Claims:

1. A method of determining an adaptive tool path for additive deposition to an aerofoil (38) having a leading edge (44) , a trailing edge (46) and suction (42) and pressure (40) surfaces extending between the leading and trailing edges, the method comprising the steps:

   a) providing an aerofoil with a deposition plane;

   b) determining for the deposition plane points corresponding the leading edge (44), the trailing edge (46) and the centre of a circle (48) constrained by both the suction surface and the pressure surface when they are at their greatest distance apart;

   c) determining the position of the centre point (64) of a circle (60) the edge of which passes through the deposition plane points;

   d) determining a trailing edge reference line (70) extending from the centre point of the circle (60) determined at step c) through the trailing edge point, a leading edge reference line (72) extending from the centre point of the circle (60) determined at step c) through the leading edge point and one or more mid reference lines (74) extending from the centre point of the circle (60) determined at step c) through one or more mid reference points between the leading edge point and the trailing edge point;

   e) trimming each mid reference line to the bounds of the suction surface and pressure surface and determining the length of each mid reference line;

   f) applying an adaptive factor to the length of each mid reference line to provide an adaptive point (80_x) for each mid reference line;

   g) determining a spline extending through the leading edge point, the trailing edge point and each adaptive point; and

   h) traversing a tool along the spline or a path offset from the spline by a predetermined factor.

2. A method according to claim 1, wherein the deposition plane is provided by a surface onto which material is to be deposited using an additive manufacture technique.

3. A method according to claim 1, wherein the deposition plane is positioned a short distance from a surface onto which material is to be deposited using an additive manufacture

4. A method according to claim 1 or claim 2 or claim 3, wherein the exterior of the aerofoil profile is measured with a CMM touch probe.

5. A method according to claim 1 or claim 2 or claim 3, wherein, the exterior of the aerofoil profile is measured using non-contact measurement.

6. A method according to any preceding claim, wherein the leading edge point and the trailing edge point are preferably determined at the position where a reference line extending normal to a tangential chord reference line is at a tangent with the leading edge, and trailing edge respectively.

7. A method according to any preceding claim, wherein the Adaptive Factor (AF) is between 0 and 1.

8. A method according to claim 7, wherein the adaptive factor is 0.5.

9. A method according to claim 7, wherein different adaptive factors are used for different mid reference lines.

10. A method according to any preceding claim, wherein the tool is a laser head which generates a laser beam that follows the spline and melts a surface of the aerofoil and into which material is deposited.

11. A method according to claim 10, wherein the material is in powder form.

12. A method according to claim 10, wherein the tool traverses over the surface in a number of passes that are offset from the spline by a predetermined amount.

13. Apparatus for depositing material to a material receiving surface of an aerofoil, aerofoil having a leading edge (44), a trailing edge (46) and suction (42) and pressure surfaces (40) extending between the leading and trailing edges, the apparatus comprising a laser (100) for generating a beam onto the surface at a predetermined location, a movement mechanism for traversing the beam relative to the surface, and processing apparatus (132), wherein the processing apparatus

a) assigns a deposition plane to the aerofoil;

b) determines for the deposition plane points corresponding the leading edge, the trailing edge and the centre (48) of a circle constrained by both the suction surface and the pressure surface when they are at their greatest distance apart;

c) determines the position of the centre point (64) of a circle (60) the edge of which passes through the deposition plane points;

d) determines a trailing edge reference line (70) extending from the centre point of the circle (60) determined at step c) through the trailing edge point, a leading edge reference line (72) extending from the centre point of the circle (60) determined at step c) through the leading edge point and one or more mid reference (74) lines extending from the centre point of the circle (60) determined at step c) through one or more mid reference points between the leading edge point and the trailing edge point;

e) trims each mid reference line to the bounds of the suction surface and pressure surface and determining the length of each mid reference line;

f) applies an adaptive factor to the length of each mid reference line to provide an adaptive point for each mid reference line;

g) determines a spline extending through the leading edge point, the trailing edge point and each adaptive point; and

h) causes the movement mechanism to traverse the beam along the spline or a path offset from the spline by a predetermined factor.