Magnetic Pyrolysis Furnace
CIFJ-1

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1. General situation of CIFJ-1

1.1 Appearance

<table>
<thead>
<tr>
<th>Essential data</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Volume of processing storage</td>
<td>1.5m³</td>
</tr>
<tr>
<td>Weight</td>
<td>2000kg</td>
</tr>
<tr>
<td>Volume</td>
<td>2m<em>1.4m</em>1.5m</td>
</tr>
<tr>
<td>Floor space</td>
<td>5m²</td>
</tr>
<tr>
<td>Rated power</td>
<td>10kw</td>
</tr>
<tr>
<td>Duration of ignition</td>
<td>15min</td>
</tr>
<tr>
<td>Eliminate smoke temperature at the facility top</td>
<td>800°C</td>
</tr>
<tr>
<td>Processing period</td>
<td>6h–8h</td>
</tr>
<tr>
<td>Temperature in processing storage</td>
<td>200–400°C</td>
</tr>
<tr>
<td>Condition of Feed intake ash</td>
<td>manual operation</td>
</tr>
<tr>
<td>Operational process</td>
<td>automatic control</td>
</tr>
</tbody>
</table>
1.2 Combination of appliance part

1. Start for input
2. Appliance part for input
3. Facility
4. Treatment chamber
5. Outlet for ash
6. Magnetic oxygen input port and cleaning hole when maintenance of facility
7. Exhaust hole after smoke abatement
8. Facility for deodorization and smoke abatement
9. Water tank and valve
10. Magnetic oxygen generation tank
1.3 Feed intake

This facility is a special furnace for Magnetization pyrolysis of all the organic waste, and it's different from the conventional burning, because it doesn't need Fuel. The source of energy is only used in ignition and exhaust smoke abatement.
1.4 Exhaust smoke abatement

It can improve the operation efficiency when the electric energy is used for deodorization and smoke abatement.

The magnetization pyrolysis process of this facility is that a small amount of oxygen molecules, which is ionized in oxygen plasma state, will get into the facility. And then, there is a reduction of decomposition of all the substances by oxygen.
2. Inner structure and process of CIFJ-1

1. Forced air inlet;
2. Oil and water set channel;
3. Furnace grill;
4. Center of the heating heat source;
5. Magnetic air;
6. Formation of plasma;
7. React with oxygen, become acute, become a powerful negative ions, have an intense thermal decomposition reaction on the organic carbon molecule interface.
3. Principle of magnetic pyrolysis

Organic waste is the inevitable product in modern society, with the social and economic development, wastes year-on-year increase. In Japan since 2000, Generated garbage has nearly 200 billion tons every year, and Organic waste weights nearly one hundred billion tons. Traditional processing method of garbage is landfill and incineration. Incineration has the problems in taking too much energy source and off-gas may have secondary pollution. Organic matter combustion produces acid gases, such as HCl、HF、NOx, Poisonous chlorine polymer compounds and so on, and these generally referred to as the dioxin-like substances. A few years ago, based on dry sliding technology, in dry sneak, scientists force to enter a certain amount of powerful magnetization air.

By using magnetization airflow (The automatic control requirements) and with the steady temperature (200~400°C), it formed the negative pressure state of ionization space in the enclosed storehouse, and then, timely adding into a small amount of oxygen makes the combination between the oxygen atoms [O₂] break up. [O₂] becomes lively and unstable and highly reactive oxygen atoms. Under the condition of closed magnetic heat effect, electron accelerates from the separation of atoms. Negatively charged electrons and positively charged nucleus constantly interact with each other and form a plasma state. The plasma state oxygen with powerful energy can start quickly and will completely oxidized organic matter from the surface into scrawled oxide element to the element state, and the treated organic matter was indirect magnetization, which greatly improve the pyrolysis. It gives off heat in the process. Electronic, by separation of acceleration, infiltrate into the treated organic molecular chain, and by taking organic hydrocarbon structure of hydrogen or by infiltrating into carbon molecules, tore the carbon molecules chain, then spreads rapidly around, it forms pyrolysis field with great energy, makes the organic matter completely carbide, completes free-pollution disposal of organic hazardous substances.
4. Range of magnetizing thermo labile things

Theoretically all kinds of organic matters including plastic products, paper, plant straw, Chemical compounds, rubber products (except wheel hubs), animal bodies and animal excrements can be thoroughly thermal decomposed into ashes, the storage of ashes are $2\%$-$2\%$ of original weight and volume.
Inorganic matters, metal, liquid and fluid container etc. cannot be thermal decomposed.
Fresh water animals and plants whose moisture contents are more than $35\%$, kitchen waste etc. cannot be thermal decomposed until they are combined with other organics containing less water. If object’s moisture content is too high, it can be desiccated first.
When the combination of organics and inorganics are pyrogenic decomposed, the organic parts turn to ashes and inorganics including metal and glasses can be sifted out and reutilized. Taking electric appliance as an example, after the pyrolysis of cell phones, computers batteries, rubber tires etc., organic parts turn to dust and ashes while the metal wire and skin and fiberglass still remain.
5. Sample pictures

The picture below is closing the door of supplementary batch charging

The picture below is objects to be processed

The picture above is the remained metal and inorganic shelf left by the cooling part of an air-conditioner after magnetizing pyrolysis.
6. Samples of ashes after magnetizing pyrolysis

Lower left figure is ashes, which can be absorbed by magnet, proving that they have been magnetized.

Practice certifies that these ashes are excellent for improving soil.
7. By-product of this equipment

Derived Liquid

Sample of derived liquid

During the operation, the component of derived liquid from the oil-water concentration is in accord with the liquid generated by dry distillation of bamboo and woods. It can be used as herbicide after experiment.

Coal tar

The coal tar and derived liquid are generated at the same time in the device, and the sample collection is in solid state. After desiccation it shows strong burning capacity, which means it can be used as profitable fuel.

Waste-heat utilization hot water

One can set hot water pipe in the device and connect it to water tank outside if necessary.

This system can generate 3 liters hot water per minute, which is 4-4.3 tons hot water (40-50 degree centigrade) if running for the whole day.

Economic benefit could be made if we sell this hot water.