WHAT IS CLAIMED:

~~1. A coating system 100 comprising:~~

~~a support fixture 132 sized to be partially inserted into one or more openings 126, 128 of a component 106; and~~

~~a spray nozzle segment device 104 comprising a housing 202 configured to receive a slurry, the spray nozzle segment device 104 configured to be disposed radially outward of a central axis 110 of the component 106 and shaped to extend circumferentially about at least part of the central axis 110 of the component 106, the housing 202 comprising plural delivery nozzles 210 configured to spray the slurry onto a surface 114, 116, 502, 504 of the component 106,~~

~~wherein the spray nozzle segment device 104 is configured to be operably coupled with the support fixture 132 such that the support fixture 132 maintains a position of the spray nozzle segment device 104 within the component 106 when the support fixture 132 is partially inserted into the one or more openings 126, 128 of the component 106.~~

~~2. The coating system 100 of claim 1, wherein the housing 202 of the spray nozzle segment device 104 is sized to be inserted into the one or more openings 126, 128 of the component 106.~~

~~3. The coating system 100 of claim 1, wherein the spray nozzle segment device 104 is fluidly coupled with a reservoir 130 disposed outside the component 106 with one or more valves 138.~~

~~4. The coating system 600 of claim 1, further comprising plural spray nozzle segment devices 104, each of the spray nozzle segment devices 104 configured to be operably coupled with each other spray nozzle segment device 104 in order to form a rail system 640 extending circumferentially about at least part of the central axis 110 of the component 106.~~

~~5. The coating system 600 of claim 4, wherein each of the plural spray nozzle segment devices 104 are fluidly coupled with each other nozzle segment device 104, wherein each of the plural spray nozzle segment devices 104 are configured to receive the slurry.~~

~~6. The coating system 600 of claim 4, further comprising plural support fixtures 132, wherein the plural support fixtures 132 are configured to maintain a position of each of the plural spray nozzle segment devices 104 inside the component 106.~~

~~7. The coating system 600 of claim 4, wherein each of the plural spray nozzle segment devices 104 are fluidly coupled with a reservoir 130 disposed outside the component 106 with one or more valves 138.~~

~~8. The coating system 100 of claim 1, further comprising a spray controller 124 configured to control one or more of an amount of the slurry provided to the spray nozzle segment device 104, a pressure of the slurry provided to the spray nozzle segment device 104, a flow rate at which the slurry is provided to the spray nozzle segment device 104, a temporal duration at which the slurry is provided to the spray nozzle segment device 104, or a time at which the slurry is provided to the spray nozzle segment device 104.~~

~~9. The coating system 100 of claim 1, wherein the slurry comprises a first fluid and a slurry of ceramic particles and a second fluid, wherein the slurry is configured to be formed inside the housing 202.~~

~~10. The coating system 100 of claim 9, wherein the first fluid is configured to promote evaporation of the second fluid as droplets of the slurry traverse from the housing 202 toward one or more surfaces 114, 116, 502, 504 of the component 106.~~

~~11. The coating system 100 of claim 1, wherein the spray nozzle segment device 104 is configured to be inserted into a turbine engine to spray the slurry onto one or more surfaces 114, 116, 502, 504 of the turbine engine without disassembling the turbine engine.~~

12. The coating system 100 of claim 1, wherein the housing 202 is shaped to control a flow rate of the slurry between an inlet 208 of the housing 202 and the delivery nozzles 210 of the housing 202.

13. A method comprising:

maintaining a position of a spray nozzle segment device 104 inside a component 106 with a support fixture 132, the spray nozzle segment device 104 comprising a housing 202 configured to receive a slurry, the spray nozzle segment device 104 configured to be disposed radially outward of a central axis 110 of the component 106 and shaped to extend circumferentially about at least part of the central axis 110 of the component 106, the housing 202 comprising plural delivery nozzles 210 configured to spray the slurry onto a surface 114, 116, 502, 504 of the component 106, the support fixture 132 sized to be partially inserted into one or more openings 126, 128 of the component 106, wherein the spray nozzle segment device 104 is configured to be operably coupled with the support fixture 132 such that the support fixture 132 maintains a position of the spray nozzle segment device 104 within the component 106 when the support fixture 132 is partially inserted into the one or more openings 126, 128 of the component 106; and

spraying the slurry onto the surface 114, 116, 502, 504 of the component 106 as a coating on the component 106.

14. The method of claim 13, further comprising disposing plural spray nozzle segment devices 104 radially outward of the central axis 110 of the component 106, each of the spray nozzle segment devices 104 configured to be operably coupled with each other spray nozzle segment device 104 in order to form a rail system 640 extending circumferentially about at least part of the central axis 110 of the component 106.

15. The method of claim 13, further comprising controlling one or more of an amount of the slurry provided to the spray nozzle segment device 104, a pressure of the slurry provided to the spray nozzle segment device 104, a flow rate at which the slurry is provided to the spray nozzle segment device 104, a temporal duration at which the slurry is provided

~~to the spray nozzle segment device 104, or a time at which the slurry is provided to the spray nozzle segment device 104 with a spray controller 124 operably coupled with the spray nozzle segment device 104.~~

1. A coating system comprising:

a support fixture sized to be partially inserted into one or more openings of a component; and

a spray nozzle segment device comprising a housing configured to receive a slurry, the housing comprising an inlet configured to receive the slurry and plural delivery nozzles, wherein the slurry is configured to be concurrently directed onto plural surfaces of the component via the plural delivery nozzles as a coating, the spray nozzle segment device configured to be disposed radially outward of a central axis of the component and shaped to extend circumferentially about at least part of the central axis of the component,

wherein the spray nozzle segment device is configured to be operably coupled with the support fixture such that the support fixture maintains a position of the spray nozzle segment device within the component, wherein the spray nozzle segment device is configured to remain stationary in the position while the slurry is configured to be concurrently directed onto the plural surfaces of the component via the plural delivery nozzles.

2. The coating system of claim 1, wherein the housing of the spray nozzle segment device is sized to be inserted into the one or more openings of the component.

3. The coating system of claim 1, wherein the spray nozzle segment device is fluidly coupled with a reservoir disposed outside the component with one or more valves.

4. The coating system of claim 1, further comprising plural spray nozzle segment devices, each of the spray nozzle segment devices configured to be operably coupled with each other spray nozzle segment device in order to form a rail system extending circumferentially about at least part of the central axis of the component.

5. The coating system of claim 4, wherein each of the plural spray nozzle segment devices are fluidly coupled with each other nozzle segment device, wherein each of the plural spray nozzle segment devices are configured to receive the slurry.

6. The coating system of claim 4, further comprising plural support fixtures, wherein the plural support fixtures are configured to maintain a position of each of the plural spray nozzle segment devices inside the component, wherein each of the plural spray nozzle segment devices are configured to remain stationary in the position while the slurry is configured to be concurrently directed onto the plural surfaces of the component via the plural delivery nozzles.

7. The coating system of claim 4, wherein each of the plural spray nozzle segment devices are fluidly coupled with a reservoir disposed outside the component with one or more valves.

8. The coating system of claim 7, further comprising a spray controller, wherein the spray controller is configured to control operation of the one or more valves in order to control an amount of the slurry provided to each of the spray nozzle segment devices.

9. The coating system of claim 1, further comprising a spray controller configured to control one or more of an amount of the slurry provided to the spray

nozzle segment device, a pressure of the slurry provided to the spray nozzle segment device, a flow rate at which the slurry is provided to the spray nozzle segment device, a temporal duration at which the slurry is provided to the spray nozzle segment device, or a time at which the slurry is provided to the spray nozzle segment device.

10. The coating system of claim 1, further comprising a spray controller configured to control one or more of an amount of the slurry provided to each of the plural delivery nozzles, a pressure of the slurry provided to each of the plural delivery nozzles, a flow rate at which the slurry is provided to each of the plural delivery nozzles, a temporal duration at which the slurry is provided to each of the plural delivery nozzles, or a time at which the slurry is provided to each of the plural delivery nozzles.

11. The coating system of claim 1, wherein the slurry comprises a first fluid and a slurry of ceramic particles and a second fluid, wherein the slurry is configured to be formed inside the housing.

12. The coating system of claim 11, wherein the first fluid is configured to promote evaporation of the second fluid as droplets of the slurry traverse from the housing toward the plural surfaces of the component via the plural delivery nozzles.

13. The coating system of claim 1, wherein the spray nozzle segment device is configured to be inserted into a turbine engine to spray the slurry onto one or more surfaces of the turbine engine without disassembling the turbine engine.

14. The coating system of claim 1, wherein the housing is shaped to control a flow rate of the slurry between the inlet of the housing and the plural delivery nozzles of the housing.

15. A method comprising:

maintaining a position of a spray nozzle segment device inside a component with a support fixture, the spray nozzle segment device comprising a housing configured to receive a slurry, the housing comprising an inlet configured to receive the slurry and plural delivery nozzles, wherein the slurry is configured to be concurrently directed onto plural surfaces of the component via the plural delivery nozzles, the spray nozzle segment device configured to be disposed radially outward of a central axis of the component and shaped to extend circumferentially about at least part of the central axis of the component, the support fixture sized to be partially inserted into one or more openings of the component, wherein the spray nozzle segment device is configured to be operably coupled with the support fixture such that the support fixture maintains a position of the spray nozzle segment device within the component; and

spraying the slurry onto the surface of the component as a coating on the component, wherein the spray nozzle segment device is configured to remain stationary in the position while the slurry is configured to be concurrently directed onto the plural surfaces of the component via the plural delivery nozzles.

16. The method of claim 15, further comprising disposing plural spray nozzle segment devices radially outward of the central axis of the component, each of the spray nozzle segment devices configured to be operably coupled with each other spray nozzle segment device in order to form a rail system extending circumferentially about at least part of the central axis of the component.

17. The method of claim 16, further comprising maintaining a position of each of the plural spray nozzle segment devices inside the component with plural support fixtures, wherein each of the plural spray nozzle segment devices are configured to

remain stationary in the position while the slurry is configured to be concurrently directed onto the plural surfaces of the component via the plural delivery nozzles.

18. The method of claim 16, further comprising controlling operation of one or more valves of a reservoir coupled to the plural spray nozzle segment devices in order to control one or more of an amount of the slurry provided to each of the spray nozzle segment devices, a pressure of the slurry provided to each of the spray nozzle segment devices, a flow rate at which the slurry is provided to each of the spray nozzle segment devices, a temporal duration at which the slurry is provided to each of the spray nozzle segment devices, or a time at which the slurry is provided to each of the spray nozzle segment devices.

19. The method of claim 15, further comprising controlling one or more of an amount of the slurry provided to the spray nozzle segment device, a pressure of the slurry provided to the spray nozzle segment device, a flow rate at which the slurry is provided to the spray nozzle segment device, a temporal duration at which the slurry is provided to the spray nozzle segment device, or a time at which the slurry is provided to the spray nozzle segment device with a spray controller operably coupled with the spray nozzle segment device.

20. The method of claim 15, further comprising controlling one or more of an amount of the slurry provided to each of the plural delivery nozzles, a pressure of the slurry provided to each of the plural delivery nozzles, a flow rate at which the slurry is provided to each of the plural delivery nozzles, a temporal duration at which the slurry is provided to each of the plural delivery nozzles, or a time at which the slurry is provided to each of the plural delivery nozzles with a spray controller operably coupled with the spray nozzle segment device.

21. The method of claim 15, further comprising inserting the spray nozzle segment device into a turbine engine to spray the slurry onto plural surfaces of the turbine engine without disassembling the turbine engine.