CLAIMS

What is claimed is –

1. A process for making olefins and a cracked gasoline stream, said process comprising:

(a) cracking a cracker feed stream comprising a recycle content pyrolysis oil (r-pyoil) composition and a non-recycle content C2 to C4 hydrocarbons composition in a cracker furnace to provide an olefin-containing effluent stream;

(b) separating said olefin-containing effluent stream in at least one separator downstream of said cracker furnace to provide a light fraction and a heavy fraction, wherein said heavy fraction comprises a recycle content cracked gasoline (r-pyrolysis gasoline) composition; and

(c) recovering a product stream comprising recycle content cracked gasoline (r-pyrolysis gasoline) composition from said heavy fraction;

wherein the recycle content is a component or a composition at least a portion of which is directly or indirectly derived from recycled waste,

wherein the non-recycle content is a component or a composition none of which is directly or indirectly derived from recycled waste, and

wherein the recycled waste is any type of waste obtained from industrial and consumer sources.

2. The process of claim 1, wherein the cracker feed stream comprises least 1%, or at least 10%, or at least 20% by weight of the r-pyoil composition.

3. The process of claim 1 or 2, further comprising recovering an olefin stream comprising a recycle content olefin (r-olefin) from said light fraction.

4. The process of claim 3, wherein said r-olefin comprises more than 50% by weight of r-ethylene.

5. The process of claim 3 or 4, wherein said r-olefin comprises more than 50% by weight of r-propylene.

6. The process of any one of claims 1 to 5, wherein said r-pyrolysis gasoline is present in said heavy fraction in an amount at least 1 and/or not more than 99 weight percent, based on the total weight of said heavy fraction.

7. The process of any one of claims 1 to 6, wherein said heavy fraction comprises dienes in an amount of at least 0.01 weight percent, based on the total weight of said heavy fraction.

8. The process of claim 7, wherein said dienes comprise C4 to C12 dienes.

9. The process of claim 7 or 8, wherein said dienes comprise straight chain dienes, cyclic dienes, or combinations thereof.

10. The process of any one of claims 7 to 9, wherein said dienes comprise butadiene, cyclopentadiene, dicyclopentadiene, and combinations thereof.

11. The process of claim 10, wherein at least 5 percent of the total amount of said dienes comprise butadiene.

12. The process of claim 10 or 11, wherein at least 5 percent of the total amount of said dienes comprise cyclopentadiene.

13. The process of any one of claims 10 to 12, wherein at least 5 percent of the total amount of said dienes comprise dicyclopentadiene.

14. The process of any one of claims 1 to 13, further comprising separating said heavy fraction in a column to form a light gasoline stream and a heavy gasoline stream, wherein at least one of the light gasoline stream and the heavy gasoline stream comprise at least a portion of said r-pyrolysis gasoline.

15. The process of claim 14, further comprising at least a portion of said light gasoline stream and/or said heavy gasoline stream to form a hydrocarbon product.

16. A system for carrying out the process of any one of claims 1 to 15.