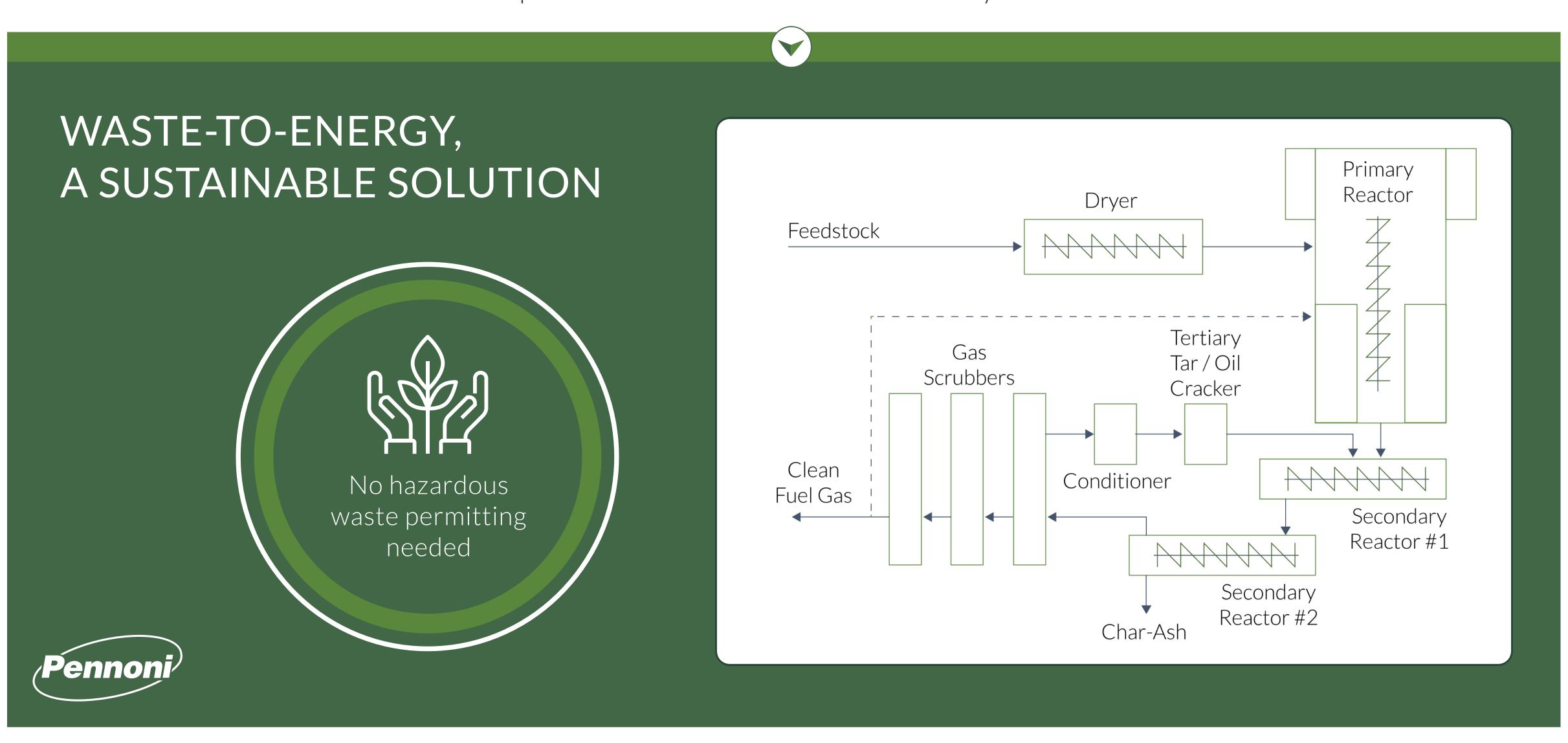
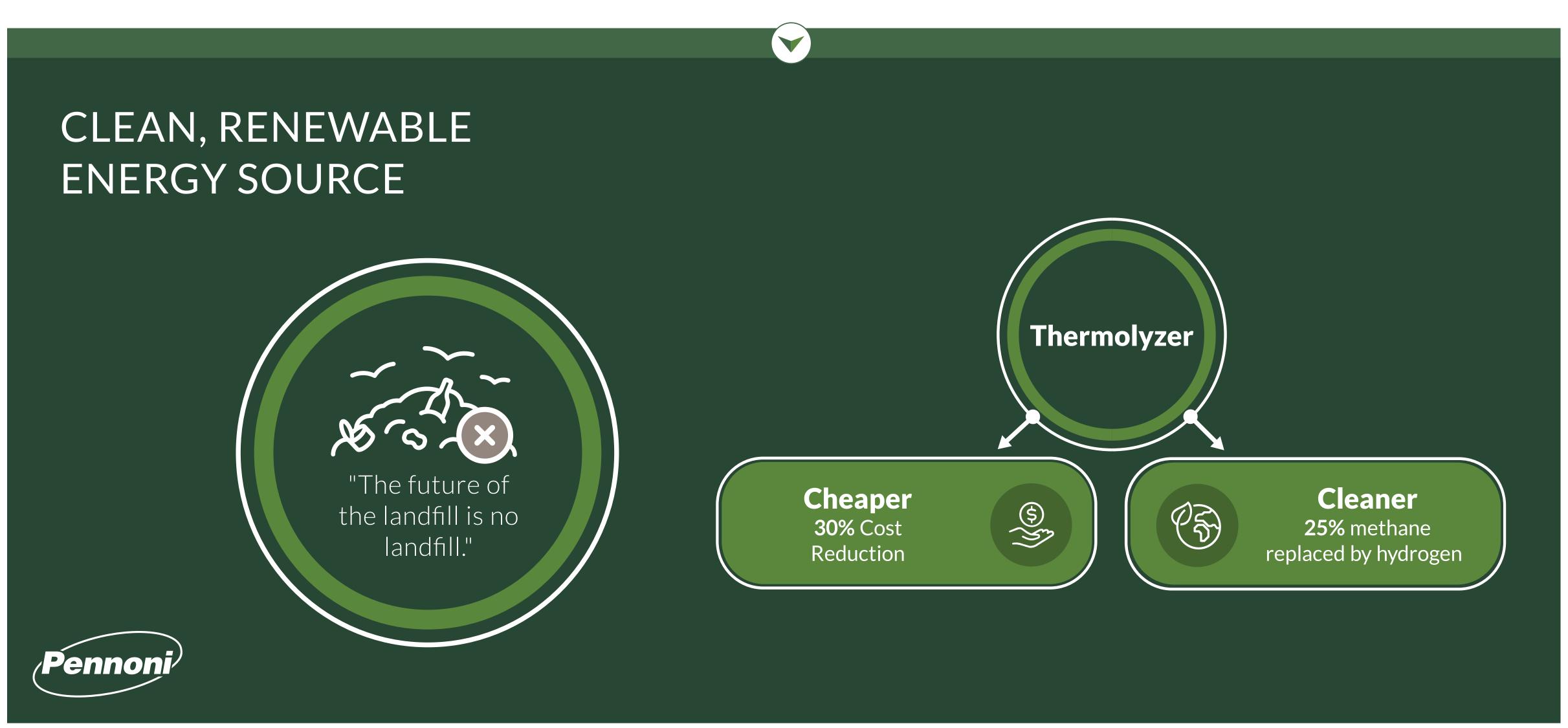




The World Bank estimates that with rapid population growth and urbanization, municipal waste generation is expected to rise to 2.2 billion tons by 2025.



A low-heat pyrolysis method recovers valuable materials and creates synthetic gas, producing virtually no toxic or hazardous by-products.



Large university campuses. Manufacturing plants. Hospital systems. They're not traditional disruptors. Their mandate, however, for innovation, sustainability and financial certainty positions them for leadership.



THE FIRST REVOLUTION

Around 12,000 years ago in what's now Iraq, the agricultural revolution began. The first seeds of civilization blossomed into permanent settlements, and unprecedented technological, economic, and social development. History had begun.



Mesopotamia's market for perfectly formed ceramics inspired a most graceful invention, some 5500 years ago: the pottery wheel. This, the first means of mass production, was just the beginning.



Three hundred years later, an innovator realized that rolling heavy, stone pottery wheels was the mechanism by which wheelbarrows, chariots, and transportation itself transformed. It was the "greatest invention since...."

SPEED HUMPS ALONG THE WAY

> Regression can be as disruptive as progress. When the Roman roads crisscrossing the Middle East and North Africa fell to ruin 2500 years ago, wheeled transport was abandoned in favor of the camel. Which worked.

> > 500 - 100 BC



Resistance to innovation is as old as the power

structures it disrupts. When Roman Emperor Tiberius was shown a new type of unbreakable glass, he had its inventor killed, to preserve the value of his own treasures.

14-37AD

10,000 BC

DON'T PHONE

IN DISRUPTIVE DECISIONS

Would you, like them, have said no?

BUMPINTHEROAD

Bell's first Telephone (Transmitter).

Electro-magnet. k. Diaphragm. c. Collar. d. Collar and tube. f. Screw. g. Mouthpiece. k. Battery.

E. Wire from battery to coil. k. Telegraph wire. l. Through binding screw. m. Pillar holding magnet.

NOT SLOWED BY A

The wheel moved people forward, but Scotland's rocky roads bruised early bicycle riders black and blue. Then engineer Robert W. Thompson encased his rims in rubber, creating the world's first pneumatic tire and smoothing the progress of transportation.

3,500 BC

THE CALICO

CLOTH AFFAIR

Cheap, printed "calico" cloth came to France in the 17th century, and local resistance was even more resolute. Some 16,000 were killed for importing the forbidden textiles, setting French industry back at least a century.

3,200 BC

REGULATING THE REVOLUTION \_\_\_\_\_

The invention of cloth buttons in 17th-century France threatened the guilds, who pressured the government to crack down. Regulations, fines, even random searches ensued; the buttons survived. Be tenacious.

1700, 1721

TURKEY STOPS

THE PRESSES

While Gutenberg's printing press spread knowledge and education into every corner of Europe, traditional Turkish bookmakers were terrified. They lobbied the Sultan to criminalize the contraption, keeping them rich—but rendering the Ottoman Empire uncompetitive.

1493

1846

Henry Ford did not invent the car—that had

THE DRIVE TO

EXPAND

not the product.

1700, 1721

MONEY AS

MOTIVATION

When Leo Baekeland was asked why he was researching synthetic resins, he answered, "to make money." In 1907, he invented plastic—a historic disruption. Today, 300 million tons of plastics are produced annually.

THINK OUTSIDE

THE CIRCLE

Tires were once naturally white, until Binney & Smith (of Crayola fame) discovered the pigment carbon black conducted heat away from friction points, like tire treads. BF Goodrich bought in and now that's how we roll.

1910

TALKIN'BOUT A REVOLUTION

> The first "talkie" film debuted in Paris in 1900, but Europe was suspicious of the technology. Hollywood, however, went all in. In 1927, The Jazz Singer made history—and inaugurated a new global cinematic capital.

1879

Entrenched business instinctively undervalues

innovation. Stop, breathee, and meditate instead

on Alexander Graham Bell, who offered Western

Union the telephone patent for just \$100,000.

TOO LATE

TO REWIND

In the year 2000, Blockbuster was a \$6 billion/year video behemoth, while Netflix' nascent rental and streaming services struggled to survive. They offered to sell out for \$50 million; Blockbuster refused.

1885

happened decades earlier. He created the assembly

line, the change that heralded our Automotive Age.

The disruption that counts may target the system,

KODAK MISSED THE BIG PICTURE

Don't write off innovation as novelty. Kodak

invented the digital camera in 1975, wifi-enabled photo sharing in 2005. Then shelved both. They were ahead of the game, but never bothered to play. Now they're gone.

1907



KNOWLEDGE AS POWER

Unlike most disruption, it was clear from the beginning that the Internet would change the world. No one guessed how much. Now data is mined, your coffeemaker's chatting with Alexa, and the future is wide open.

3RD

1920s to 1938

FM RADIO: SABOTAGED



When FM radio began broadcasting superior sound in the 1930s, the Radio Corporation of America fought back. They changed FM frequencies in 1949, rendering all FM investment obsolete, and setting the tech back decades.

1940's to 1970's

2000

Connection and communication over the Internet allowed a new type of disruption, sharing with peers as a profession. AirBnB, Uber and their ilk leveraged that into billion-dollar businesses, but there's more to come.

3 BILLION

TIRES

AND PRATOVERS SELECTION OF THE SELECTION

1969, 1983

The wheel, the tire, the carbon black: All have been magnificently disruptive. But when their work is done, disposal is no easy task. What to do with 3 billion tires? That solution is the disruption we've been waiting for.

ABRIEFHISTORYOF DISRUPTIVE INNOVATION

THE SHARING

ECONOMY

1975

TODAY

AND THE IMPENDING TIREPOCALYPSE

2009 - TODAY

THE FUTURE