SENS Systemic Environmental Solutions

WASTE TO VALUE · END-OF-LIFE TIRES

# Tread-grade carbon from waste tires.

One proprietary low-temperature process converts end-of-life tires into tread-grade carbon black, high-aromatic oil, and self-generated process gas, with zero waste streams.

systemicenvs.com

THE OPPORTUNITY

# Waste on one side. Carbon demand on the other.

The world cannot absorb the tires it discards. More than 4 billion end-of-life tires sit in stockpiles, with roughly 1.5 billion more added every year. Most are landfilled, stockpiled, or burned as low-grade fuel.

At the same time, demand for industrial carbon keeps climbing. The carbon black bound up in a tire is the same material new tires are built from, and conventional recovery rarely returns it at usable grade.

TiPs treats a scrap tire as what it is: a carbon carrier. It recovers the materials the tire already contains and returns them as saleable product.

**4B+**

End-of-life tires stockpiled globally, with ~1.5 billion more added every year.

**~14M**

Tons of carbon black demanded globally each year, mostly tread-grade N330.

**~4B**

Tons of cement produced each year, a vast market for affordable bulk carbon.

**85-95%**

Aromatic content of the recovered diluent, a high-value solvent and fuel.

**The gap between what a scrap tire contains and what the market pays for carbon is the opportunity.**

ONE PROCESS, THREE PRODUCT FAMILIES

### Carbon

Tread-grade N330 carbon black for tire manufacturing, plus bulk industrial carbon for concrete and steel.

### Fuel oil & diluent

High-aromatic industrial oil and 200+ constituent solvent with established offtake markets.

### Process gas

Captured during processing and used to power the unit. Closed loop, zero external fuel.

THE TECHNOLOGY

# One process. Every carbon feedstock.

The Thermal-static internal Pyrophinic system (TiPs) is a sealed, low-temperature, vacuum-driven thermal mechanical depolymerization process. Instead of burning the tire, it recovers the carbon, oil, and gas, and returns each as a saleable product.

### Feedstock

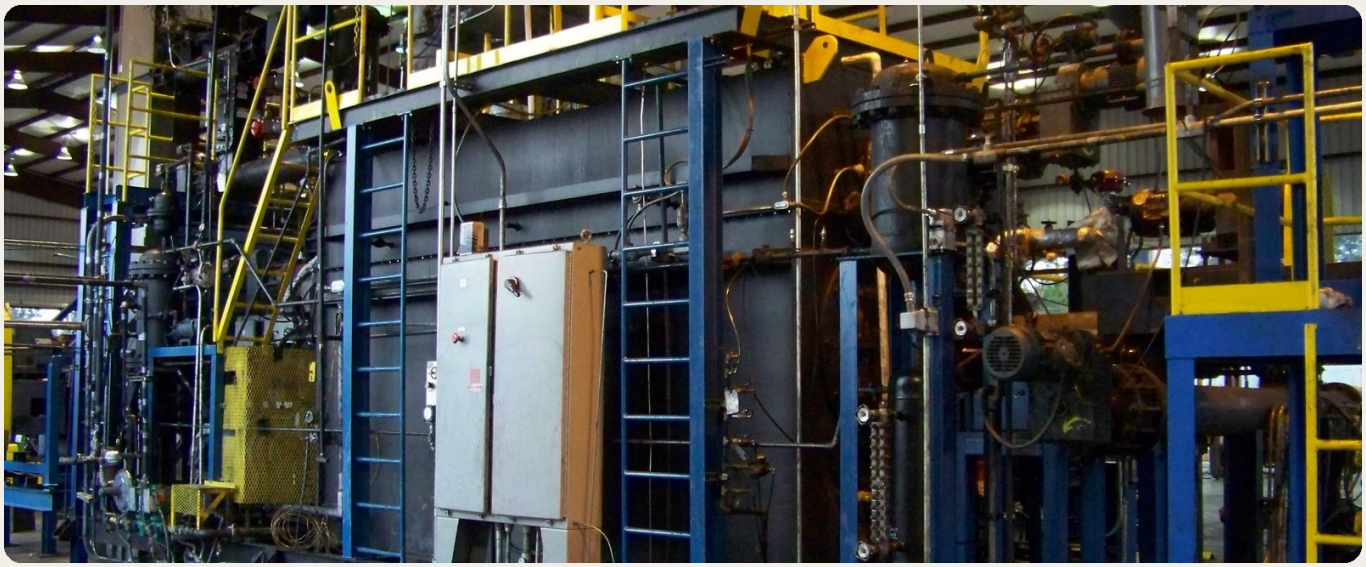
Tire crumb rubber, 0.25 to 0.75 inch

### TiPs processing

Sealed low-temperature depolymerization under vacuum.

### Outputs

N330 carbon black, high-aromatic diluent, and process gas



*TiPs processing unit*

**10,000+**

Hours operated at full scale across feedstocks: tires, coal, oil sands. TRL 8.

**24/7**

Continuous feed operation, self-powered after a one-time grid startup.

**100%**

Of every ton of feedstock becomes product, recovered water, or sold residue.

**Zero**

Waste streams. Every fraction is sold or used in the process.

FEEDSTOCK · END-OF-LIFE TIRES

# Tread-grade carbon from waste tires.

TiPs converts tire crumb into materials validated against virgin equivalents. The carbon black is a direct N330 tread-grade replacement. Most recovered carbon black never reaches that grade; TiPs carbon does, and goes back into new tires in a closed tire-to-tire loop.

The diluent is a 200+ constituent aromatic solvent with naturally occurring d-limonene. At Noble, Oklahoma, 88,000 tons of annual crumb rubber supply is secured under a long-term agreement.

> *"Rubber testing confirmed comparable cure behavior, strong tensile and elongation values, and equal or better abrasion resistance than the N330 control."*
>
> Independent analysis, Sid Richardson Carbon Co, a division of TOKAI CARBON (Japan)

**48**

Tons processed per day, per TiPs unit, on continuous feed.

**88K**

Tons of crumb rubber secured annually at Noble, Oklahoma.

**66%**

15-year project IRR. 175% 5-year ROIC.

**Zero**

Waste streams. No combustion in the process.

*Outputs: N330-grade carbon black (Tokai Carbon validated), high-aromatic diluent and solvent (Herty / CRC validated), and fuel oil and gas that powers the unit.*

THE PRODUCTS

# Three commodity-grade revenue streams.

Every TiPs output is a commercial-grade product, not a downgraded byproduct. On the tire side, the carbon black returns to tire manufacturing and the diluent reaches high-value solvent markets. The model is built on product value.

## WHAT A TON OF CRUMB RUBBER BECOMES


**Carbon black** | **Fuel oil & diluent** | **Process gas**

*Typical recovered output per ton of crumb rubber. Fractions vary with feedstock; each project is built on the assay of the actual feedstock.*

### Carbon

Tread-grade N330 carbon black that goes back into tires, plus bulk industrial carbon for other markets.

#### Markets & uses

Tires, belts, and rubber goods
Advanced concrete
Metallurgical carbon for steel
Soil and agriculture

### Fuel oil & diluent

High-aromatic oil, 85 to 95% aromatic content. A 200+ constituent solvent with d-limonene.

#### Markets & uses

Industrial heating
Marine and bunker fuel
Refining feedstock
Diluent blending

### Process gas

Non-condensable gas captured during processing. It powers the TiPs unit and crumb drying.

#### Markets & uses

Powers the TiPs unit
Runs feedstock drying
Closed loop after startup
Zero external fuel

**Every fraction leaves as a product. Nothing is downgraded to a byproduct.**

THE COMPARISON

# How TiPs compares.

End-of-life tires have an incumbent disposal route. TiPs replaces all of them with material recovery instead of destruction.

| | TiPs | Pyrolysis | TDF (tire-derived fuel) | Landfill / stockpile |
|---|---|---|---|---|
| **Process** | Sealed, low-temperature thermal mechanical depolymerization under vacuum. | High-temperature thermochemical cracking, 400 to 800C. | Whole or shredded tires burned as fuel in cement kilns and boilers. | No processing. Whole or shredded tires buried or stockpiled. |
| **Products** | Carbon, fuel oil, process gas, recovered solvent. | Fuel oil, low-grade char, syngas. | Heat only. The carbon and oil are lost to combustion. | None. The material value is lost. |
| **Material value** | Preserved and sold into product markets, including N330. | Partially destroyed, lower-value byproducts. | Destroyed in combustion. | Stranded and lost. |
| **Environmental** | Zero waste streams, no combustion in the process. | Energy-intensive, char disposal issues. | Stack emissions and ash. Displaces coal, but burns the material. | Fire risk, leaching, and vector breeding. |
| **Deployment** | Modular, distributed, on-site at the supply. | Large centralized plants. | Burned in existing kilns and power boilers. | Permanent land use and long-term liability. |

## 48 t/day

Processed per unit on continuous feed at full scale.

## TRL 8

Technology readiness proven across 10,000+ hours of full-scale operation.

## Modular

Units are added as feedstock and demand grow. No giant central plant required.

THE ECONOMICS

# The project economics.

Independent revenue lines from products, not subsidies. The project is financed against a 3x collateralized investment with the balance mobilized through the SENS and ISCM structure.

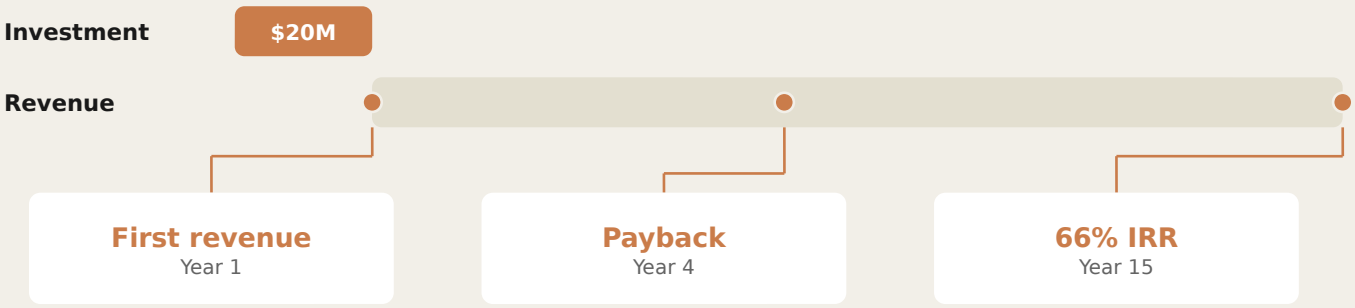
**$130M**
Total project capex.

**$20M**
Minimum investment.

**6**
TiPs processors.

**66%**
15-year project IRR.

## PROJECT TIMELINE




| Project at a glance | Tires · Noble, Oklahoma |
|---|---|
| **Location** | Noble, Oklahoma |
| **Annual feedstock** | 88,000 tons crumb rubber |
| **Key outputs** | N330 carbon black, high-aromatic diluent, process gas |
| **Collateralization** | 3x |

*Indicative figures, subject to business case validation and feedstock profile. Carbon credits are not included in the base case.*

**Every project is built on product value from day one. Subsidies, credits, and premiums are upside, never the base case.**

PARTNER WITH US

# Build this in your region.

SENS delivers waste-to-value solutions at scale. Whether you represent an investor, a manufacturer, a municipality, or a fund, we invite you to explore what TiPs can do with end-of-life tires in your region.

### SENS

Technology, project development, and delivery of TiPs facilities worldwide.

### ISCM Foundation

20+ years of governance oversight and research integrity from Brussels.

### ISCM Investments

The Foundation's dedicated fundraising and investment governance arm, mobilizing private and institutional capital.

THE TEAM

**David Meunier**
Co-CEO

**Lyle Ewanchuk**
Co-CEO

**Thomas Andres**
COO

SENS Systemic Environmental Solutions

ISCM FOUNDATION

systemicenvs.com

ISCMfoundation.org

Systemic Environmental Solutions is an initiative of the ISCM Foundation.