EcoCarbon Innovation (ECI) builds, owns and operates regional “scrap tire to high value specialty chemicals” manufacturing plants across North America and South America.

ECI manufactures basic commodity products (recycled carbon and oil) from scrap tires with a commercially-proven, patented technology. This is a much higher value use of scrap tires in comparison to current uses such as tire derived aggregates, crumb rubber and most particularly air polluting tire-derived fuel.

ECI then converts the tire carbon through a patented technology into a high value mercury sorbent for industrial flue gas, EcoPAC-S™, and the tire oil into a high value renewable oilfield chemical, EcoSOLV.
Triple Green™ Solutions

ECI management has worked diligently to produce higher value applications for the by-products of scrap tire pyrolysis.

EcoPAC-S and EcoSOLV are not only high-value but also Triple Green as they are:
- manufactured with recycled, subsidized, and renewable feedstock;
- manufactured sustainably using recycled syngas (produced by the recycling process); and,
- manufactured in an environmentally friendly manner and have a greenhouse gas footprint much smaller than ECI’s competitors.

The Most Efficient Tire Recycling Solution

ECI’s conversion of tires is highly efficient as it employs a patented and automated 24/7 continuous flow, close looped recycling process which is currently in commercial use by a major ECI stakeholder.

ECI’s patented upgrade process converts recycled tire carbon into powdered activated carbon, EcoPAC-S, for use as a mercury sorbent for EPA regulated industrial emissions treatment by power generating units, cement manufacturing facilities and industrial boilers.

While recycled tire oil can be sold as a fuel oil, ECI will upgrade it to EcoSOLV an excellent solution for down hole enhanced oil recovery which is hindered by paraffin and/or asphaltene. EcoSOLV raises the API gravity while reducing the pour point, the viscosity and density of heavy oils for improved pipeline transportation; and, re-liquefying, or remediating, petroleum based sludge, and sediments.
Continuous Process Waste Pyrolysis

Pyrolysis is the chemical decomposition of organic matter, in a totally oxygen free environment, by indirect heating. Pyrolysis of waste tires is undertaken to extract renewable and high value by-products in an environmentally friendly manner.

Historically waste tire pyrolysis has been conducted using a batch method whereby quantities of shredded tires are placed in a sealed vessel. The vessel has a vacuum attached to remove any oxygen and it is heated to approximately 400~700°C. At this temperature pyrolysis occurs. After a period of time, once the vessel has cooled, the tire shred has been converted to tire carbon, oil and steel. This batch pyrolysis method, while effective, is not economically viable.

At the heart of ECI’s business is the Advanced Thermal Carbonization System® and the Advanced Thermal Carbonization Reactor® technology developed by a major ECI stakeholder. ECI owns the North America and South America patents to this technology.

The Advanced Thermal Carbonization System® is a solution where shredded tires are continually fed to a system that produces tire carbon, oil and syngas 24/7. This innovative design eliminates heat-up, cool down, and downtimes and substantially improves throughput and plant economics.
Advantages of the Advanced Thermal Carbonation System®

- Unique, patented waste tire continuous carbonization system
- Feed rate of 10 tonnes of de-wired scrap tires per day per line (modular and completely scalable in 10 tonne increments)
- Feed rates and temperatures are adjustable to allow different yields of various by-products
- Superior production efficiency with virtually zero wastage of de-wired scrap tire feedstock

Over A Decade of Experience and Enhancements Are Incorporated into the Advanced Thermal Carbonisation Reactor®

ECI’s technology partners have invested well over a decade from lab testing to small scale continuous flow prototypes that have culminated in the current commercial facility.
ECI Plant Inputs and By-Products

Advanced Thermal Carbonization

- Natural Rubber
- Synthetic Rubber
- Carbon Black
- Sulfur
- Hydrocarbon Fillers/Accelerators
- Series 6

25% 25% 25% 5% 5%

Product Applications

- **SynGas**: for fueling the plant reactors, and a turbine that generates excess Green Electricity.

- **Steel Wire**: for sales to the steel metal/iron industry.

- **Tire Carbon**: the primary input for ECI’s EcoPAC-S, ideal because of its high sulfur content.

- **Recovered Oil**: for marine use, industrial boilers, petrochemicals industry, blending agent, and importantly as the primary input for ECI’s EcoSOLV.
EcoPAC-S®

EcoPAC-S is a patented mercury sorbent (powdered activated carbon) for use by coal fired power producers, cement plants and operators of industrial boilers, in their activated carbon injection systems, to meet the Environmental Protection Agency’s new Mercury and Air Toxic Standards (“MATS”).

Developed by ECI, in part with funding and assistance from the Department of Energy, the National Science Foundation, and the Environmental Protection Agency, EcoPAC-S is the only powdered activated carbon that is produced using renewable energy and recycled carbon feedstock.

EcoPAC-S – Sulfur Enriched by Design for Greater Performance

EcoPAC-S benefits from the sulfur used in the vulcanization of tire rubber in the production of tires. When recycled through pyrolysis this sulfur is uniformly distributed throughout the tire carbon’s pore structure. This sulfur results in a sorbent that possesses high mercury removal efficiency, due to its extensive surface area, excellent pore structure and the formation of mercury-sulfur species on the carbon surface when the native mercury is captured by the injected EcoPAC-S.

EcoSOLV™

ECI is developing a high value oil-field chemical from it’s recycled oil. While tire oil can be sold as a recycled fuel oil, it has been extensively tested in the following higher-value applications:

- Down hole enhanced oil recovery which restarts or increases production through removal of paraffin and/or asphaltene build up.
- Raising the API gravity while reducing the pour point, the viscosity and density of heavy oils for improved pipeline transportation.
- Re-liquefying, or remediating, petroleum based sludge, sediments and solids, and removing built-up paraffin and asphaltene from flow lines, as well as the bottom of transport vessels.

This product line has been tested in various laboratory and field tests and in several cases has shown a quantum improvement over existing and non-renewable chemicals.
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