CLAIMS:

1. A reactor assembly for heating plastic material comprising:

a reactor vessel comprising a central axis;

a furnace arranged to heat the reactor vessel to a temperature in excess of 350ºC; and

an agitator mounted within the reactor vessel, the agitator comprising:

one or more blade(s) distal from the central axis for mixing contents of the reactor vessel in use; and

one or more wearing part(s) detachably mounted to the one or more blade(s) to extend from the one or more blade(s) for engaging with and removing char from the reactor vessel, wherein the one or more wearing part(s) are a first distance from an internal surface of the reactor vessel.

2. The reactor assembly of claim 1, wherein the one or more blade(s) each comprises a main portion distal from the central axis and one or more base portion(s) extending from the main portion towards the central axis, and wherein the one or more wearing part(s) are mounted to the one or more base portion(s) to extend axially further than the one or more base portion(s).

3. The reactor assembly of any preceding claim, wherein the one or more wearing part(s) are mounted to the one or more blade(s) such that they extend radially from the one or more blade(s) with respect to the central axis.

4. The reactor assembly of any preceding claim, wherein the one or more blade(s) are generally helical.

5. The reactor assembly of any preceding claim, wherein the extensions of the one or more wearing part(s) are adjustable for adjusting either or both of:

a radial position of the one or more wearing part(s) on the one or more blade(s); or

an axial position of the one or more wearing part(s) on the one or more blade(s).

6. The reactor assembly of claim 5, wherein one of:

(a) the one or more wearing part(s); or

(b) the one or more blade(s),

comprise an elongate slot, and the one or more wearing part(s) are mounted to the one or more blade(s) via one or more bolt(s) passing through the elongate slot.

7. The reactor assembly of claim 6, further comprising one or more spring washer(s), wherein the one or more bolt(s) pass through the one or more spring washer(s) to engage the one or more wearing part(s).

8. The reactor assembly of any preceding claim, wherein said one or more blade(s) comprise a plurality of blades, preferably two blades.

9. The reactor assembly of any preceding claim, wherein each blade comprises a plurality of said wearing parts distributed along its length such that generally a plane orthogonal to the central axis at any point along the central axis in the region of the one or more blade(s) passes through at least one wearing part, preferably only one wearing part.

10. The reactor assembly of any preceding claim, wherein the one or more wearing part(s) are formed of steel, preferably an austenitic stainless steel, more preferably AISI 316, 316Ti, 310, 309, 321 and/or 302.

11. A method of maintaining a maximum thickness of coking on an internal surface of a reactor vessel, the method comprising the steps of:

providing a reactor assembly according to any one of claims 1 to 10;

heating the reactor vessel to a temperature in excess of 350ºC;

operating the reactor vessel for a number of cycles such that the one or more wearing part(s), by rotation thereof, remove coking from the internal surface of the reactor vessel and thereby maintain the maximum thickness of coking;

stopping the reactor vessel; and

adjusting the one or more wearing part(s) to maintain the first distance from the internal surface of the reactor vessel following any wear of the one or more wearing part(s) during operation.

12. The method of claim 12, wherein the maximum thickness is no more than 10 mm, preferably no more than 8 mm.