

GOWI AG

"Emptying landfills to
clean oil spills!"



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GOWI AG – Green our World Industries
www.gowi-ag.ch

1. GOWI AG - The mission

In a World of growing population and ever increasing consumption we have to find ways to protect our planet, reduce emission and improve our CO₂ balance.

GOWI AG has the technology to empty landfills to gain raw materials that can clean spilled soil and water, reduce emission, cultivate desert areas, improve insulation from buildings, protect from fire and many more things...

During the process, excess energy can be used to provide the neighbourhood with power.



The innovative process can be applied to a number of waste products, ideally old tyres. It is estimated that 13'500'000 metric tons of old tyres are discarded worldwide per annum. This comes on top of thousands of landfills all over the World.

2. VDI Industrial Module



One module can process more than 2.5 metric tons of waste such as used tires to regain useable raw materials.

The reactor is being filled, then the fully automated process is started. After about 3 hours the tyres are transformed.

Input 2.5 mt of used tyres



Reactor after process



Oil and Gas leaving reactor during process



During the process the different components of the tyres are getting separated; Concrete material remains in the reactor while liquids - oil and gas - are getting extracted and led out along with all the toxic components.

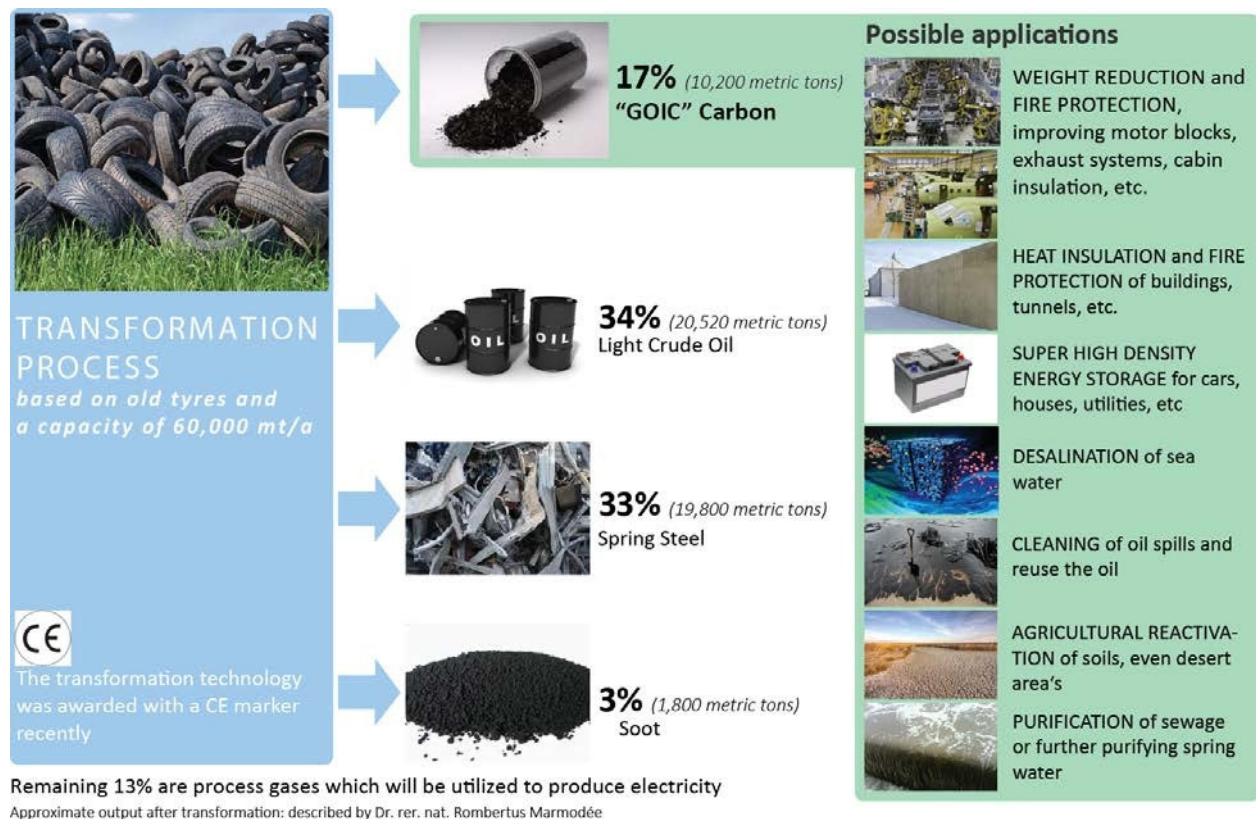
- 33% of spring steel
- 34% of light crude oil
- 17% of inorganic carbon
- 3% of soot
- the remaining 13% is process gas that generates power for the process with the excess energy being fed into the grid.

3. Archetype GOWI Plant



After 14 years of development and testing, a fully automated, **CE approved technology** - the VDI Industrial Module - is now ready for worldwide distribution.

The GOWI plant consists of **12 modules with 4 reactors** each in order to process approximately **60'000 metric tons** of used tyres per annum. The factory will require 30'000m² to 40'000m² of land for the turn-key construction. It will be fully automated and can be operated with less than 50 employees in a three-shift, 24/7 operation. Given this capacity, following output values can be expected:



4. Inorganic Carbon: a new material for a changing World

Generations of scientists have focused on creating new materials to improve our daily life. Over recent years, inorganic carbon has been regarded as a primary solution in a variety of scientific advances.

Now, one scalable industrial solution that is able to deliver pure inorganic carbon is readily available at an affordable level.

This one basic material that is recovered only from waste in a CO₂ neutral process has the physical and chemical properties to:

- rapidly improve the day-to-day life of the global population by combating water and fertile land shortages
- help the industry to save significant energy and generate whole new product categories
- increase safety of infrastructure constructions.



5. Significant potentials of the „inorganic Carbon“

In the near future, when inorganic carbon is available in industrial quantities, it will be a fundamental part of many products and processes. Listed below are some of many applications that demonstrate it's relevance and potential to various industries:

With a population of 8.3 billion people in 2030, we will need:¹

40%
more water

35%
more food

50%
more energy

Multiple applications for "GOIC" Carbon

- Desalination
- Purification of sewage
- Cleaning oil spills
- Cleaning chemical spills

Desalination

Inorganic carbon can be used in a filter in order to desalinate seawater in a very simple and scalable process. This highly cost efficient procedure will impact the cost of drinking water in regions without or with limited access to fresh water springs but access to seawater.

Purification of sewage

A high adsorption capacity for a great number of organic substances and high purity of carbon can be used to purify sewage or further purify spring water. The same technology and procedures are used to decontaminate soil or water from oil spills (even large scale) and the spill of chemical substances.

Reactivation

In terms of oil spills, the adsorbed oil can be fed into the same production process (as the inorganic carbon) and will be extracted. The oil can be reused.

- High water adsorption
- Preserving nutrients
- Prohibit vaporisation

Adsorption of water

The beforementioned high adsorption capacity of "GOIC" Carbon can also be used and has the potential to increase agricultural fertility even in desert areas. The release of water and humidity happens at low rates but continuously.

The high capacity for bonding of organic substances could hold, besides the water, a specific set of nutrients necessary to grow plants.

Vaporisation

Vaporisation is a major perpetrator for deserts. "GOIC" Carbon offers a very low heat transfer rate, thus safeguarding the contained water. A layer of "GOIC" Carbon could also act as a heat shield and avoid vaporisation.

In sum, these properties explain the potential for improvements in growing plants, hence agricultural products.

- Super high density energy storage (batteries)
- Saving energy through weight/material reduction
- Energy savings through minimal heat transfer

Super high density energy storage

Currently under scientific investigation, "GOIC" Carbon offers molecular properties that suggest that spectacular energy densities can be achieved in certain combinations and layering. It could be used to store large amounts of electricity from excess renewable production or as a plug-in battery for cars or houses, etc.

Weight and material reduction, especially in the field of aircraft, aerospace and car-manufacturing. Cost efficient materials that are light weight, easy to admix to aluminium, magnesium, ceramics, etc. and offer heat resistance > 3,000°C and low heat transfer rates are difficult to find.

Energy savings & minimal heat transfer

"GOIC" Carbon has a very low heat transfer rate and can be admixed to concrete and other building material. Consequently less construction material can be used to achieve the same insulating properties.

1) Source: National Intelligence Council: Global Trends 2030