CLAIMS

1. An integrated process for producing petrochemicals and fuel products from a crude oil feed comprising:

separating from the crude oil feed, in an atmospheric distillation unit (ADU), at least a first ADU fraction comprising straight run naphtha,

a second ADU fraction comprising at least a portion of middle distillates from the crude oil feed, and

a third ADU fraction comprising atmospheric residue;

separating from the third ADU fraction, in a vacuum distillation unit (VDU), at least a first VDU fraction comprising vacuum gas oil;

hydroprocessing middle distillates from the second ADU fraction and recovering at least a first fraction and a second fraction, wherein the first fraction comprises naphtha and the second fraction is used for diesel fuel production;

hydroprocessing in a gas oil subjecting the vacuum gas oil from the first VDU fraction in a ring opening reaction area, and recovering a first fraction containing components boiling at or below an atmospheric residue end boiling point and including LPG, naphtha and middle distillate range components, and a second fraction containing heavy oil, which , which is hydrotreated gas oil or unconverted oil in the vacuum gas oil range;

steam cracking naphtha from the first ADU fraction;

wherein steam cracking operates under conditions effective to recover at least a mixed product stream H2, methane, ethane, ethylene, mixed C3s and mixed C4s, pyrolysis gas; and pyrolysis oil;

recovering, from the mixed product stream, H2, methane, non-olefinic C2-C4s, and petrochemicals ethylene, propylene and butylenes;

hydroprocessing pyrolysis gas from steam cracking in a naphtha hydroprocessing zone, and recovering hydrotreated pyrolysis gas; and

separating aromatics from hydrotreated pyrolysis gas in an aromatics extraction zone for recovery of petrochemical aromatic products, and aromatics extraction zone raffinate.

2. A process for upgrading refinery heavy residues to petrochemicals,

comprising the following steps of:

separating crude oil in a crude oil distillation unit into an overhead stream, a side stream and a bottom stream,

feeding said bottom stream to a resid FCC unit area,

separating reaction products, which are generated from said reaction area of step (b) into a stream rich in mono-aromatics and in a stream rich in poly-aromatics,

feeding said stream rich in mono-aromatics to a gasoline hydrocracker (GHC) unit, wherein the process conditions prevailing in said gasoline hydrocracker (GHC) unit are a reaction temperature of 300-580 °C, a pressure of 0.3-5 MPa gauge and a Weight Hourly Space Velocity (WHSV) of 0.1-10 h-1, and separating reaction products of said GHC into an overhead gas stream, comprising C2-C4 paraffins, hydrogen and methane and a bottom stream comprising aromatic hydrocarbon compounds and non-aromatic hydrocarbon compounds,

feeding said stream rich in poly-aromatics to a ring opening reaction area, wherein the process conditions prevailing in said reaction area for ring opening are a temperature from 100 °C to 500 °C and a pressure from 2 to 10 MPa together with from 50 to 300 kg of hydrogen per 1,000 kg of feedstock over an aromatic hydrogenation catalyst and passing the resulting stream to a ring cleavage unit at a temperature from 200 °C to 600 °C and a pressure from 1 to 12 MPa together with from 50 to 200 kg of hydrogen per 1,000 kg of said resulting stream over a ring cleavage catalyst,

and feeding effluent of the ring-opening process is highly mono-aromatic and to the GHC unit for further upgrading into LPG.

3. The process as set forth in claim 2, further comprising feeding an overhead stream from the gasoline hydrocracker unit into a steam cracker unit.

4. The process as set forth in claim 3, further comprising the step of pretreating said stream rich in poly-aromatics in an aromatics extraction unit, from which aromatics extraction unit its bottom stream is fed into said reaction area for ring opening and its overhead stream is fed into said steam cracker unit.

5. The process as set forth in claim 3, further comprising the step of pretreating said stream rich in poly-aromatics in an aromatics extraction unit, from which aromatics extraction unit its bottom stream is fed into said reaction area for ring opening and its overhead stream is fed into said steam cracker unit.

6. The process as set forth in claim 3, further comprising the step of feeding the light fraction of reaction products formed in the reaction area for ring opening into said steam cracker unit.

7. The process as set forth in claim 4, wherein said aromatics extraction unit is a distillation unit.

8. The process as set forth in claim 4, wherein said aromatics extraction unit is a solvent extraction unit, wherein in said solvent extraction unit, its overhead stream is washed for removal of solvent, wherein the thus recovered solvent is returned into said solvent extraction unit and the overhead stream thus washed is fed into said steam cracker unit.

9. The process as set forth in claim 4, wherein said aromatics extraction unit is of the molecular sieve type.

10. The process as set forth in claim 2, further comprising the step of pretreating said bottom stream from said distillation unit in a vacuum distillation unit, in

which vacuum distillation unit said feed is separated in an overhead stream and a bottom stream, and feeding said bottom stream into said hydrocracking area.

11. The process as set forth in claim 10, further comprising the step of feeding said overhead stream to said aromatics extraction unit or to said reaction area for ring opening, or a combination thereof.

12. The process as set forth in claim 3, further comprising feeding an overhead stream from an aromatics extraction unit into an isomerization unit and feeding the thus isomerized stream to said steam cracking unit.

13. The process as set forth in claim 3, further comprising recovering the C2-C4 paraffins to form a steam rich in paraffins and feeding the stream rich in paraffins coming from a separation section into an isomerization unit and feeding the thus isomerized stream to said steam cracking unit.

14. The process as set forth in claim 2, wherein the atmospheric residue is not sent to a vacuum distillation unit for further fractionation of the resid.