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(54) Title: SELECTIVE 1-HEXENE/1-OCTENE PRODUCTION WITH 1-DECENE

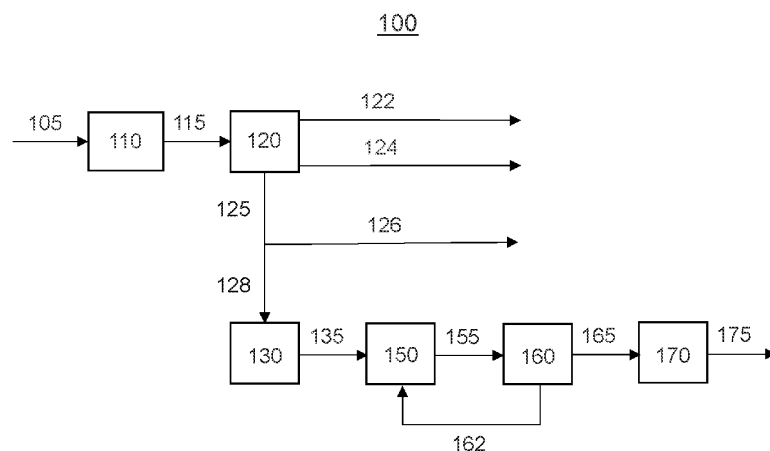


FIG. 1

(57) Abstract: A process to produce 1-octene and 1-decene includes (a) separating a composition containing an oligomer product – which contains from 15 to 80 mol % C₆ olefins, from 20 to 80 mol % C₈ olefins, and from 5 to 20 mol % C₁₀+ olefins – into a first oligomer composition containing C₆ alkanes and at least 85 mol % C₆ olefins (e.g., 1-hexene), a second oligomer composition containing at least 85 mol % C₈ olefins (e.g., 1-octene), and a heavies stream containing C₁₀+ olefins, then (b) contacting a metathesis catalyst system with the first oligomer composition to form a first composition comprising C₁₀ linear internal olefins, (c) contacting the C₁₀ linear internal olefins with an isomerization hydrofunctionalization catalyst system to form a second composition containing a functionalized alkane, (d) retro-hydrofunctionalizing the functionalized alkane to form a third composition containing 1-decene, and (e) purifying the third composition to isolate a fourth composition containing at least 90 mol % 1-decene. Processes to produce 1-hexene and 1-decene also are described, as well as related manufacturing systems.

[Continued on next page]

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