CLAIMS:

1. An electrically heated reforming reactor comprising an outer shell defining an interior space including a catalyst bed volume for containing catalyst, said reforming reactor further comprising a plurality of heating elements extending partly or completely through the catalyst bed volume and configured for heating separate regions within the catalyst bed volume,

   wherein each of said plurality of heating elements comprises a core of electrically conductive material that is surrounded by a sheath that is an alloy of copper or nickel.

2. The electrically heated reforming reactor of claim 1, wherein the plurality of heating elements are resistive heating elements or inductive heating elements.

3. The electrically heated reforming reactor of claim 1 or claim 2, wherein the plurality of heating elements include one or more individually controllable heating elements or one or more individually controllable groups of heating elements.

4. The electrically heated reforming reactor of any one of the preceding claims, further comprising a reformer feed inlet and a reformer product outlet, said reformer feed inlet and reformer product outlet configured for flowing a gaseous reaction mixture in an overall flow direction, from an inlet end to an outlet end of the catalyst bed volume,

   wherein the plurality of heating elements extend unidirectionally in the overall flow direction, over at least a portion of a length from the inlet end to the outlet end, or

   wherein the plurality of heating elements extend unidirectionally in a direction that differs from the overall flow direction.

5. The electrically heated reforming reactor of claim 4, wherein the plurality of heating elements extend unidirectionally, over at least a portion of a width of the catalyst bed volume.

6. The electrically heated reforming reactor of any one of the preceding claims, wherein the plurality of heating elements extend axially with respect to a cylindrical portion of the interior space, and are spaced apart radially at regular or irregular intervals.

7. The electrically heated reforming reactor of any one of the preceding claims, wherein the plurality of heating elements extend radially with respect to a cylindrical portion of the interior space, and are spaced apart axially at regular or irregular intervals.

8. The electrically heated reforming reactor of claim 7, wherein the plurality of heating elements are spaced apart at irregular intervals, and further wherein intervals nearer to one end of the catalyst bed volume are smaller relative to intervals nearer to an opposite end of the catalyst bed volume.

9. The electrically heated reforming reactor of any one of the preceding claims, wherein the plurality of heating elements are in the form of resistive or inductive wires or rods.

10. The electrically heated reforming reactor of any one of the preceding claims, wherein the sheath surrounding each of the plurality of heating elements is in the form of a tubular member.

11. The electrically heated reforming reactor of any one of the preceding claims, wherein at least one heating element of said plurality of heating elements extends unidirectionally through the catalyst bed volume.

12. The electrically heated reforming reactor of claim 11, wherein the at least one heating element extends centrally through the catalyst bed volume.

13. The electrically heated reforming reactor of claim 12, wherein the at least one heating element extends along a central axis of the catalyst bed volume.

14. The electrically heated reforming reactor of any one of the preceding claims, wherein the plurality of heating elements

are inductive heating elements configured for inductive heating from an alternating magnetic field provided by an energy source.

15. The process of claim 4, wherein the plurality of heating elements extend unidirectionally in the overall flow direction, and over a portion of the catalyst bed volume, said plurality of heating elements being configured to generate heat at only selected axial portions that do not extend to the outlet end of the catalyst bed volume.

16. The process of any one of the preceding claims, wherein the plurality of heating elements extend over at least about 50% of a length of the catalyst bed volume.

17. The process of any one of the preceding claims, wherein the electrically conductive material is a metal or alloy that is capable of withstanding reforming temperatures of at least 850°C.

18. The process of any one of the preceding claims, wherein the electrically heated reforming reactor further comprises a feed inlet distributor and a product outlet collector, configured to distribute, guide, and/or collect the reformer feed.

19. The process of any one of the preceding claims, wherein the electrically heated reforming reactor further comprises a peripheral insulating layer, configured for substantially adiabatic operation.

20. The process of any one of the preceding claims, wherein the electrically heated reforming reactor is transportable.