CLAIMS

1. An apparatus for the treatment of a component using a fluidised bed of powder, the apparatus including:

a treatment chamber (50) for receiving at least a treatment part of the component;

a powder reservoir (52) having heating (68) or cooling means for controlling the temperature of the powder; and

a powder conveying means (54) linking the treatment chamber and the powder reservoir, for continuously conveying powder from the reservoir to the treatment chamber for use in the fluidised bed,

wherein the position of the treatment chamber is variable with respect to the powder reservoir during operation of the apparatus.

2. An apparatus according to claim 1 wherein, in the powder reservoir, the powder is in non-fluidised form.

3. An apparatus according to claim 1 or claim 2 wherein the powder conveying means is provided by a gas stream (A).

4. An apparatus according to claim 3 wherein the gas stream of the powder conveying means is used in the treatment chamber to generate the fluidised bed.

5. An apparatus according to any one of claims 1 to 4 wherein the apparatus allows positioning of the treatment chamber with respect to the component to be treated, independently of the position of the powder reservoir.

6. An apparatus according to any one of claims 1 to 5 wherein a return powder conveying means (56) links the treatment chamber and the powder reservoir for transporting powder from the fluidised bed back to the powder reservoir.

7. An apparatus according to claim 6 wherein the powder is returned to the powder reservoir for renewed heating/cooling before being conveyed once more to the treatment chamber.

8. An apparatus according to any one of claims 1 to 7 wherein the apparatus includes more than one treatment chamber, each treatment chamber being for use to treat a different treatment part of the same or different components.

9. An apparatus according to any one of claims 1 to 8 wherein at least one treatment part of the component is placed in the fluidised bed and at least one non-treatment part of the component is located substantially outside the chamber and out of contact with the fluidised bed, the boundary between the treatment part and the non-treatment part of the component being defined by a boundary containment surface (60) at a fixed location with respect to the component.

10. An apparatus according to claim 9 wherein the boundary containment surface includes at least one seal member (47, 48) to seal between the component and the treatment chamber.

11. An apparatus according to any one of claims 1 to 10 and further including a heat exchange system in order to extract waste heat from exhaust gas from the fluidised bed.

12. A process for the treatment of a component using a fluidised bed of powder, wherein the fluidised bed is formed in a treatment chamber and in contact with at least a treatment part of the component, and wherein the powder is subjected to heating or cooling in a powder reservoir located away from the treatment chamber, the position of the treatment chamber being variable with respect to the powder reservoir during the process, the powder being continuously conveyed to the treatment chamber from the powder reservoir by a powder conveyor.

13. A process according to claim 12 wherein the fluidising gas is recycled.

14. A process according to claim 12 or claim 13 wherein the component is initially installed in the treatment chamber before the fluidised bed is formed in the treatment chamber, the treatment part(s) of the component being located above the surface of the powder bed before fluidisation, and on fluidisation, the treatment part(s) of the component are then completely submerged under the rising surface of the fluidised bed.

15. A kit of parts suitable for assembling an apparatus according to any one of claims 1 to 11, wherein the kit includes two or more interchangeable treatment chambers of different shape, in order to adapt the apparatus to different shapes of specific components to be treated.

CLAIMS

1. An apparatus for the localised heat treatment of part of a component using a fluidised bed of powder, the apparatus including:

a treatment chamber for receiving a treatment part of the component;

a powder reservoir having heating or cooling means for controlling the temperature of the powder; and

a powder conveying means linking the treatment chamber and the powder reservoir, for continuously conveying powder from the reservoir to the treatment chamber for use in the fluidised bed,

wherein the powder conveying means is configured such that the position of the treatment chamber is variable with respect to the powder reservoir during operation of the apparatus.

2. An apparatus according to claim 1, wherein the powder conveying means comprises a gas stream, and wherein the gas stream of the powder conveying means is used in the treatment chamber to generate the fluidised bed.

3. An apparatus according to claim 1 or 2 wherein the apparatus allows positioning of the treatment chamber with respect to the component to be treated, independently of the position of the powder reservoir.

4. An apparatus according to any one of claims 1 to 3 wherein a return powder conveying means links the treatment chamber and the powder reservoir for transporting powder from the fluidised bed back to the powder reservoir.

5. An apparatus according to any one of claims 1 to 4 wherein the apparatus includes more than one treatment chamber, each treatment chamber being for use to treat a different treatment part of the same or different components.

6. An apparatus according to any one of claims 1 to 5 and further including a heat exchange system in order to extract waste heat from exhaust gas from the fluidised bed.

7. A process of localised heat treatment of part of a component using a fluidised bed of powder, wherein the fluidised bed is formed in a treatment chamber and in contact with a treatment part of the component, and wherein the powder is subjected to heating or cooling in a powder reservoir located away from the treatment chamber, the position of the treatment chamber being variable with respect to the powder reservoir during the process, the powder being continuously conveyed to the treatment chamber from the powder reservoir by a powder conveyor.

8. A process according to claim 7 wherein the fluidising gas is recycled.

9. A process according to claim 7 or claim 8 wherein the component is initially installed in the treatment chamber before the fluidised bed is formed in the treatment chamber, the treatment part(s) of the component being located above the surface of the powder bed before fluidisation, and on fluidisation, the treatment part(s) of the component are then completely submerged under the rising surface of the fluidised bed.

10. A process according to any one of claims 7 to 9, wherein in the powder reservoir, the powder is in non-fluidised form.

11. A process according to any one of claims 7 to 10, wherein the powder conveying means is provided by a gas stream.

12. A process according to any one of claims 7 to 11, wherein a return powder conveying means links the treatment chamber and the powder reservoir for transporting powder from the fluidised bed back to the powder reservoir, and wherein the

powder is returned to the powder reservoir for renewed heating/cooling before being conveyed once more to the treatment chamber.

13. A kit of parts suitable for assembling an apparatus according to any one of claims 1 to 6, the kit including: two or more interchangeable treatment chambers of different shape, in order to adapt the apparatus to different shapes of specific components to be treated;

a powder reservoir having heating or cooling means for controlling the temperature of the powder; and

a powder conveying means linking the treatment chamber and the powder reservoir, for continuously conveying powder from the reservoir to the treatment chamber for use in the fluidised bed.