CLAIMS:

1. A blade outer air seal of a turbine engine, the blade outer air seal comprising:

a first surface to be cooled by a flow of cooling air, wherein the flow of cooling air includes a downstream direction, the first surface

including:

a pedestal array physically connected to the first surface, the

pedestal array including:

a first row of pedestals extending from the first surface;

and

a second row of pedestals extending from the first

surface and running in a direction generally

parallel to the first row of pedestals; and

a first row of contour bumps extending from the first surface

between the first row of pedestals and the second row of

pedestals and running in a direction generally parallel to

the first row of pedestals, wherein the first row of contour

bumps is positioned adjacent to and immediately upstream

from the second row of pedestals, wherein the first row of contour

bumps is positioned adjacent to and immediately downstream

from the first row of pedestals such that there are no other rows

of contour bumps positioned between the first row of pedestals

and the first row of contour bumps, the first row of contour

bumps aligned such that each contour bump of the first row of contour bumps is positioned

immediately downstream of a pedestal of the first row

of pedestals such that each contour bump of the first row of

contour bumps is aligned co-linear with the pedestal of the first

row of pedestals in a direction parallel to the downstream

direction of the flow of cooling air, and a second surface opposite and the second row of pedestals each extend to the second surface, wherein each contour bump of the first row of contour bumps does not extend to the second surface.

2. The blade outer air seal of claim 1 further wherein the first row of contour bumps is aligned such that each contour bump of the first row of contour bumps is positioned immediately downstream of a pedestal of the first row of pedestals such that each contour bump of the first row of contour bumps is aligned co-linear with the pedestal of the first row of pedestals in a direction parallel to the downstream direction of the flow of cooling air.

3. The blade outer air seal of claim 1, wherein the first row of contour bumps extends a first distance from the first surface, the first row of pedestals extends a second distance from the first surface, the

second row of pedestals extends a third distance from the first surface, and the first distance is less than 40% and more than 5% of the second distance and the third distance.

4. The blade outer air seal of claim 1, wherein the first row of contour bumps restricts the flow of cooling air between the first row of pedestals and the second row of pedestals to an extent less than the first row of pedestals and the second row of pedestals restrict the flow of cooling air.

5. The blade outer air seal of claim 1, wherein the second row of pedestals is offset from the first row of pedestals in the parallel direction.

6. The blade outer air seal of claim 1, wherein contour bumps of the first row of contour bumps have a shape that is one of a spherical dome, an ellipsoidal dome, a tear drop, and a bulb tapered at both ends.

7. The blade outer air seal of claim 1, wherein,

the pedestal array further comprises:

a plurality of rows of pedestals extending from the first surface and running in a direction parallel to the second row of pedestals on a side of the second row of pedestals opposite the first row of pedestals, each of the plurality of rows of pedestals extending from the first surface one or more distances; and

the first surface further comprises:

a plurality of rows of contour bumps, at least one of the plurality of rows of contour bumps extending from the first surface between adjacent rows of pedestals and running in a direction generally parallel to the adjacent rows of pedestals, at least one of the plurality of rows of contour bumps extending from the first surface less than 40% and more than 5% of the distance both adjacent rows of pedestals extend from the first surface.

8. The blade outer air seal of claim 7, wherein the pedestal array further comprises:

a plurality of rows of pedestals running in a direction parallel to the first row of pedestals;

wherein the plurality of rows of pedestals runs on a side of the first row of pedestals opposite the second row of pedestals.

9. The blade outer air seal of claim 1, further comprising:
the second surface to be cooled by the flow of cooling air;
the first row of pedestals and the second row of pedestals each extend to the second surface to create a flow passage between the first surface and the second surface, the second surface including:
a second row of contour bumps extending from the second surface between the first row of pedestals and the second row of pedestals and running in a direction generally parallel to the first row of pedestals;, the second row of contour bumps aligned such that at least one contour bump of the second row of contour bumps is positioned at least one of immediately downstream of a pedestal of the first row of pedestals and immediately upstream of a pedestal of the second row of pedestals.

10. The blade outer air seal of claim 9, wherein the first row of contour bumps extends a first distance from the first surface, the second row of contour bumps extends a second distance from the second surface, the first row of pedestals extends a third distance from the first surface, the second row of pedestals extends a forth distance from the first surface, and the first distance and the second distance are each less than 40% and more than 5% of the third distance and the fourth distance.

11. The blade outer air seal of claim 9, wherein the first row of contour bumps and the second row of contour bumps together restrict the flow of cooling air between the first row of pedestals and the second row of pedestals to an extent less than the first row of pedestals and the second row of pedestals restrict the flow of cooling air.

12. The blade outer air seal of claim 9, wherein the first row of contour bumps is aligned such that at least one contour bump of the first row of contour bumps is positioned immediately downstream of a pedestal of the first row of pedestals, and the second row of contour bumps is aligned such that at least one contour bump of the second row of contour bumps is positioned immediately upstream of a pedestal of the second row of pedestals.

13. The blade outer air seal of claim 9, wherein,
the pedestal array further comprises:
a plurality of rows of pedestals extending from the first surface and running in a direction parallel to the second row of pedestals on a side of the second row of pedestals opposite the first row of pedestals, each of the plurality of rows of pedestals extending, from the first surface one

or more distances to the second surface;

the first surface further comprises:

a first plurality of rows of contour bumps, at least one of the first plurality of rows of contour bumps extending from the first surface between adjacent rows of pedestals and running in a direction generally parallel to the adjacent rows of pedestals, at least one of the first plurality of rows of contour bumps extending from the first surface less than 40% and more than 5% of the distance both adjacent rows of pedestals extend from the first surface to the second surface; and

the second surface further comprises:

a second plurality of rows of contour bumps, at least one of the second plurality of rows of contour bumps extending from the second surface between adjacent rows of pedestals and running in a direction generally parallel to the adjacent rows of pedestals, at least one of the second plurality of rows of contour bumps extending from the second surface less than 40% and more than 5% of the distance both adjacent rows of pedestals extend from the first surface to the second surface.

14. The component of claim 9, wherein contour bumps of the first row of contour bumps and contour bumps of the second row of contour bumps have a shape that is one of a spherical dome, an ellipsoidal dome, a tear drop, and a bulb tapered at both ends.

15. A gas turbine engine comprising:

a combustor;

a turbine including:

a plurality of rotor stages; and

a plurality of stator stages interspersed between the plurality of rotor stages; and

a blade outer air seal to be cooled within the turbine, the blade outer air seal the turbine, the blade outer air seal comprising:

a first surface to be cooled by a flow of cooling air, the first surface including:

a pedestal array physically connected to the first surface, the pedestal array including:

a first row of pedestals extending from the first

surface; and

a second row of pedestals extending from the first surface and running in a direction generally parallel to the first row of pedestals; and

a first row of contour bumps extending from the first surface between the first row of pedestals and the second row of pedestals and running in a direction generally parallel to the first row of pedestals, wherein the first row of contour bumps is positioned adjacent to and immediately upstream from the second row of pedestals, wherein the first row of contour bumps is positioned adjacent to and immediately downstream from the first row of pedestals such that there are no other rows of contour bumps positioned between the first row of pedestals and the first row of contour bumps, the first row of contour bumps aligned such that each contour bump of the first row of contour bumps is positioned immediately downstream of a pedestal of thefirst row of pedestals such that each contour bump of the first row of contour bumps is aligned co-linear with the pedestal of the first row of the pedestals in a direction parallel to a direction towards the downstream side of the first row of pedestals, and a second surface opposite the first surface such that the first row of pedestals and the second row of pedestals each extend to the second surface, wherein each contour bump of the first row of contour bumps does not extend to the second surface.

16. The gas turbine engine of claim 15 further wherein the first row of contour bumps is aligned such that each contour bump of the first row of contour bumps is positioned immediately downstream of a pedestal of the first row of pedestals such that each contour bump of the first row of contour bumps is aligned co-linear with the pedestal of the first row of pedestals in a direction parallel to a direction towards the downstream side of the first row of pedestals.

17. The gas turbine engine of claim 15, wherein at least one of the plurality of stator stages comprises:

a plurality of stator vanes, each stator vane including:

an inner diameter platform having radially inward facing surface and radially outward facing surface;

an outer diameter platform having an radially inward facing surface and a radially outward facing surface; and

an airfoil extending radially between the radially outward

facing surface of the inner diameter platform and the radially inward facing surface of the outer diameter platform.

18. A method for cooling a first and second surface within an internal cooling channel of a blade outer air seal, the method comprising:

introducing cooling air into a pedestal array on the surface to be cooled, wherein the cooling air includes a downstream direction of flow,

flowing the cooling air between adjacent pedestals of a first row of pedestals attached to the first surface;

flowing the cooling air over and between adjacent contour bumps of a first row of contour bumps beyond the first row of pedestals, wherein the first row of contour bumps is positioned adjacent to and immediately downstream from the first row of pedestals such that there are no other rows of contour bumps positioned between the first row of pedestals and the first row of contour bumps; and

flowing the cooling air between adjacent pedestals of a second row of pedestals attached to the first surface beyond the first row of contour bumps,

wherein flowing the cooling air over and between adjacent contour bumps comprises increasing heat transfer in a separation zone by flowing cooling air over the contour bumps of the first row of contour bumps, the first row of contour bumps aligned such that each contour bump of the first row of contour bumps is positioned immediately downstream of a pedestal of the first row of pedestals such that each contour bump of the first row of contour bumps is aligned co-linear with the pedestal of the first row of pedestals in a direction parallel to the downstream direction of the flow of cooling air, and the second surface being opposite of the first surface such that the first row of pedestals and the second row of pedestals each extend to the second surface, wherein each contour bump of the first row of contour bumps does not extend to the second surface.