



Upcycling Expert

Innovative Pyrolysis

| 環拓科技

TIRE INTO
SUSTAINABILITY

About Enrestec



Established in 2005, Enrestec is a global leader in innovative pyrolysis technology. Transforming waste rubber into valuable resources, we offer a sustainable solution for the rubber industry. Our patented system minimizes environmental impact through a circular economy model that prioritizes low-carbon, recycled materials. Enrestec provides comprehensive environmental solutions tailored to the global community. Our expertise extends to the design, operation, and quality control of organic waste pyrolysis systems. Committed to economic, environmental, and social responsibility, we continuously advance clean pyrolysis technology to eliminate secondary pollution. Enrestec's journey began in 2006 when we established Taiwan's first pyrolysis plant, in response to the global emphasis on renewable energy and CO₂ emission reduction. In 2013, Enrestec built a continuous end-of-life tire pyrolysis resource recovery plant in the Pingtung Technology Industrial Park. With a track record of providing high-quality pyrolysis products and developing

multiple applications for recovered carbon black (rCB), we provide the rubber industry with low-carbon footprint solutions. Today, after major expansion in 2022, our Pingtung facility processes 70,000 tons of waste rubber annually.

In 2018, in alignment with the government's New Southbound Policy, Enrestec successfully exported our pyrolysis system to Thailand. This initiative assisted the Thai government in addressing end-of-life tire disposal challenges, demonstrating our dedication to global sustainability efforts.

Enrestec is your trusted partner for energy-saving and carbon reduction. Recognized by leading rubber manufacturers and tire producers, our unique low-energy, continuous pyrolysis process utilizes a professional quality control lab to ensure the highest standards. As an international provider of both continuous and semi-continuous pyrolysis technology, we offer unmatched expertise and comprehensive solutions.

System Description



Tire Shredding System

The tire shredding system consists of steel wire removal, coarse shredder, fine shredder, and fine wire separator. After removing the steel wires, tires are shredded into patches smaller than 3 cm with less than 1% steel content, making them suitable as raw materials for the pyrolysis system.



Pyrolysis System

Enrestec offers a revolutionary 24/7, continuous tire recycling system. Our efficient design of the pyrolysis system, developed and manufactured in Taiwan, boasts over 90% operational uptime. It transforms end-of-life tires into valuable resources: $28\pm 2\%$ crude carbon black and $38\pm 2\%$ pyrolysis oil.

The secret lies in our main four-stage process: End-of-life tires are automatically fed into a high-temperature, oxygen-limited reactor, where they decompose into solids, liquids, and gasses. The primary solid product, crude carbon black, is separated, cooled, and treated. The gaseous products are condensed into reusable liquid pyrolysis oil, while any remaining combustibles fuel the system, eliminating the need for external energy.

Alternatively, Enrestec's innovative semi-continuous systems also goes beyond tires and tackle various waste materials, such as waste oil pipes, waste oil sludge, and contaminated soil. This innovation solves the inadequacy of continuous pyrolysis systems in handling varying sizes of pyrolysis materials, achieving both waste reduction and carbon reduction goals.



Recovered Carbon Black Processing System

A series of treatments is required for crude carbon black to become eco-friendly rCB. This process system includes magnetic separation, grinding, granulation, and drying procedures. Steel cords or wires in the carbonized material are removed through magnetic separation, then crushed, ground, and granulated into granular recovered carbon black. This refinement process must be strictly managed and analyzed to ensure the highest quality rCB, meeting the strictest environmental standards.



Pyrolysis Oil Processing System

The gaseous reactants from the pyrolysis of tire pieces are cooled and collected by the condensation system, resulting in crude pyrolysis oil. This crude pyrolysis oil contains carbon particles and thus requires further processing through the pyrolysis oil treatment system, which includes precipitation, filtration, and sludge treatment procedures to ensure quality control. The refined pyrolysis oil that meets the control standards becomes the final product.



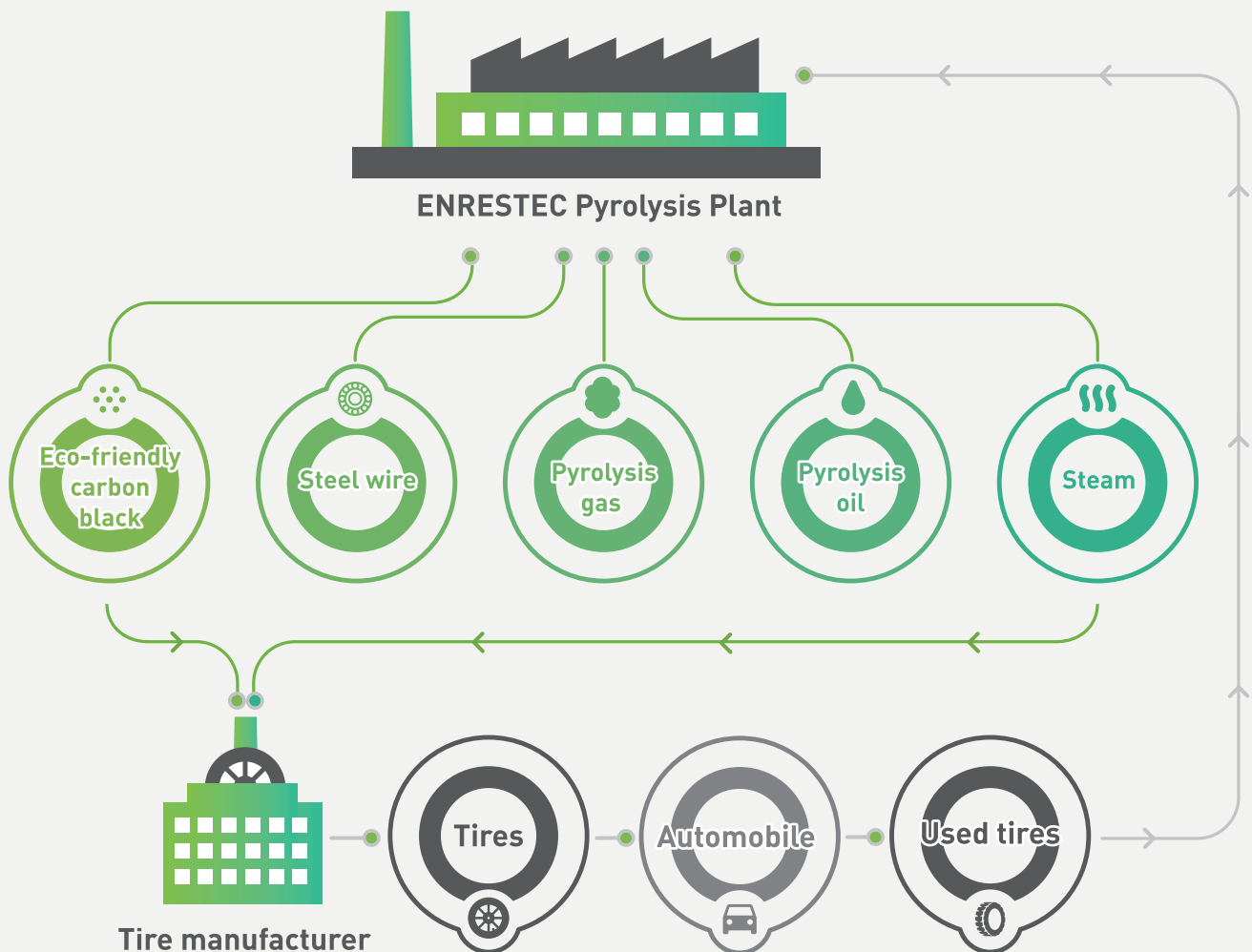
Utility System

The utility system includes a cooling tower, air compressor, pyrolysis oil storage tank, waste heat recovery system, waste water treatment equipment, and waste gas treatment system. The design of the utility system varies based on the requirements of different installation sites. The waste heat recovery device may also use a waste heat recovery boiler to generate steam for use.

Our Business Model

In the realm of the rubber industry, carbon black reigns as the second most crucial raw material, accounting for over 90% of carbon black consumption, according to global statistics. Tire manufacturing, in particular, claims a staggering 67% of this demand. This unwavering reliance on carbon black positions in the tire and rubber product segments serves as the primary driver of the carbon black market. With the anticipated growth in both rubber pyrolysis and carbon black demand, the future holds immense opportunities for carbon black producers.

Enrestec stands at the forefront of this burgeoning industry, spearheading a comprehensive end-of-life tire resource integration system that manages energy consumption and minimizes carbon footprints, creating the greatest economic value with minimal energy resources.



**First pyrolysis plant in Taiwan
to obtain re-refined oil permit**



**Only factory in Taiwan with
ISO 9000/14001/14067/14064**



**rCB that complies with
EU REACH and PAHs regulations**

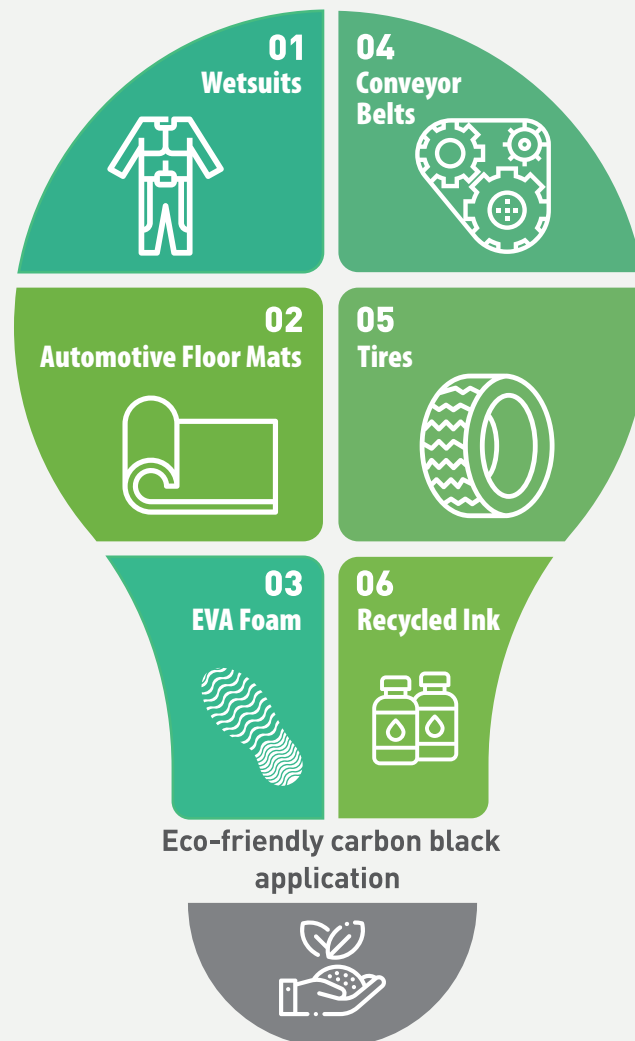
ISCC

**ISCC PL214-15501221
International Sustainability &
Carbon Certification**

Pioneering Environmental Innovation

Enrestec proudly stands at the vanguard of the circular economy. Our unwavering commitment to environmental stewardship extends beyond our domestic endeavors, as we actively expand our global presence and garner international recognition for our pioneering efforts. In addition to the domestic environmental labels and carbon label certifications awarded by the Environmental Protection Administration, Enrestec has also obtained international carbon footprint certifications (ISO 14067/ISO 14064), ISO 14001, and Cradle to Cradle (C2C) certification from Germany's Environmental Protection Agency (EPEA).

High-quality rCB, the sustainable alternative to conventional carbon black, finds widespread applications in both the production of plastic products and industrial rubber. With its proven capabilities, rCB has already been adopted by leading tire manufacturers, offering significant cost savings and a remarkable reduction in carbon footprint. As the rubber industry strives towards carbon neutrality, rCB is poised to become an indispensable tool for reducing the environmental impact of rubber products.



Unlocking the Full Potential with Enrestec





Facebook



Instagram



YouTube

ENRESTEC INC.

www.enrestec.com.tw

📍 940001 No. 25, Yong-Xiang Road, Fang-Liao Township,
Ping-Tung County, Taiwan

☎ +886-8-8663546

🖨 +886-8-8667037

✉ info@enrestec.com.tw