CLAIMS:

1. A method for producing a diesel fuel, comprising:

treating a diesel boiling range feed having a cloud point of about 5°C or less by contacting the feed with a dewaxing catalyst under effective dewaxing conditions to form a dewaxed effluent, the effective dewaxing conditions including a dewaxing inlet temperature and a dewaxing outlet temperature, the dewaxing catalyst comprising a zeolitic molecular sieve and a hydrogenation metal;

quenching the dewaxed effluent using a recycled effluent from the aromatic saturation treatment, the dewaxed effluent having a cloud point of about -30°C or less; and

treating the quenched dewaxed effluent with an aromatic saturation catalyst different than the dewaxing catalyst under effective aromatic saturation conditions to form a product having a concentration of polyaromatic hydrocarbons with three or more rings of about 0.02 wt% or less, the effective aromatic saturation conditions including an inlet temperature that is at least about 20°C lower than the dewaxing outlet temperature, the dewaxing catalyst and the aromatic saturation catalyst being located in the same reactor,

wherein the dewaxed effluent, the quenched dewaxed effluent, or both exhibit a cloud point at least 10°C lower than a cloud point of the ~~distillate~~ diesel boiling range feed, and

wherein the diesel boiling range feed, the quenched dewaxed effluent, or both exhibit a concentration of polyaromatic hydrocarbons with three or more rings of about 0.08 wt% or more.

2. The method of claim 1, wherein a combined treat gas rate for the dewaxing treatment and the aromatic saturation treatment is less than about 4500 scf/bbl (about 800 Sm^3/m^3).

3. The method of claim 1, wherein a sulfur content of the diesel boiling range feed is about 50 wppm or less.

4. The method of claim 1, wherein a sulfur content of the diesel boiling range feed is at least about 500 wppm.

5. The method of claim 1, wherein a surface area of the aromatic saturation catalyst is at least about 750 m^2/g.

6. The method of claim 1, wherein the dewaxing catalyst comprises a zeolitic catalyst and the aromatic saturation catalyst comprises a non-zeolitic catalyst.

7. The method of claim 1, wherein the inlet temperature for the aromatic saturation is about 320°C or less.

8. The method of claim 1, wherein quenching the dewaxed effluent comprises using a heat exchanger.

9. The method of claim 1, wherein contacting the diesel boiling range feed with a dewaxing catalyst comprises contacting the diesel boiling range feed with at least two beds of dewaxing catalyst, the method further comprising quenching an effluent from contact with the first bed of dewaxing catalyst prior to contacting with the second bed of dewaxing catalyst.

10. The method of claim 9, wherein each bed of dewaxing catalyst has a dewaxing inlet temperature, the dewaxing inlet temperature for the second bed corresponding approximately to a temperature, after quenching, of the effluent from contact with the first bed of dewaxing catalyst.

11. The method of claim 1, wherein the aromatic saturation catalyst comprises alumina-bound MCM-41.

12. The method of claim 11, wherein the aromatic saturation catalyst comprises from about 0.1 wt% to about 1.5 wt% of Pt, Pd, or a combination thereof.

13. A method for producing a diesel fuel, comprising:

treating a diesel boiling range feed having a cloud point of about 5°C or less by contacting the feed with a dewaxing catalyst under effective dewaxing conditions to form a dewaxed effluent, the effective dewaxing conditions including a dewaxing inlet temperature and a dewaxing outlet temperature, the dewaxing catalyst comprising a zeolitic molecular sieve and a hydrogenation metal;

quenching the dewaxed effluent; and

treating the quenched dewaxed effluent with an aromatic saturation catalyst different than the dewaxing catalyst under effective aromatic saturation conditions including an inlet temperature for the aromatic saturation that differs from the dewaxing inlet temperature by about 25°C or less, the inlet temperature for the aromatic saturation stage being about 300°C or less,

wherein contacting the diesel boiling range feed with a dewaxing catalyst comprises contacting the diesel boiling range feed with at least two beds of dewaxing catalyst, the method further comprising quenching an effluent from contact with the first bed of dewaxing catalyst prior to contacting with the second bed of dewaxing catalyst, and

wherein the dewaxed effluent, the quenched dewaxed effluent, or both exhibit a cloud point at least 10°C lower than a cloud point of the diesel boiling range feed.

14. The method of claim 13, wherein treating the quenched dewaxed effluent with an aromatic saturation catalyst produces a product having a content of polyaromatic hydrocarbons having three or more rings of about 0.02 wt% or less.

15. The method of claim 13, wherein a combined treat gas rate for the dewaxing treatment and the aromatic saturation treatment is less than about 4500 scf/bbl (about 800 Sm^3/m^3).

16. The method of claim 13, wherein a surface area of the aromatic saturation catalyst is at least about 750 m^2/g.

17. The method of claim 13, wherein quenching the dewaxed effluent comprises using a heat exchanger.

18. The method of claim 13, wherein the aromatic saturation catalyst comprises alumina-bound MCM-41.

19. The method of claim 18, wherein the aromatic saturation catalyst comprises from about 0.1 wt% to about 1.5 wt% of Pt, Pd, or a combination thereof.

20. The method of claim 13, wherein quenching the dewaxed effluent comprises using a recycled effluent from the aromatic saturation treatment.