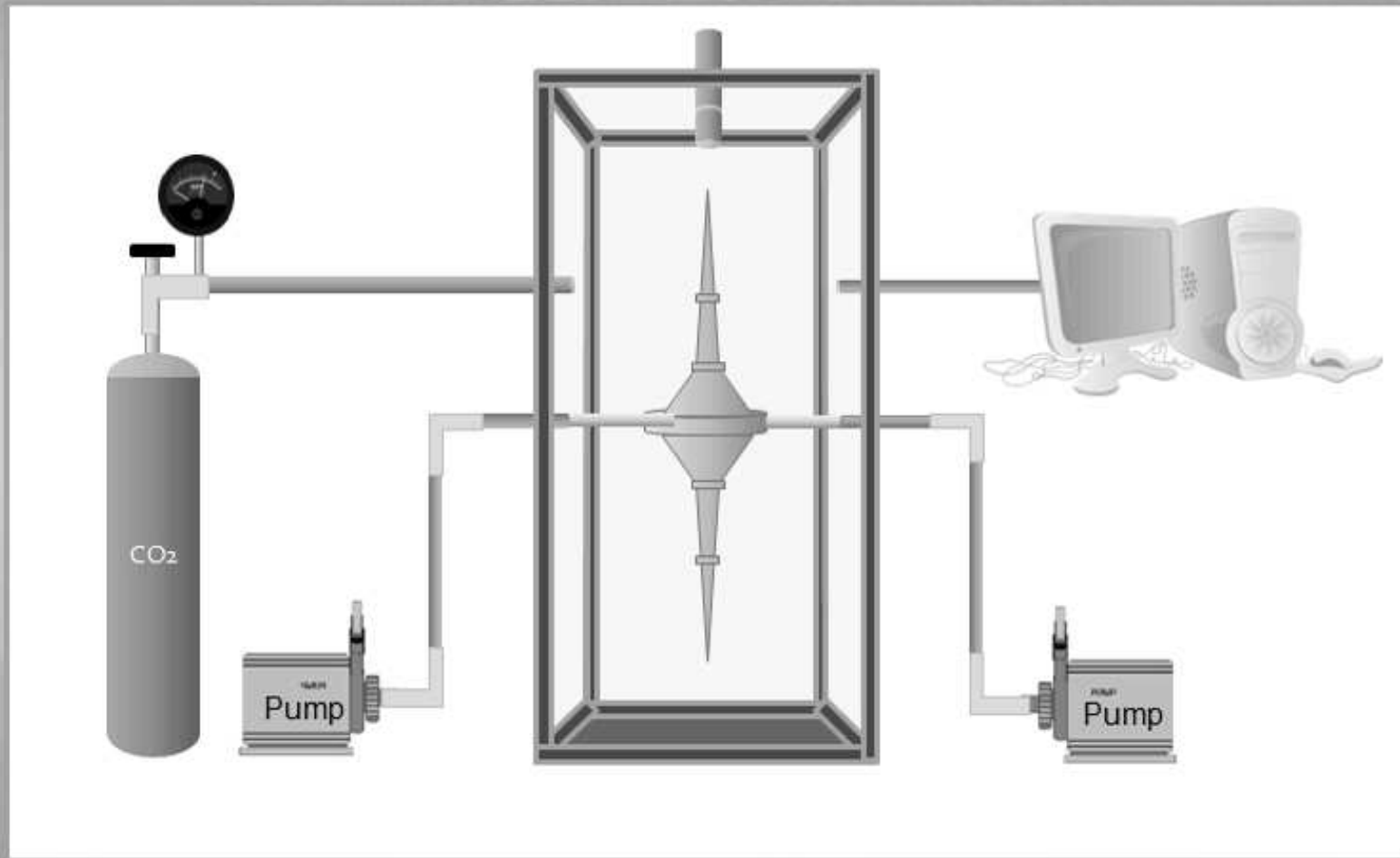
## CO<sub>2</sub> – Neutralisation

A Unique process permanently reducing CO<sub>2</sub> and other gases from the air

## Bonding CO<sub>2</sub> Into Water

A Unique process bonding CO<sub>2</sub> into water permanently

## EGM Technology - CO<sub>2</sub> Neutralisation System



**This System reduces the concentration of CO<sub>2</sub> from 15 vol.% to 1 vol. % within 5 min  
Therefore reaching multiple times higher degrees than any technology possible before.**



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# CO<sub>2</sub> Neutralisation - System

Pilot Project for CO<sub>2</sub> reduction from the air



CO<sub>2</sub> reduction system



CO<sub>2</sub> measuring system



Co<sub>2</sub> reading before implementation



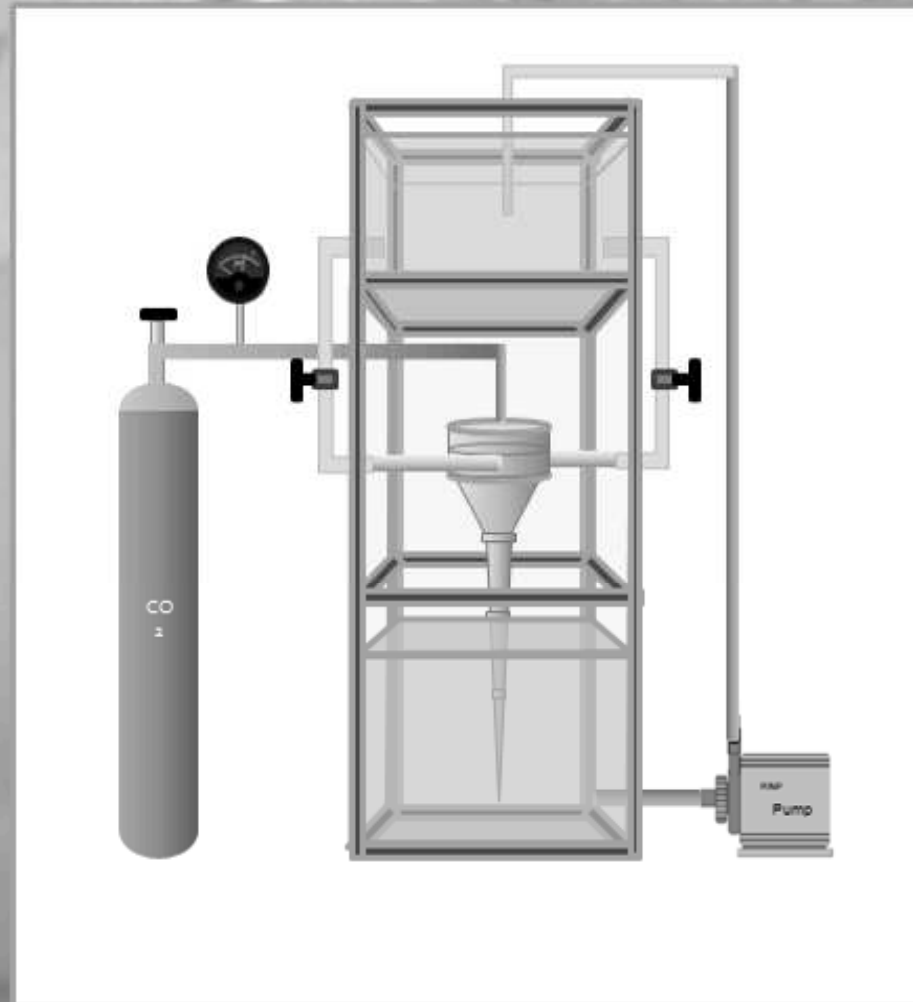
Co<sub>2</sub> reading after implementation



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## EGM Technology - Bonding CO<sub>2</sub> Into water system



**Bonding CO<sub>2</sub> into water Permanently, resulting carbon water and an oily substance on the water surface**

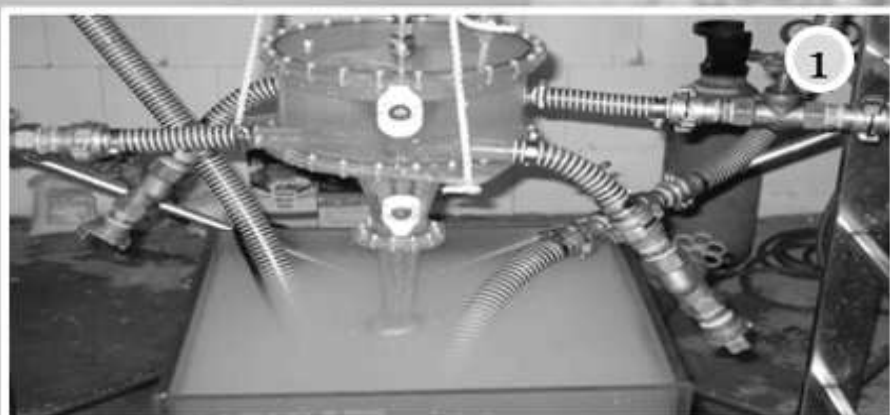


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# EGM Technology - Bonding CO<sub>2</sub> Into water system

Pilot project for oil production by Bonding CO<sub>2</sub> in to water



Bonding CO<sub>2</sub> with water



Oil separation from water



Oil floating to surface



Oil used in engine operation

## **EGM Missions & Targets**

### **Missions**

**To play an important role in sustainable development in all fields of social, economical and political activities to secure current and future water and energy demands**

### **Target**

**To reduce the CO<sub>2</sub> emissions**



## **Ecological Advantages Of EGM Technology**

- 1. Unique process permanently reducing CO<sub>2</sub> and other gases from the air.**
- 2. Unique system permanently bonding CO<sub>2</sub> Into Water.**
- 3. High degree of energy efficiency with excellent reliability.**
- 4. Environmentally and equologically safe.**
- 5. Application for basic industries and agriculture.**
- 6. Recovery of an energetic mass.**
- 7. No storage necessary.**
- 8. The system could be upgradable to any size.**
- 9. The system could be fully integrated with any existing plant.**
- 10. Energy ( CO<sub>2</sub> enriched water leading to high enegetic oil ).**
- 11. The oil Applicable to any diesel and bio-foul engines or turbines.**



## **Economical Benefits Of EGM Technology**

- 1. Lower capital investment.**
- 2. Low innovation costs.**
- 3. Low energy consumption.**
- 4. Lower operation and maintenance cost.**
- 5. High degree level of technical efficiency.**
- 6. Low costs of production per gallon.**
- 7. Lower costs than purchasing CO2 emission certificates .**
- 8. Lower costs than using CCS ( Carbon Cupture Storag ).**



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## **Joint Venture Advantages & Benefits**

- 1. World wide technology partner.**
- 2. World wide licenseing & royalties benefits.**
- 3. Center of excelance of EGM Technology.**
- 4. Establishment of R&D Center for EGM Technology.**
- 5. Marketing and project development.**
- 6. New industry & manufacturing.**
- 7. Carbon credit income stream World Wide.**



## **The EGM Technology Requirements**

- 1. Further technical developments for prototypes design.**
- 2. Application of industrial scale require further research.**
- 3. World wide marketing plan and program must be designed.**
- 4. World wide publicity must be started soon.**
- 5. Further research for down stream products.**
- 6. Further research for application of down stream products.**



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*With Compliments*

*For all your support and trust  
All our respect and gratitude*

*Thank you*

**EGM Environmental Solutions GmbH**