Proposal

To Build:

Tire Shredding Unit,

Tire Pyrolysis Plant Producing:
Tire Oil, Black Carbon and Steel
&
Tire Oil Distillation Unit
&
Storage tanks
Summary

Introduction

Ambient Tribal Energy, ATE will build facilities that process used tires to convert them into Tire Oil, fuel Oil, Black Carbon and Steel.

The proposed capacity of the plant is 24 Tons of used tire per day.

Scope of Work

Upon award of the contract by the Tribe, ATE will furnish a turnkey job for the plant facilities. Tribe own the land with the utilities required to start the project. Permits, Tires and Plastic pickup and delivery, and land filling or other disposal of the residue from the facility to be done by the Owner (a joint venture between ATE & Tribe) ATE will be responsible for the design, procurement, contracting, commissioning, training of the Owner furnished personnel and initial operation of the plant. First year maintenance and continuing training of the Owner furnished personnel can be furnished under a separate contract. The operation will be under a joint venture agreement with ATE 49% and Tribe 51%. This new company will operate the plant as a Joint-Venture.

Project Timeline

Following land acquisition, obtaining all permits, contacting with all local authorities, and award of contract, the following timeline is to be expected:

- Site assessment and engineering 1-2 months (according to the specific conditions encountered)
- Procurement 1-2 months (according to the specific units required)
- Installation of the units 3-6 months (according to conditions on the ground)
- Commissioning 1-2 months (according to the type of units specified)

After production of oil, black carbon and steel in the commissioning phase, there will be a 1-month operational phase with ATE technicians on location to handle training and operational details that may arise. Total time from award of contract to completed system is 6-12 months depending upon conditions encountered on the ground.

Ambient Tribal Energy (ATE) proposes to build a facility to process approximately 24 Tons of used tires per day and produce oil, black carbon, steel, tire oil distillation unit and storage tank

The total estimated cost is $22,500,000 (twenty two & half million Dollars).
Pyrolysis and gasification – how they work:

Like incineration, pyrolysis, gasification and plasma technologies are thermal processes that use high temperatures to break down waste. The main difference is that they use less oxygen than traditional mass-burn incineration. These technologies are sometimes known as Advanced Thermal Technologies or Alternative Conversion Technologies. They typically rely on carbon-based waste such as paper, petroleum-based wastes like plastics, and organic materials such as food scraps. Pyrolysis offers a flexible and attractive way of converting solid biomass into an easily stored and transportable fuel, which can be successfully used for the production of heat, power and chemicals. In pyrolysis, biomass, here used Tires or plastic is subjected to high temperatures in the absence of oxygen resulting in the production of pyrolysis oil (or bio-oil), char or syngas which can then be used to generate electricity. The process transforms the biomass into high quality fuel without creating ash or energy directly. Pyrolysis oil can offer major advantages over solid biomass and gasification due to the ease of handling, storage and combustion in an existing power station when special start-up procedures are not necessary.

How do Pyrolysis and Gasification Differ?

Both gasification is the overall outcome term for processes, which involve pyrolysis to turn wastes into energy rich fuels by heating the waste under controlled conditions. Whereas incineration fully converts the input waste into energy and ash, these processes deliberately limit the conversion so that combustion does not take place directly. Instead, they convert the waste into valuable intermediate materials that can be further processed for the purpose of materials recycling and/or energy recovery:

PYROLYSIS:
Thermal degradation of waste in the absence of air to produce char, pyrolysis oil and syngas, e.g. the Conversion of wood to charcoal

GASIFICATION:
Breakdown of hydrocarbons into a syngas by carefully controlling the amount of oxygen present, eg. the conversion of coal into town gas.

Explanation of Terms:

Char is created when an organic material—usually wood—is burned in a smothered environment.

Burning wood in the absence of oxygen makes charcoal, and lump charcoal is the product of that. One of the most important applications of wood charcoal is as a component of gunpowder. Charcoal is a black substance that resembles coal and is used as a source of fuel. It is generally made from wood that has been burnt, or charred, while being deprived of oxygen so that what's left is an impure carbon residue.
There is a diagram, which was published by Bridgwater, which shows the nature of the difference between incineration and gasification and pyrolysis very clearly, and we have reproduced it below to show the differences, not only between gasification and incineration but with other combustion type processes.

![Diagram of Thermal conversion processes and products](image_url)

Gasification information from [http://gasification4energy.com](http://gasification4energy.com)
Tire Shredding Unit:

Chipped and shredded tires are used as Tire Derived Fuel (TDF); once again not recycling, but TDF helps to eliminate tires from our waste stream and produces a fuel source.
List of equipment:

Shredder System Part Photo (Capacity of 1 Ton/hour)
LS-1200 Puller Debeader LF-1200 Tire Cutter
LP-800 Shredder GP-1000 Secondary Crusher
PD-N Conveyor Material Distributor
Recycling Capacity per day: 24 Tons Scrap Tire pieces per day
Note: The feed in raw material size for this system should be less than 5mm.

ZDS-3500 Vibration Sieve CX-2000 Magnetic Separator
Capacity: 1 Ton/Hour
Power: 238.5 Kw
Workers: 2-3 labor workers

Shredder System Equipment List

<table>
<thead>
<tr>
<th>R.</th>
<th>Power(KW)</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SW-1200 Debeader</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>LF-1200 Rough Shredder</td>
<td>30</td>
</tr>
<tr>
<td>3</td>
<td>LP-800 Shredder</td>
<td>30</td>
</tr>
<tr>
<td>4</td>
<td>PD-1 PVC Conveyor</td>
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<tr>
<td>5</td>
<td>PD-2 PVC Conveyor</td>
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<tr>
<td>6</td>
<td>MD-01 Material Distributors</td>
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<tr>
<td>7</td>
<td>ZDS-3500 Vibration Sieve</td>
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<tr>
<td>8</td>
<td>CX-2000 Magnetic metal separator</td>
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<tr>
<td>9</td>
<td>GP-1000 Secondary Crusher</td>
<td>150</td>
</tr>
<tr>
<td>10</td>
<td>Dust Collectors</td>
<td>01</td>
</tr>
<tr>
<td>11</td>
<td>XQ-150 Fiber Separator</td>
<td>2.2</td>
</tr>
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</table>
10000Ton/Year Rubber Fine powder/Rubber Granule Production Line

LF-1200 Tire Cutter

LS-1200 Puller Debeader

GP-1000 Secondary Crusher
Tire Pyrolysis Plant Producing “Tire Oil”:

The semi-continuous pyrolysis system is to increase functions of shredding system, automatic feeding, automatic slag on the basis of basic style pyrolysis oil system. It can save the heating material and save the operation time for each batch. Highly increased the batch pyrolysis efficiency. Capacity 24Tons/day.

The pyrolysis method for recycling of used tires is an innovation technique that uses a special mechanism to heat the used tires in a closed stove to melt down the tire into the materials that they were made of.
Layout:

Function and Application:

Equipment List:

1 CP-24-001 Burner  set 1
2 CP-24-002 Reactor Casing Φ2800X6000  set 1
3 CP-24-003 Rotation Reactor  set 1
4 CP-24-004 Control Box  set 1
5 CP-24-005 Catalyst Tower  set 1
6 CP-24-006 Heavy Oil tank  set 1
7 CP-24-007 Condenser for oil  set 1
8 CP-24-008 Oil Storage Tank  set 4
9 CP-24-009 Hydro Seal  set 1
10 CP-24-010 Water Pool  set 1
11 CP-24-011 Cooling Tower  set 1
12 CP-24-012 Condenser for flue  set 1
13 CP-24-013 Draft Fan 7.5kw  set 1
14 CP-24-014 Paul Ring dust remover 3kw  set 1
15 CP-24-015 Waste Gas burner chamber  set 1
16 CP-24-016 Reducer 5.5Kw 1
17 CP-24-017 Carbon black auto-discharger 1
18 CP-24-018 Plat Form 1
19 CP-24-019 Carbon black storage tank 1
20 CP-24-020 Feed-in Conveyor 1

Specification:

24 Tons Tire pieces or plastic per day (with the size of 5mmX5mm)
Finish Product Rate: 40% oil, 20% steel wire, 30% carbon black, 10% Gas
Reactor Size: 2.8X6Meter
Reactor Weight: 10Tons. System Equipment Total Weight: 30Tons
Power Consumption: Maximum 70Kw/Hour
Water Consumption: 60m3/hour
Loading Container: 3X40HQ+1x40FR
Plant Area Space requirement: Minimum 700 M2, 35M(L) X20M (W) X8M (H)
Workers requirement: 3-4 workers per shift
Installation Time: 35 Days. Workers training time: 10 Days.

**CD-2000 Distillation System**

<table>
<thead>
<tr>
<th></th>
<th>CD2000-10</th>
<th>CD2000-50</th>
<th>CD2000-80</th>
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<tbody>
<tr>
<td>Capacity (Day)</td>
<td>10Ton</td>
<td>50Ton</td>
<td>80Ton</td>
</tr>
<tr>
<td>Pure Oil Ratio</td>
<td>80%</td>
<td>80%</td>
<td>80%</td>
</tr>
<tr>
<td>Catalyst</td>
<td>No</td>
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</table>
Function and Application:
The CD2000 distillation system is specially designed for refining the black tire oil from the tire pyrolysis system, which can remove the black color from the tire oil, and make pure oil from the crude tire oil. This distillation system can also work with waste oil.

System Part List
1. Re-boiler
2. Fractionating tower
3. Pressure release device
4. Central electric control system
5. Condensation system
6. Fuel gas heating system (exhaust treatment system)
7. Air heater
8. Flue dust collecting system
9. Oil tanks.

Features:
1. The complete set of unit produces no smoke and smell with favourable effects of environmental protection.
2. The pressure release device operates through water circulation, which greatly improves the security of the system.
3. The release of pressure during the production dramatically increases the output within certain time and meanwhile improves the quality of oil.
4. The heating system adopts hot air heating technology, which improves the safety performance of production and heating efficiency.
5. High efficiency fuel gas heating system. When the heated gas reaches 150℃ during refining, a large amount of gas will be generated: including methane to butane, which cannot be liquefied under normal temperature. A large quantity of energy will be generated after these gases fully burn within a specially designed gas burner. Then energy will be saved greatly.
6. Flue dust collecting system; Equipped with water hammer cyclone dust collecting room, which makes sure the discharged flue gas reach national emission standard.

Environmental Protection
Treatment of the three wastes in the course of production
- 1. Exhaust gas
  - By means of full combustion in water seal and gas burner of safety devices, the pollution of exhaust gas shall be eliminated and a large amount of fuel shall be saved.
- 2. Waste liquid
  - Faintly acid waste water shall produce in the course of treatment of oil products (about 50 kg waste water each ton oil, small volume and tractable); after neutralization by adding faintly alkaline liquor, the neutral waste water shall be harmless with three-grade filtration and be discharged into special evaporation processor to vapor (heat source is the flue residual heat of main processor).
- 3. Waste solid
  - The waste plastic will have some solid residues, which probably accounts for 5% to 10% of the weight of waste plastic, after being catalyzed and
thermally cracked. The main component of these residues is asphalt and it can be sold as the raw material of producing asphalt in the market.

Optional Future Expansion of the plant, NOT included in this offer

This is the most advanced batch style rotation reactor tires pyrolysis technology on the world market, which is feasible, eco-friendly and profitable for transforming billions of discarded tires/plastic into commercial-grade oil, steel and carbon black.

Financial estimates:

Tire:
The Tipping Fee for Tire are in average $3 per tire.
If we assume that 1 Ton of tire is about 85 Tire, then in average the plant will have an Income of about 24 Ton x 365 Day x 85 tire x $3 = $2,233,800 +

Products Income:
In average from Tire 40% Tire Oil, 45% Black Carbon and 15% Steel is produced.
\{1 Ton fuel=1000/0.845(density)=1183 Liter x 0.2642(Gallon per Liter)= 312.55 Gallon\}
Tire Oil per year: 24 x 365 Day x 40% x 312.55 = 1,095,175 Gallon

Tire Oil Income: 1,095,175 Gallon x $2.75 per Gallon = $3,011,731 +
Black Carbon Income: 24 Ton x 365 Day x 45% x $700 per Ton = $2,759,400 +
Steel Income: 24 Ton x 365 Day x 15% x $260 per Ton = $341,640 +

Total Annual Project Income: $2,233,800 + $3,011,731 + $2,759,400 + $341,640 = $8,346,571

Total Annual Operation Costs:
If assuming approximately two million Dollars annual operation cost.

Return Of Investment (ROI) will be less than three years.