
putting the pieces together

# METAN Green Health & Environmental Engineering & Consultancy Services

**GENERAL INFORMATION**


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|---|---|
| Name | : METAN Green Health & Environmental Engineering & Consultancy Co |
| Year of Establishment | : 18.03.1998 |
| Founder | : Dr. Cemal KALDIRIMCI |
| Address: | Ataturk Mahallesi Ugur Mumcu Caddesi No:<br>17/16 Narlidere-Izmir, TURKEY<br>Tel: +90.232.2387083<br>GSM: +90.532.454 9077 |
| Key Persons: | : Cemal Kaldirimci, PhD, Chemical Engineering |
| Partner | : Dr. Gulbin Seybizinli Kaldirimci ( Medical Doctor , Radiology Specialist ) |


**PRINCIPAL ACTIVITIES**

**1-Healthcare waste management and disposal**

Healthcare waste management has been one of the core businesses in the company since 1999.

During establishment, the main task of Metan has been to initiate the culture and methodologies in the field of "

Medical Waste Management Consultancy and Disposal Engineering ".

The activities in this field has started with consultancy work in cooperation with EtLog GmbH Germany and continued with distributorship of major companies form Europe and USA as Ecodas, Tuttnauer, Matachane and Bondtech , etc. and finally with Logmed GmbH owned by Globetech Environment, USA.

Kayseri, Konya and Kusadasi projects were contracted during this period.

After Logmed GmbH announced bankruptcy ( during the global crisis, Globetech Environment lost in public lists in the USA ) , Metan decided to start manufacturing of medical waste sterilizers and the founder, Dr. Cemal Kaldirimci set up another company with the name of Optimet Engineering Co. and developed her own and unique design. The first product was set up in Afyon city.

Adana, Kirikkale and N. Cyprus projects followed the first one and the last one contracted was Romania project. Kirikkale project was a BOT project covering waste collecting, logistics and treatment steps which is still ongoing.

After Optimet had decided to stop manufacturing, Akarmak copied the design of Dr. Cemal Kaldirimci , and launched into market Akar brand sterilizers . ( L type , the design of Dr. Cemal Kaldirimci )

Meanwhile, Some projects for KfW and Gtz have been conducted by. Dr. Cemal KALDIRIMCI as the local expert ( Bursa, Nevsehir )

Currently, Metan has been acting as an EPC contractor and providing her clients with full project consultancy from the start of the idea to the operation of the medical waste disposal plant and cooperating with major medical waste disposal equipment manufacturers.

**2- Liquid Hospital waste management and disposal**

The grey and black water from hospitals, whether infectious or not, require controlling and treating properly. Metan has been acting as consulting and project management and Execution Company with regard to liquid healthcare waste.

Metan is offering liquid medical waste neutralizer and disinfecting unit as well as total chemical and infectious treatment and purification systems.

**3-Hazardous waste management and treatment**

Metan has been involved in the managing, storing and disposal activities of hazardous healthcare waste and hazardous industrial waste. The founder, Dr. Cemal Kaldirimci has set up a hazardous waste interim storage facility in Izmir city with the company name of Eko Waste Engineering Inc. which is still active in this field.

Currently Metan has been using the incinerators from Santes Co., Turkey in the international EPC and commercial projects.

**4-Scrap plastic and scrap tire treatment and recycling line**

In this line, Metan is cooperating with selected suppliers in pyrolysis technologies field and to set up turn-key plants to recover and purify steel, oil, power and carbon black from scrap tires. This industry is very fragile and there are numbers of suppliers in the scrap tire and plastics pyrolysis line but only some of them are reliable and qualified by all means. One of the main concerns in this industry is firing danger and outmost care must be given in selecting the technology provider and method. Metan has spent quite a long time to choose the best technology providers in pyrolysis, product refinery and pre-treatment lines.

**5- Mobile Clinics and Field Hospital Supply**

Mobile clinics and hospitals are rather new solutions providing quick services under emergency and combat conditions and at particularly the rural areas where stationary services are not so possible.

Metan is in cooperation with major Turkish mobile clinics and field hospital suppliers and offering the turn-key solutions furnished with medical equipment.

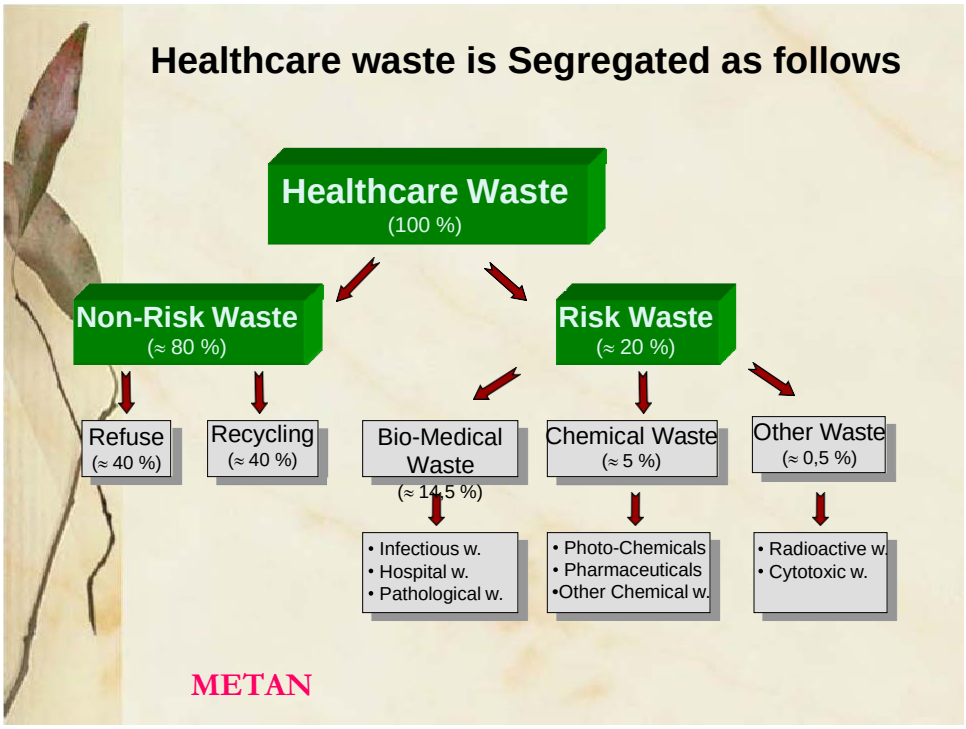
**7- General Project Design, Development, Execution**

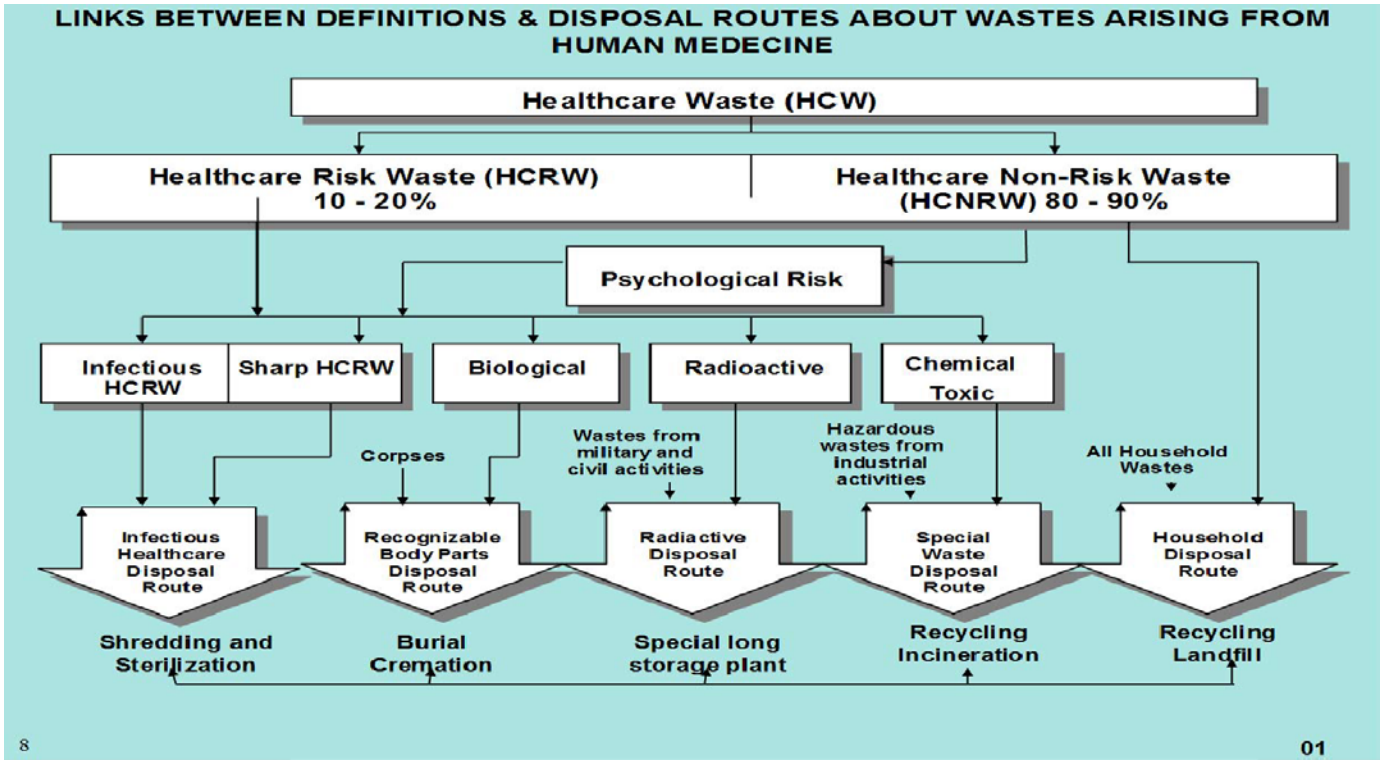
As having a very wide range experience in laboratory, healthcare, industrial, environmental, waste management and energy sectors, Metan is supplying her clients with various system solutions and products in their needs

**HUMANITARIAN AND SOCIAL RESPONSIBILITY WORKS**

Founder of Metan, Mr. Dr. Cemal Kaldirimci has been selected as the Country Representative and Advisory Board Member of AFRIEF, Africa Islamic Economy Foundation. Under this position, various humanitarian projects in housing, accommodation, potable water and waste water management, energy generation, waste management from the smart city perspective are being designed, developed and implemented.

# HEALTHCARE WASTE MANAGEMENT AND DISPOSAL OF BIO-MEDICAL WASTE




WASTE OPERATORS NEED TO KNOW HOW TO TREAT DIFFERENT WASTE STREAMS ARISEN FROM MEDICAL SERVICES BY THE HEALTH CENTERS

***WE REVIEW YOUR NEEDS AND OFFER YOU THE MOST APPROPRIATE SOLUTION SUITS TO YOUR NEEDS***

***Pre-shredding kind ( We have various solutions from 25 kg/h to 500 kg/h )***

***Post-shredding kind ( We have various solutions from 75 kg/h to 1000 kg/h , Higher capacities on demand )***

Healthcare Waste management is an environmental responsibility for the medical waste generators and adequate measures are to be taken to manage the hazardous waste from point of generation to the final disposal stage.

On the other hand, from business point of view, the management and disposal of the healthcare waste is a lucrative way of business for the entrepreneurs in this field.

We are here to provide you with the most appropriate solutions in the field of healthcare waste management form A to Z.

**It is easy to manage the medical waste if you go with the experts.**

**And a lucrative business with very short ROI period.**

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## *LIQUID MEDICAL WASTE DESENFECTING AND NEUTROLIZING*

***Liquid discharge from laboratory equipment may be contaminated and infectious at relatively low to medium levels.***


***SPECIALLY DESIGNED EQUIPMENT WOULD DISINFECTAND PURIFY THESE KIND IF LIQUID WASTES.***

**BASIC FEATURES,**

Minimizes human-induced errors.

Has high safety standards.

Has the same disinf ection efficiency at every discharge (Disinfection capacity can be increased up to 99.99%).

Makes automatic pH adjustment

Decharges the wastes into the sewerage system after processing them as specified in the regulations.

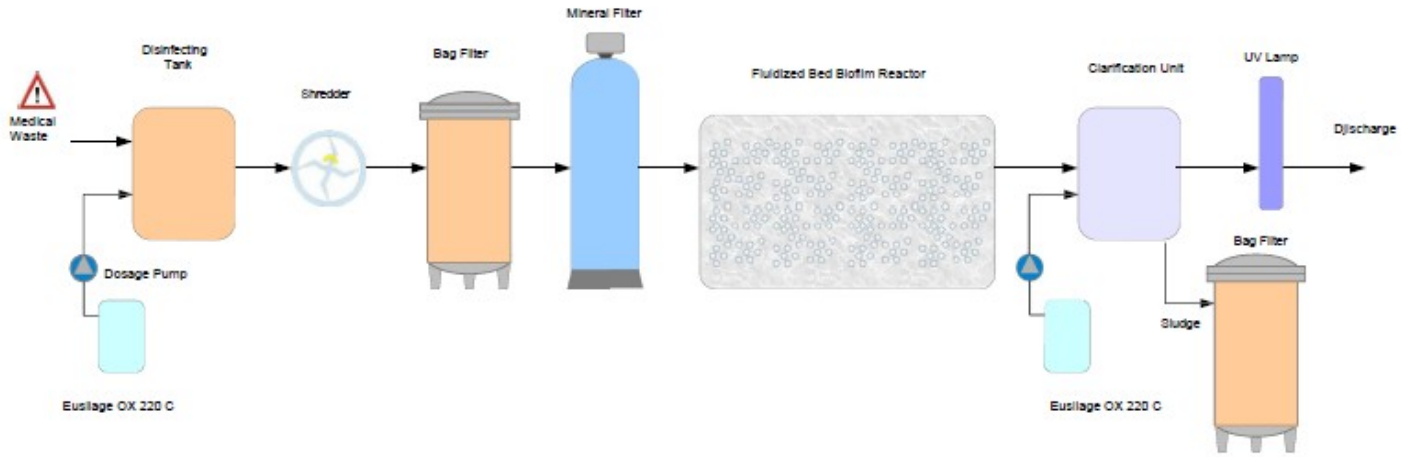
Does not require a comprehensive infrastructure and/or modification to install and operate.

Can be operated in a lab provided that adequate ventilation system exists.

Could be an economical solution due to low investment and operational costs.

## *CHEMICALLY POLLUTED AND INFECTIOUS LIQUID/SLUDGE WASTE DISINFECTING AND PURIFICATION SYSTEM*

*A spe-*




HAZARDOUS (INFECTED AND CHEMICALLY POLLUTED) LIQUID WASTE DISINFECTING AND PURIFICATION SYSTEM

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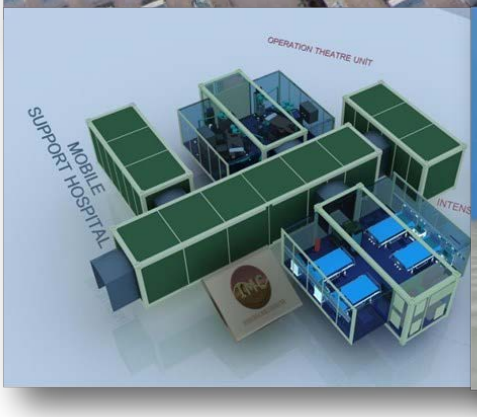
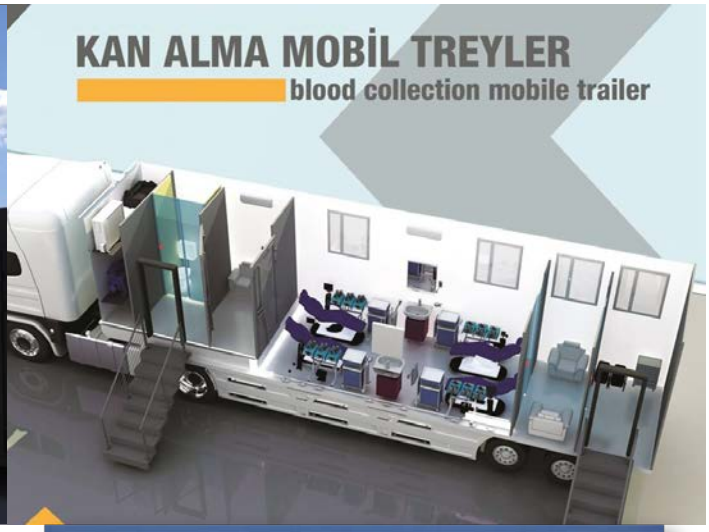
# PRF-FABRICATED MODALIIES

**WE CAN DESIGN AND OFFER MOVABLE, STATIONARY OR FIELD KIND OF CLINICS AND HOSPITALS, COMMODITY ACCOMODATION , CAMPS AND SIMILAR SOLUTIONS SUIT TO SPECIFIC NEEDS**

**TURN-KEY WITH THE MEDICAL AND AUXILLARY EQUIPMENT OR ONLY THE MUODULES CAN BE DELIVERED**

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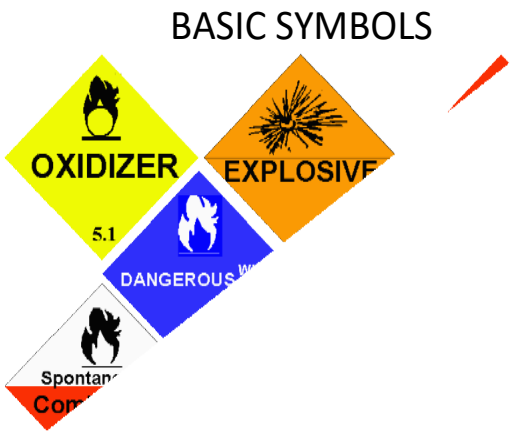
# HAZARDOUS WASTE MANAGEMENT AND DISPOSAL TECHNOLOGIES

According to the EPA, hazardous waste is any solid, gaseous, liquid or sludge waste that is potentially harmful to public health and the environment.

All of these substances pose significant health risks to human, animals and the environment.
Most industrial plants and manufacturing concerns generate hazardous waste that requires the use of proper disposal techniques.
Correctly disposing of the hazardous waste is crucial to maintaining national and global health




- **Examples of industrial hazardous waste that requir special disposal processes include:**

- Spent solvent wastes
- Wastes from wood preserving
- Petroleum refinery wastewater treatment sludge
- Multisource leachate
- Dioxin bearing wastes
- Inorganic pigment & organic chemica
- Explosives manufacturing input
- Coking
- Iron & steel production
- Pesticides manufa
- Primary alum

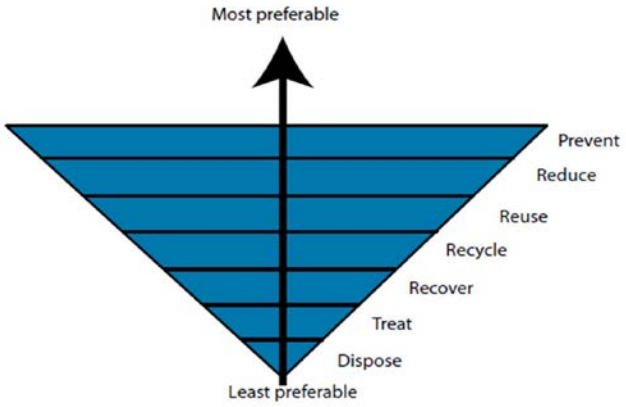
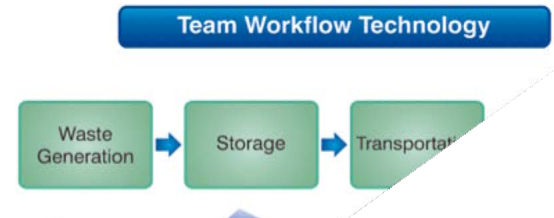



Figure 6.1 The waste-management hierarchy




## MANAGEMENT OF HAZARDOUS WASTE

**Starts from Point of Generation**

**Ends up with Re-Use, Re-Cycling, Disposal**

**AT THE POINT OF GENERATION**

**REDUCE**

**REUSE**

**RECYCLE**

**is tried as much as possible in a safe maner**

**Analyzing, Sorting, Labeling, Containerization**

**Inventory and Record Keeping,**

**Temporary storage**

**Spil Control**

**Tranfer to permanet disposal-recycling**

**Reporting to the Authorities**

## Storing Hazardous Waste

**Hazardous waste is stored for a temporary period before it is treated, disposed or stored elsewhere. Hazardous waste is stored in containers, tanks, waste piles, containment buildings and surface impoundments.**

**A container is a portable device in which the hazardous waste can be stored, treated, disposed or otherwise handled.( Example: 55-gallon drum.)**

**A waste pile is an open, uncontained waste pile used for storing or treating waste. The waste is placed on top of a double liner system to prevent groundwater contamination from the waste leachate.**

**Tanks are stationary devices made of non-earthen materials like steel, glass or concrete and are used to treat or store hazardous waste.**

**Containment buildings are self supported, completely enclosed structures used to treat or store non-containerized hazardous waste.**

**Surface impoundments are man-made excavations such as a lagoon or storage pit lined by synthetic liners.**



## EPA identifies 4 ways to recycle hazardous waste:

Use constituting disposal
Reclamation
Direct use and reuse
Combustion for energy recovery


**Use constituting disposal**
Hazardous waste can be recycled by being applied elsewhere, for example used as fertilizer. Some wastes can be incorporated into another product, for example, used to make asphalt. The recycling of these hazardous wastes in these ways is known as use constituting disposal.

**Reclamation**
By contrast, reclamation involves processing a waste to recover usable component. An example of reclamation would be recovering mercury from broken thermometers. Spent (used) solvents, such as acetone, can be distilled to make them pure again. Metals, such as lead, may also be reclaimed from other materials, such as paint and lead-acid batteries.

**Direct use or reuse**
Direct use or reuse involves using a waste directly as an ingredient to make a product or a substitute for a product. For example, latex paint can be mixed with ash to make cement mix for concrete.

**Combustion for Energy Recovery**
Combustion for energy recovery is the use of wastes directly as a fuel or as an ingredient to produce heat. For example, oily wastes can be used to generate steam or electricity.

## Past Disposal Practice

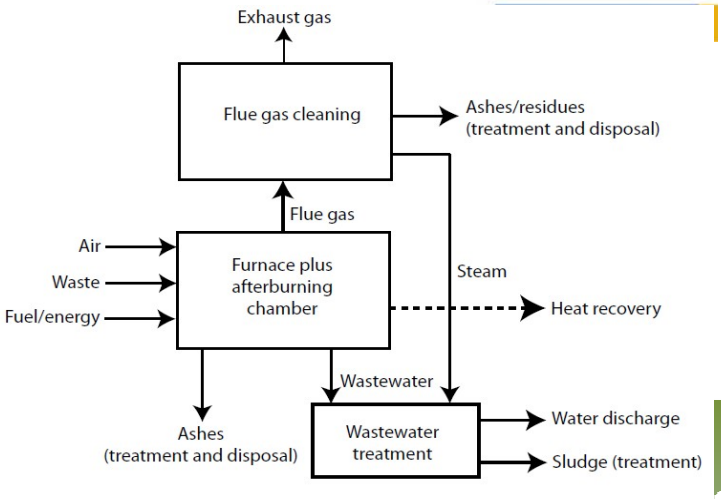
- Soil Spreading
- Pits/Ponds/Lagoons
- Sanitary Landfills
- Drum Storage Areas
- Underground Storage Tanks
- Midnight Dumping
- Uncontrolled Incineration

**Disposal techniques include, but are not limited to**

**Incineration.** **This process has undergone extensive tec fully comply with regulatory standards.**

**Landfill disposal.** **With underground b environmentally viable, as hazardous sub the ground. DOT certified waste man and store your waste in regulator to the landfill site for disposa**

**Concrete mixin**
**management op material.**

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# SCRAP PLASTIC and TIRE RECYCLING

**END OF LIFE TIRES AND USED PLASTICS ARE NEVER EVER WASTE AND NOT TO BE DISPOSED OF TO LANDFILL BUT ARE CONSIDERED TO BE VALUABLE SOURCES FOR RECYCLING AND ARE TO BE TREATED ADEQUATELY TO GET BENEFIT OUT OF THEM.**

**THE BEST METHOD FOR REYCLING OF USED PLASTICS IS SEGREGATING ON SOURCE**

**ONCE PLASTICS ARE MIXED UP WITH OTHER KINDS OF WASTE STREAMS, IT BECOMES MORE COMPLICATED AND COSTLY TO SEGREGATE THE PLASTICS FROM OTHER MATERIALS AND FURTHER TO SEPERATE THEM INTO SORTS**

**WE CAN PROVIDE OUR CLIENTS WITH THE ENTIRE RANGE FOR RECYCLING EQUIPMENT FOR PRODUCTION OF PLASTIC GRANULES**
**A TYPICAL " USED PLASTICS " PHYSICAL RECYCLING SYSTEM IS SHOWN BELOW WHICH WE CAN DELIVER MEETING THE NEEDS**

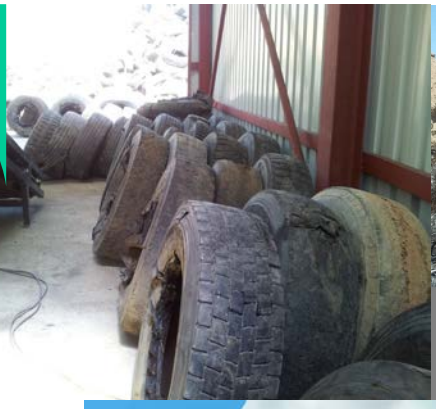
**OR WE CAN ALSO DELIVER PYROLYSIS SYSTEMS TO GENERATE OIL AND POWER FROM USED PLASTICS AS DESCRIBED BELOW IN THE PYROLYSIS OF " END OF LIFE TIRES "**

# END OF LIFE TYRES CONSISTS OF VALUABLE MATERIALS AS STEEL, RUBBER AND CARBON BLACK WHICH ARE TO BE RECOVERED BY PHYSICAL AND CHEMICAL WAYS.

Composition by weight of tires

| Material | Car/utility% | Truck/lorry% |
|---|---|---|
| Rubber/elastomers[a] | ±48 | ±45 |
| Carbon black or silica[b] | ±22 | ±22 |
| Metal | ±15 | ±25 |
| Textile | ±5 | - |
| Zinc oxide | ±1 | ±2 |
| Sulphur | ±1 | ±1 |
| Additives | ±8 | ±5 |

*The rubber compounds, metals and textiles are recovered through material recycling*



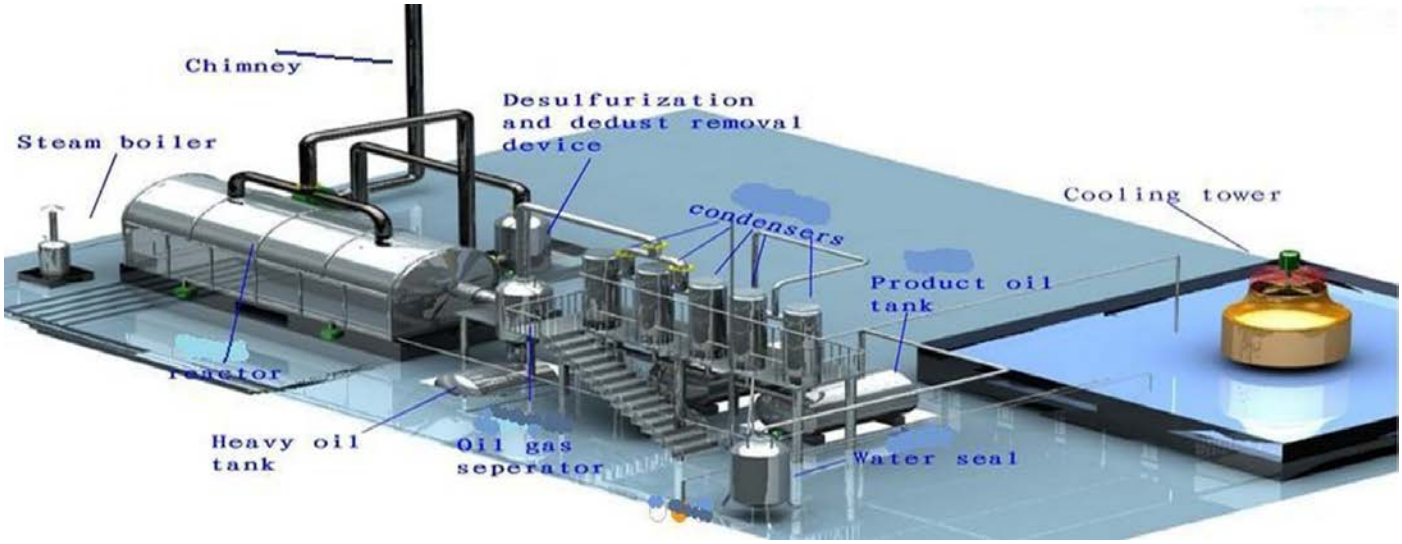
**Further to the conventionel physical nature recycling technologies, New trend in TIRE RECYCLING is PYROLYSIS**

**As being the most innovative and environmental friendly method with zero emision zero effluent zero waste**


## Outcome

12-15% Steel Wire

45-52% Diesel Oil *crude oil, after distillation gasoline and/or diesel oil*




**WE CAN DESIGN AND DELIVER THE MOST APPROPRIATE AND COMPETITIVE SCRAP TIRE AND PLASTICS PYROLYSIS SYSTEMS FOR ANY NEEDS FOR THE RECOVERY OF CRUDE OIL, REFINED OIL, AND POWER ( CARBON BLACK AND STEEEL IN TIRES PYROLYSIS )**

*METAN Green Health & Environmental Engineering & Consultancy Services*

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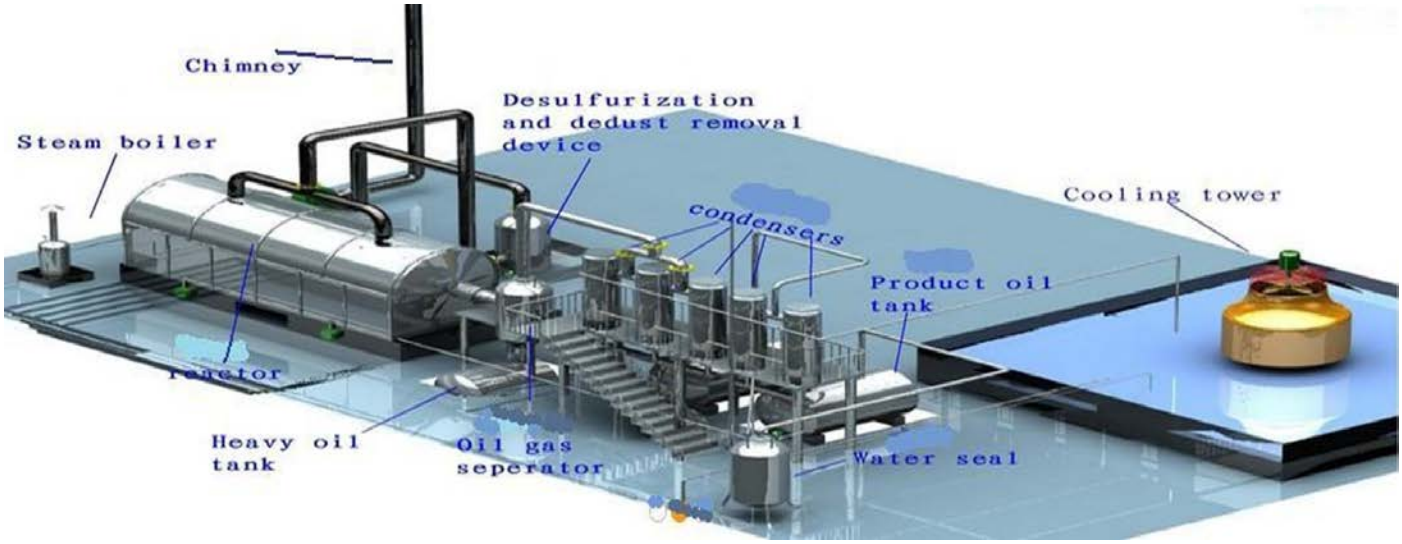


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