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(54) **COMPRESSOR STATOR VANE AIRFOIL**

(57) A stator vane (50) includes an airfoil (100) having an airfoil shape (150). The airfoil shape (150) has a nominal profile substantially in accordance with Cartesian coordinate values of X, Y and Z set forth in one of Table I, Table II, Table III, Table IV, Table V, Table VI, Table VII, or Table VIII. The Cartesian coordinate values of X, Y and Z are non-dimensional values from 0% to 100% convertible to dimensional distances expressed in a unit of distance by multiplying the Cartesian coordinate values of X, Y and Z by a scaling factor of the airfoil in the unit of distance. The X and Y values, when connected by smooth continuing arcs, define airfoil profile sections at each Z value. The airfoil profile sections at Z values are joined smoothly with one another to form a complete airfoil shape (150).

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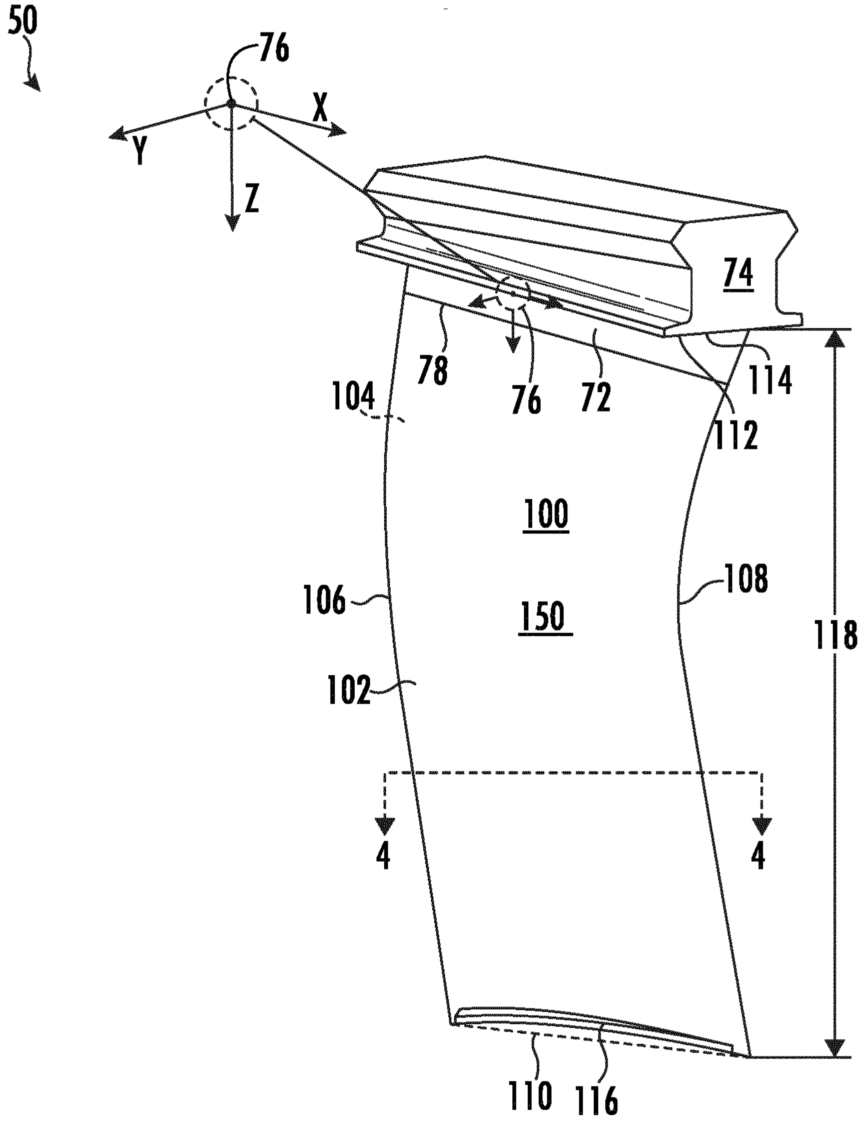
50
76
X
Y
Z
74
78
76
72
114
112
104
100
150
106
108
118
102
4
4
110
116

FIG. 3

Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of priority to Indian Patent Application No. 202111019918, filed on April 30, 2021, and to United States Patent Application Serial No. 17/445,210, filed on August 17, 2021, the disclosures of which are incorporated by reference herein in their entirety.

FIELD

[0002] The present disclosure relates to an airfoil for a compressor stator vane disposed within a stage of a compressor section of a land-based gas turbine system and, more particularly, relates to a shape defining a profile for an airfoil of a compressor stator vane.

BACKGROUND

[0003] Some simple cycle or combined cycle power plant systems employ turbomachines in their design and operation. Generally, turbomachines employ airfoils (e.g., stator vanes or nozzles and rotor blades), which during operation are exposed to fluid flows. These airfoils are configured to aerodynamically interact with the fluid flows and to transfer energy to or from these fluid flows as part of power generation. For example, the airfoils may be used to compress fluid, create thrust, to convert kinetic energy to mechanical energy, and/or to convert thermal energy to mechanical energy. As a result of this interaction and conversion, the aerodynamic characteristics of these airfoils may result in losses that have an impact on system and turbine operation, performance, thrust, efficiency, and power.

BRIEF DESCRIPTION

[0004] Aspects and advantages of the stator vanes and turbomachines in accordance with the present disclosure will be set forth in part in the following description, or may be obvious from the description, or may be learned through practice of the technology.

[0005] In accordance with one embodiment, a stator vane is provided. A stator vane includes an airfoil having an airfoil shape. The airfoil shape has a nominal profile substantially in accordance with Cartesian coordinate values of X, Y and Z set forth in one of Table I, Table II, Table III, Table IV, Table V, Table VI, Table VII, or Table VIII. The Cartesian coordinate values of X, Y and Z are non-dimensional values from 0% to 100% convertible to dimensional distances expressed in a unit of distance by multiplying the Cartesian coordinate values of X, Y and Z by a scaling factor of the airfoil in the unit of distance. The X and Y values, when connected by smooth continuing arcs, define airfoil profile sections at each Z value. The airfoil profile sections at Z values are joined smoothly with one another to form a complete airfoil shape.

[0006] The airfoil shape (e.g., the airfoil shape 150 in FIGS. 3 and 4) has a nominal profile substantially in accordance with Cartesian coordinate values of X, Y and Z set forth in one of Table I, Table II, Table III, Table IV, Table V, Table VI, Table VII, or Table VIII. Each of Tables I-VIII defines a plurality of airfoil profile sections of the airfoil (e.g., the airfoil 100 in FIGS. 3 and 4) at respective Z positions. For each airfoil profile section of the airfoil at each Z position, the points defined by the X and Y coordinates are connected together by smooth continuing arcs thereby to define the shape of that airfoil profile section. Also, adjacent airfoil profile sections along the Z-direction are connected together by smooth continuing surfaces. Thus, the complete airfoil shape is defined. Advantageously, this airfoil shape tends to provide for improved aerodynamic efficiency of the airfoil when compared to conventional airfoil designs.

[0007] In accordance with another embodiment, a stator vane is provided. The stator vane includes an airfoil having a nominal suction-side profile substantially in accordance with suction-side Cartesian coordinate values of X, Y and Z set forth in one of Table I, Table II, Table III, Table IV, Table V, Table VI, Table VII, or Table VIII. The Cartesian coordinate values of X, Y and Z are non-dimensional values from 0% to 100% convertible to dimensional distances expressed in a unit of distance by multiplying the Cartesian coordinate values of X, Y and Z by a scaling factor of the airfoil in the unit of distance. The X and Y values, when connected by smooth continuing arcs, define suction-side profile sections at each Z value. The suction-side profile sections at the Z values are joined smoothly with one another to form a complete airfoil suction-side shape.

[0008] In accordance with yet another embodiment, a turbomachine is provided. The turbomachine includes a compressor section, a turbine section downstream from the compressor section, and a combustion section downstream from the compressor section and upstream from the turbine section. A stator vane is disposed within one of the compressor section or the turbine section. The stator vane includes an airfoil having a nominal suction-side profile substantially in accordance with suction-side Cartesian coordinate values of X, Y and Z Table I, Table II, Table III, Table IV, Table V,

Table VI, Table VII, or Table VIII. The Cartesian coordinate values of X, Y and Z are non-dimensional values from 0% to 100% convertible to dimensional distances expressed in a unit of distance by multiplying the Cartesian coordinate values of X, Y and Z by a scaling factor of the airfoil in the unit of distance. The X and Y values, when connected by smooth continuing arcs, define suction-side profile sections at each Z value. The suction-side profile sections at the Z values are joined smoothly with one another to form a complete airfoil suction-side shape.

[0009] These and other features, aspects and advantages of the present stator vanes and turbomachines will become better understood with reference to the following description and appended claims. The accompanying drawings, which are incorporated in and constitute a part of this specification, illustrate embodiments of the technology and, together with the description, serve to explain the principles of the technology.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] A full and enabling disclosure of the present stator vanes and turbomachines, including the best mode of making and using the present systems and methods, directed to one of ordinary skill in the art, is set forth in the specification, which makes reference to the appended figures, in which:

FIG. 1 is a schematic illustration of a turbomachine in accordance with embodiments of the present disclosure;
FIG. 2 illustrates a cross-sectional side view of a compressor section, in accordance with embodiments of the present disclosure;
FIG. 3 illustrates a perspective view of a stator vane, in accordance with embodiments of the present disclosure; and
FIG. 4 illustrates an airfoil profile section of an airfoil from along the line 4-4 shown in FIG. 3, in accordance with embodiments of the present disclosure;
FIG. 5 illustrates a graph of a stagger angle distribution belonging to an airfoil disposed on a stator vane within a specified stage of a compressor section, in accordance with embodiments of the present disclosure;
FIG. 6 illustrates a graph of a stagger angle distribution belonging to an airfoil disposed on a stator vane within a specified stage of a compressor section, in accordance with embodiments of the present disclosure;
FIG. 7 illustrates a graph of a stagger angle distribution belonging to an airfoil disposed on a stator vane within a specified stage of a compressor section, in accordance with embodiments of the present disclosure;
FIG. 8 illustrates a graph of a stagger angle distribution belonging to an airfoil disposed on a stator vane within a specified stage of a compressor section, in accordance with embodiments of the present disclosure;
FIG. 9 illustrates a graph of a stagger angle distribution belonging to an airfoil disposed on a stator vane within a specified stage of a compressor section, in accordance with embodiments of the present disclosure;
FIG. 10 illustrates a graph of a stagger angle distribution belonging to an airfoil disposed on a stator vane within a specified stage of a compressor section, in accordance with embodiments of the present disclosure;
FIG. 11 illustrates a graph of a stagger angle distribution belonging to an airfoil disposed on a stator vane within a specified stage of a compressor section, in accordance with embodiments of the present disclosure; and
FIG. 12 illustrates a graph of a stagger angle distribution belonging to an airfoil disposed on a stator vane within a specified stage of a compressor section, in accordance with embodiments of the present disclosure.

DETAILED DESCRIPTION

[0011] Reference now will be made in detail to embodiments of the present stator vanes and turbomachines, one or more examples of which are illustrated in the drawings. Each example is provided by way of explanation, rather than limitation of, the technology. In fact, it will be apparent to those skilled in the art that modifications and variations can be made in the present technology without departing from the scope or spirit of the claimed technology. For instance, features illustrated or described as part of one embodiment can be used with another embodiment to yield a still further embodiment. Thus, it is intended that the present disclosure covers such modifications and variations as come within the scope of the appended claims and their equivalents.

[0012] The detailed description uses numerical and letter designations to refer to features in the drawings. Like or similar designations in the drawings and description have been used to refer to like or similar parts of the invention. As used herein, the terms "first", "second", and "third" may be used interchangeably to distinguish one component from another and are not intended to signify location or importance of the individual components.

[0013] As used herein, the terms "upstream" (or "forward") and "downstream" (or "aft") refer to the relative direction with respect to fluid flow in a fluid pathway. For example, "upstream" refers to the direction from which the fluid flows, and "downstream" refers to the direction to which the fluid flows. The term "radially" refers to the relative direction that is substantially perpendicular to an axial centerline of a particular component, the term "axially" refers to the relative direction that is substantially parallel and/or coaxially aligned to an axial centerline of a particular component and the term "circumferentially" refers to the relative direction that extends around the axial centerline of a particular component.

Terms of approximation, such as "generally," "substantially," or "about" include values within ten percent greater or less than the stated value. When used in the context of an angle or direction, such terms include within ten degrees greater or less than the stated angle or direction. For example, "generally vertical" includes directions within ten degrees of vertical in any direction, e.g., clockwise or counter-clockwise.

[0014] Referring now to the drawings, FIG. 1 illustrates a schematic diagram of one embodiment of a turbomachine, which in the illustrated embodiment is a gas turbine 10. Although an industrial or land-based gas turbine is shown and described herein, the present disclosure is not limited to a land based and/or industrial gas turbine unless otherwise specified in the claims. For example, the invention as described herein may be used in any type of turbomachine including but not limited to a steam turbine, an aircraft gas turbine, or a marine gas turbine.

[0015] As shown, gas turbine 10 generally includes an inlet section 12, a compressor section 14 disposed downstream of the inlet section 12, a plurality of combustors (not shown) within a combustor section 16 disposed downstream of the compressor section 14, a turbine section 18 disposed downstream of the combustor section 16, and an exhaust section 20 disposed downstream of the turbine section 18. Additionally, the gas turbine 10 may include one or more shafts 22 coupled between the compressor section 14 and the turbine section 18.

[0016] The multi-stage axial compressor section or compressor section 14 may generally include a plurality of rotor disks 24 (one of which is shown) and a plurality of rotor blades 44 extending radially outwardly from and connected to each rotor disk 24. Each rotor disk 24 in turn may be coupled to or form a portion of the shaft 22 that extends through the compressor section 14. The compressor section 14 may further include one or more stator vanes 50 arranged circumferentially around the shaft 22. The stator vanes 50 may be fixed to a static casing or compressor casing 48 that extends circumferentially around the rotor blades 44.

[0017] The turbine section 18 may generally include a plurality of rotor disks 28 (one of which is shown) and a plurality of rotor blades 30 extending radially outwardly from and being interconnected to each rotor disk 28. Each rotor disk 28 in turn may be coupled to or form a portion of the shaft 22 that extends through the turbine section 18. The turbine section 18 further includes a turbine casing 33 that circumferentially surround the portion of the shaft 22 and the rotor blades 30, thereby at least partially defining a hot gas path 32 through the turbine section 18. The turbine casing 33 may be configured to support a plurality of stages of stationary nozzles 29 extending radially inwardly from the inner circumference of the turbine casing 33.

[0018] During operation, a working fluid such as air flows through the inlet section 12 and into the compressor section 14 where the air is progressively compressed, thus providing pressurized air to the combustors of the combustor section 16. The pressurized air is mixed with fuel and burned within each combustor to produce combustion gases 34. The combustion gases 34 flow through the hot gas path 32 from the combustor section 16 into the turbine section 18, wherein energy (kinetic and/or thermal) is transferred from the combustion gases 34 to the rotor blades 30, causing the shaft 22 to rotate. The mechanical rotational energy may then be used to power the compressor section 14 and/or to generate electricity. The combustion gases 34 exiting the turbine section 18 may then be exhausted from the gas turbine 10 via the exhaust section 20.

[0019] FIG. 2 illustrates a cross-sectional side view of an embodiment of the compressor section 14 of the gas turbine 10 of FIG. 1, which is shown as a multi-stage axial compressor section 14, in accordance with embodiments of the present disclosure. As shown in FIGS. 1 and 2, the gas turbine 10 may define a cylindrical coordinate system. The cylindrical coordinate system may define an axial direction A (e.g. downstream direction) substantially parallel to and/or along an axial centerline 23 of the gas turbine 10, a radial direction R perpendicular to the axial centerline 23, and a circumferential direction C extending around the axial centerline 23.

[0020] In operation, air 15 may enter the compressor section 14 in the axial direction A through the inlet section 12 and may be pressurized in the multi-stage axial compressor section 14. The compressed air may then be mixed with fuel for combustion within the combustor section 16 to drive the turbine section 18, which rotates the shaft 22 in the circumferential direction C and, thus, the multi-stage axial compressor section 14. The rotation of the shaft 22 also causes one or more rotor blades 44 (e.g., compressor rotor blades) within the multi-stage axial compressor section 14 to draw in and pressurize the air received by the inlet section 12.

[0021] The multi-stage axial compressor section 14 may include a rotor assembly 46 having a plurality of rotor disks 24. Rotor blades 44 may extend radially outward from the rotor disks 24. The entire rotor assembly 46 (e.g. rotor disks 24 and rotor blades 44) may rotate in the circumferential direction C during operation of the gas turbine 10. The rotor assembly 46 may be surrounded by a compressor casing 48. The compressor casing may be static or stationary, such that the rotor assembly 46 rotates relative to the compressor casing 48. Stator vanes 50 (e.g., variable stator vanes and/or fixed stator vanes) may extend radially inward from the compressor casing 48. As shown in FIG. 2, one or more stages of the stator vanes 50 may be variable stator vanes 51, such that an angle of the stator vane 50 may be selectively actuated (e.g. by a controller 200). For example, in the embodiments shown in FIG. 2, first three stages of the compressor section 14 may include variable stator vanes 51. In many embodiments, as shown, the rotor blades 44 and stator vanes 50 may be arranged in an alternating fashion, such that most of the rotor blades 44 are disposed between two stator vanes 50 in the axial direction A.

[0022] In some embodiments, the compressor casing 48 of the compressor section 14 or the inlet section 12 may have one or more sets of inlet guide vanes 52 (IGVs) (e.g., variable IGV stator vanes). The inlet guide vanes 52 may be mounted to the compressor casing 48, spaced apart from one another in the circumferential direction C, and may be operable to control the amount of air 15 that enters the compressor section 14. Additionally, an outlet 56 of the compressor section 14 may have a set of outlet guide vanes 58 (OGVs). The OGVs 58 may be mounted to the compressor casing 48, spaced apart from one another in the circumferential direction C, and may be operable to control the amount of air 15 that exits the compressor section 14.

[0023] In exemplary embodiments, as shown in FIG. 2, the variable stator vane 51, the IGVs 52, and the OGVs may each be configured to vary its vane angle relative to the gas flow (e.g. air flow) by rotating the vane 51, 52, 58 about an axis of rotation (e.g., radially oriented vane shaft). However, each variable stator vane 51 (including the IGVs 52 and the OGVs 58) may be otherwise stationary relative to the rotor blades 44. In certain embodiments, the variable stator vanes 51, the IGVs 52, and the OGVs 58 may be coupled to an actuator 19 (e.g., electric drive, pneumatic drive, or hydraulic drive). The actuators 19 may be in operable communication (e.g. electrical communication) with a controller 200. The controller may be operable to selectively vary the vane angle. In other embodiments, all of the stator vanes 50 may be fixed, such that the stator vanes 50 are configured to remain in a fixed angular position (e.g. the vane angle does not vary).

[0024] The compressor section 14 may include a plurality of rows or stages arranged in a serial flow order, such as between 2 to 30, 2 to 25, 2 to 20, 2 to 14, or 2 to 10 rows or stages, or any specific number or range therebetween. Each stage may include a plurality of rotor blades 44 circumferentially spaced about the axial centerline 23 and a plurality of stator vanes 50 circumferentially spaced about the axial centerline 23. In each stage, the multi-stage axial compressor section 14 may include 2 to 1000, 5 to 500, or 10 to 100 of circumferentially arranged rotor blades 44, and 2 to 1000, 5 to 500, or 10 to 100 of circumferentially arranged stator vanes 50. In particular, the illustrated embodiment of the multi-stage axial compressor section 14 includes 22 stages (e.g. S1-S14).

[0025] It may be appreciated that each stage has a set of rotor blades 44 disposed at a first axial position and a set of stator vanes 50 disposed at a second axial position along the length of the compressor section 14. In other words, each stage has the rotor blades 44 and stator vanes 50 axially offset from one another, such that the compressor section 14 has an alternating arrangement of rotor blades 44 and stator vanes 50 one set after another along the length of the compressor section 14. Each set of rotor blades 44 extends (e.g., in a spaced arrangement) in the circumferential direction C about the shaft 22, and each set of stator vanes 50 extends (e.g., in a spaced arrangement) in the circumferential direction C within the compressor casing 48.

[0026] While the compressor section 14 may include greater or fewer stages than is illustrated, FIG. 2 illustrates an embodiment of the compressor section 14 having fourteen stages arranged in a serial flow order and identified as follows: first stage S1, second stage S2, third stage S3, fourth stage S4, fifth stage S5, sixth stage S6, seventh stage S7, eighth stage S8, ninth stage S9, tenth stage S10, eleventh stage S11, twelfth stage S12, thirteenth stage S13, and fourteenth stage S14. In certain embodiments, each stage may include rotor blades 44 and stator vanes 50 (e.g., fixed stator vanes 50 and/or variable stator vanes 50). As used herein, a rotor blade 44 disposed within one of the sections S1-S14 of the compressor section 14 may be referred to by whichever stage it is disposed within, e.g. "a first stage compressor rotor blade," "a second stage compressor rotor blade," "a third stage compressor rotor blade," etc. Similarly, a stator vane 50 disposed within one of the sections S1-S14 of the compressor section 14 may be referred to by whichever stage it is disposed within, e.g. "a third stage compressor stator vane," "a fourth stage compressor stator vane," "a fifth stage compressor stator vane," etc.

[0027] In use, the rotor blades 44 may rotate circumferentially about the compressor casing 48 and the stator vanes 50. Rotation of the rotor blades 44 may result in air entering the inlet section 12. The air is then subsequently compressed as it traverses the various stages (e.g., first stage S1 to fourteenth stage S14) of the compressor section 14 and moves in the axial direction 38 downstream of the multi-stage axial compressor section 14. The compressed air may then exit through the outlet 56 of the multi-stage axial compressor section 14. As discussed above, the outlet 56 may have a set of outlet guide vanes 58 (OGVs). The compressed air that exits the compressor section 14 may be mixed with fuel, directed to the combustor section 16, directed to the turbine section 18, or elsewhere in the gas turbine 10.

[0028] TABLES I through VIII below each contain coordinate data that describes a respective airfoil shape (or surface profile). In exemplary embodiments, the airfoil shapes defined by each of TABLES I through VIII describe a rotor blade 44 and/or the stator vane 50 (such as a fixed stator vane and/or a variable stator vane) of the compressor section 14. In certain embodiments, the airfoil shapes defined by each of TABLES I through VIII describe an IGV 52 and/or an OGV 58 of the compressor section 14.

[0029] The IGV 52, the stages (e.g. S1-S14) of rotor blades 44 and stator vanes 50, and the OGV 58 of the compressor section 14 may be grouped into one or more sections or portions of the compressor section 14 for reference purposes. For the purposes of the grouping, portions the compressor section 14 may be expressed in terms of a percentage, such as a percentage of the compressor section 14 from the inlet (e.g. 0% of the compressor section 14) to the outlet (e.g. 100% of the compressor section 14) in the axial or downstream direction. In this way, the compressor section 14 may include, in a serial flow order, an early stage 60, a mid stage 62, and a late stage 64. In particular, the early stage 60 may include from approximately 0% to approximately 25% of the compressor section 14 (e.g. from the IGV 52 to about the fourth stage S4). The mid stage 62 may include from approximately 25% to approximately 75% of the compressor section 14 (e.g. from about the fifth stage S5 to about the eleventh stage S11). The late stage 64 may include from approximately 75% to approximately 100% of the compressor section 14 (e.g. from about the twelfth stage S12 to the OGV 58).

[0030] Accordingly, the Cartesian coordinate data contained within TABLE I may correspond to an airfoil shape of an airfoil 100 disposed within the early stage 60 of the compressor section 14. The Cartesian coordinate data contained within TABLES II through VI may correspond to an airfoil shape of an airfoil 100 disposed within the mid stage 62 of the compressor section 14. The Cartesian coordinate data contained within each of TABLES VII and VIII may correspond to an airfoil shape of an airfoil 100 disposed within the late stage 64 of the compressor section 14.

[0031] For example, in exemplary embodiments, the Cartesian coordinate data contained within TABLE I may correspond to an airfoil shape of an airfoil 100 disposed on a stator vane 50 within the fourth stage S4 of the compressor section 14. The Cartesian coordinate data contained within TABLE II may correspond to an airfoil shape of an airfoil 100 disposed on a stator vane 50 within the fifth stage S5 of the compressor section 14. The Cartesian coordinate data contained within TABLE III may correspond to an airfoil shape of an airfoil 100 disposed on a stator vane 50 within the sixth stage S6 of the compressor section 14. The Cartesian coordinate data contained within TABLE IV may correspond to an airfoil shape of an airfoil 100 disposed on a stator vane 50 within the seventh stage S7 of the compressor section 14. The Cartesian coordinate data contained within TABLE V may correspond to an airfoil shape of an airfoil 100 disposed on a stator vane 50 within the eighth stage S8 of the compressor section 14. The Cartesian coordinate data contained within TABLE VI may correspond to an airfoil shape of an airfoil 100 disposed on a stator vane 50 within the ninth stage S9 of the compressor section 14. The Cartesian coordinate data contained within TABLE VII may correspond to an airfoil shape of an airfoil 100 disposed on a stator vane 50 within the eleventh stage S11 of the compressor section 14. The Cartesian coordinate data contained within TABLE VIII may correspond to an airfoil shape of an airfoil 100 disposed on a stator vane 50 within the thirteenth stage S13 of the compressor section 14.

[0032] However, in various other embodiments, each of TABLES I through VIII may contain Cartesian coordinate data of an airfoil shape of an airfoil 100 that may be disposed on a stator vane 50 or rotor blade 44 in any stage S1-S14 of the compressor section 14. Accordingly, the airfoil shape defined by each of TABLES I through VIII should not be limited to any particular stage of the compressor section 14 unless specifically recited in the claims.

[0033] FIG. 3 illustrates a perspective view of a stator vane 50, which may be incorporated in any stage (e.g. S1 through S14) of the compressor section 14, in accordance with embodiments of the present disclosure.

[0034] As shown, the stator vane 50 includes an airfoil 100 defining an airfoil shape 150. The airfoil 100 includes a pressure-side surface or profile 102 and an opposing suction-side surface or profile 104. The pressure-side surface 102 and the suction-side surface 104 meet or intersect at a leading edge 106 and a trailing edge 108 of the airfoil 100. A chord line 110 extends between the leading edge 106 and the trailing edge 108 such that pressure and suction-side surfaces 102, 104 can be said to extend in chord or chordwise between the leading edge 106 and the trailing edge 108. The leading and trailing edges, 106 and 108 respectively, may be described as the dividing or intersecting lines between the suction-side surface 104 and the pressure-side surface 102. In other words, the suction-side surface 104 and the pressure-side surface 102 couple together with one another along the leading edge 106 and the trailing edge 108, thereby defining an airfoil shaped cross-section that gradually changes lengthwise along the airfoil 100.

[0035] In operation, the stator vanes 50 may be a stationary components that do not move in the circumferential direction C. For example, the stator vanes 50 may be coupled to, and extend radially inward from, the compressor casing 48. Each set (or stage) of stator vanes 50 within the compressor section 14 may be disposed axially between two sets (or stages) of rotor blades 44, which rotate in the circumferential direction C. For example, the rotor blades 44 rotate about an axial centerline 23 exerting a torque on a working fluid, such as air 15, thus increasing energy levels of the fluid as the working fluid traverses the various stages S1 through S14 of the multi-stage axial compressor section 14 on its way to the combustor 26. The stator vanes 50 may be adjacent (e.g., upstream and/or downstream) to the one or more of the rotor blades 44. The stator vanes 50 slow the working fluid during rotation of the rotor blades 44, converting a circumferential component of movement of the working fluid flow into pressure. Accordingly, continuous rotation of the rotor blade 44 creates a continuous flow of compressed working fluid, suitable for combustion via the combustor 26.

[0036] As shown in FIG. 3, the airfoil 100 includes a root or first end 112, which intersects with and extends radially outwardly from a base or platform 114 of the stator vane 50. The airfoil 100 terminates radially at a second end or radial tip 116 of the airfoil 100. In some embodiments (not shown), the stator vane 50 may include a tip shroud or tip platform extending from the radial tip 116 generally parallel to the base 114. The pressure-side and suction-side surfaces 102, 104 can be said to extend in span or in a span-wise direction 118 between the root 112 and/or the platform 114 and the radial tip 116 of the airfoil 100. In other words, each stator vane 50 includes an airfoil 100 having opposing pressure-side and suction-side surfaces 102, 104 that extend in chord or chordwise 110 between opposing leading and trailing edges 106, 108 and that extend in span or span-wise 118 between the root 112 and the radial tip 116 of the airfoil 100.

[0037] In particular configurations, the airfoil 100 may include a fillet 72 formed between the platform 114 and the airfoil 100 proximate to the root 112. The fillet 72 can include a weld or braze fillet, which can be formed via conventional MIG welding, TIG welding, brazing, etc., and can include a profile that can reduce fluid dynamic losses as a result of the presence of fillet 72. In particular embodiments, the platform 114, the airfoil 100 and the fillet 72 can be formed as a single component, such as by casting and/or machining and/or additive manufacturing (such as 3D printing) and/or any other suitable technique now known or later developed and/or discovered.

[0038] In various implementations, the stator vane 50 may include a mounting portion 74 (such as a dovetail joint), which is formed to connect and/or to secure the stator vane 50 to the compressor casing 48. For example, the mounting portion 74 may include a T-shaped structure, a hook, one or more lateral protrusions, one or more lateral slots, or any combination thereof. The mounting portion 74 (e.g., dovetail joint) may be configured to mount into the compressor casing 48 in an axial direction A, a radial direction R, and/or a circumferential direction C (e.g., into an axial slot or opening, a radial slot or opening, and/or a circumferential slot or opening).

[0039] An important term in this disclosure is "profile". The profile is the range of the variation between measured points on an airfoil surface and the ideal position listed in any one of TABLES I through VIII. The actual profile on a manufactured compressor stator vane will be different than those in TABLES I through VIII, and the design is robust to this variation meaning that mechanical and aerodynamic function are not impaired. As noted above, a + or - 5% profile tolerance is used herein. The X, Y and Z values are all non-dimensionalized relative to the airfoil height.

[0040] The airfoil 100 of the stator vane 50 has a nominal profile at any cross-section taken between the platform 114 or the root 112 and the radial tip 116, e.g., such as the cross section shown in FIG. 4. A "nominal profile" is the range of variation between measured points on an airfoil surface and the ideal position listed in TABLES I through VIII. The actual profile on a manufactured compressor blade may be different from those in TABLES I through VIII (e.g., due to manufacturing tolerances), and the design is robust to this variation, meaning that mechanical and aerodynamic function are not impaired.

[0041] The Cartesian coordinate values of X, Y, and Z provided in each of TABLES I through VIII are dimensionless values scalable by a scaling factor, as measured in any given unit of distance (e.g., inches). For example, the X, Y, and Z values in each of TABLES I through VIII are set forth in non-dimensionalized units, and thus a variety of units of dimensions may be used when the values are appropriately scaled by a scaling factor. As one example only, the Cartesian coordinate values of X, Y and Z may be convertible to dimensional distances by multiplying the X, Y and Z values by a scaling factor. The scaling factor may be substantially equal to 1, greater than 1, or less than 1. For example, the Cartesian coordinate values of X, Y, and Z may be convertible to dimensional distances by multiplying the X, Y, and Z values by the scaling factor. The scaling factor, used to convert the non-dimensional values to dimensional distances, may be a fraction (e.g., ½, ¼, etc.), decimal fraction (e.g., 0.5, 1.5, 10.25, etc.), integer (e.g., 1, 2, 10, 100, etc.) or a mixed number (e.g., 1½, 10¼, etc.). The scaling factor may be a dimensional distance in any suitable format (e.g., inches, feet, millimeters, centimeters, etc.). In various embodiments, the scaling factor may be between about 0.01 inches and about 10 inches, such as between about 0.1 inches and about 10 inches, such as between about 0.1 inches and about 5 inches, such as between about 0.1 inches and about 3 inches, such as between about 0.1 inches and about 2 inches.

[0042] In various embodiments, the X, Y, and Z values in each of TABLES I through VIII may be scaled as a function of the same scaling factor (e.g., constant or number) to provide a scaled-up or a scaled-down airfoil. In some embodiments, the scaling factor may be different for each of TABLES I through VIII, such that each of the TABLES I through VIII has a unique scaling factor. In this way, each of TABLES I through VIII define the relationships between the respective X, Y, and Z coordinate values without specifying the units of measure (e.g., dimensional units) for the various airfoil 100 embodiments. Accordingly, while different scaling factors may be applied to the respective X, Y, and Z coordinate values of each of TABLES I through VIII to define different embodiments of the airfoil 100, each embodiment of the airfoil 100 regardless of the particular scaling factor is considered to be defined by the respective X, Y, and Z coordinate values TABLES I through VIII. For example, the X, Y, and Z coordinate values of TABLES I through VIII may each define an embodiment of the airfoil 100 formed with a 1:1 inch scaling factor, or formed with a 1:2 inch scaling factor, or formed with a 1:1 cm scaling factor. It may be appreciated that any scaling factor may be used with the X, Y, and Z coordinate values of any of TABLES I through VIII, according to the design considerations of a particular embodiment.

[0043] A gas turbine hot gas path requires airfoils that meet system requirements of aerodynamic and mechanical blade loading and efficiency. To define the airfoil shape of each compressor stator vane airfoil, there is a unique set or loci of points in space that meet the stage requirements and that can be manufactured. This unique loci of points meet the requirements for stage efficiency and are arrived at by iteration between aerodynamic and mechanical loadings enabling the turbine to run in an efficient, safe and smooth manner. These points are unique and specific to the system.

[0044] The loci that define the compressor stator vane airfoil shape include a set of points with X, Y and Z dimensions relative to a reference origin coordinate system. The Cartesian coordinate system of X, Y and Z values given in each of TABLES I through VIII below defines the airfoil shapes (which include the various airfoil profile sections) of an airfoil belonging to one or more compressor stator vanes and/or compressor rotor blades at various locations along its height (or along the span-wise direction 118).

[0045] Each of TABLES I through VIII list data for a uncoated airfoil at cold or room temperature. The envelope/tolerance for the coordinates is about +/-5% in a direction normal to any airfoil surface location and/or about +/-5% of the chord 110 in a direction nominal to any airfoil surface location. In other words, the airfoil layout, as embodied by the disclosure, is robust to this range of variation without impairment of mechanical and aerodynamic functions. As used herein, the term of approximation "substantially," when used in the phrase "substantially in accordance with Cartesian coordinate values of X, Y and Z set forth in Table I," refers to the envelope/tolerance for the coordinates (e.g., +/-5% in a direction normal to any airfoil surface location and/or about +/-5% of the chord 110 in a direction nominal to any airfoil surface location).

[0046] A point data origin 76 is defined at the base 114 of the airfoil 100. For example, the point data origin 76 may be defined at the root 112 of the airfoil 100. For example, in some embodiments, the point data origin 76 may be defined at the root 112 of the airfoil 100 at the intersection of a stacking axis (e.g. a radially extending axis) and the compressed air flowpath (e.g. a flowpath of air along the surface of the airfoil). In the embodiments presented in TABLES I through VIII below, the point data origin 76 is defined at a transition or intersection line 78 defined between the fillet 72 and the airfoil 100. The point data origin 76 corresponds to the non-dimensional Z value equal to 0.

[0047] As described above, the Cartesian coordinate system has orthogonally-related (e.g. mutually orthogonal) X, Y and Z axes, and the X axis lies generally parallel to a axial centerline 23 of the shaft 22, i.e., the rotary axis, and a positive X coordinate value is axial toward an aft, i.e., exhaust end of the gas turbine 10. The positive Y coordinate value extends from the suction-side surface 104 towards the pressure-side surface 102, and the positive Z coordinate value is radially outwardly from the base 114 toward the radial tip 116 (e.g. radially inward with respect to the gas turbine coordinate system). All the values in each of TABLES I through VIII are given at room temperature and do not include the fillet 72 or coatings (not shown).

[0048] By defining X and Y coordinate values at selected locations in a Z direction normal to the X, Y plane, an airfoil profile section 160 of the airfoil 100 of the stator vane 50 may be defined at each Z distance along the length of the airfoil 100. By connecting the X and Y values with smooth continuing arcs, each airfoil profile section of the airfoil 100 at each distance Z may be fixed. The complete airfoil shape 150 may be determined by smoothly connecting the adjacent profile sections to one another.

[0049] The values of TABLES I through VIII are generated and shown to three decimal places for determining the airfoil shape 150 of the airfoil 100. As the stator vane 50 heats up during operation of the gas turbine 10, surface stress and temperature will cause a change in the X, Y and Z values. Accordingly, the values for the various airfoil profile sections given in TABLES I through VIII define the "nominal" airfoil profile, that is, the profile of an uncoated airfoil at ambient, non-operating or non-hot conditions (e.g., room temperature).

[0050] There are typical manufacturing tolerances as well as coatings which must be accounted for in the actual profile of the airfoil 100. Each cross-section is joined smoothly with the other cross-sections to form the complete airfoil shape. It will therefore be appreciated that +/- typical manufacturing tolerances, i.e., +/- values, including any coating thicknesses, are additive to the X and Y values given in each of TABLES I through VIII below. Accordingly, a distance of +/- 5% in a direction normal to any surface location along the airfoil profile defines an airfoil profile envelope for this particular stator vane 50 airfoil design, i.e., a range of variation between measured points on the actual airfoil surface at nominal cold or room temperature and the ideal position of those points as given in each of TABLES I through VIII below at the same temperature. The data provided in each of TABLES I through VIII is scalable (i.e., by a uniform geometric scaling factor), and the geometry pertains to all aerodynamic scales, at, above and/or below 3000 RPM. The design of the airfoil 100 for stator vane 50 is robust to this range of variation without impairment of mechanical and aerodynamic functions.

[0051] The airfoil 100 may include various airfoil profile sections along the span-wise direction 118. Each of the airfoil profile sections may be "stacked" on top of one another other along the Z direction, such that when connected with smooth continuous arcs, the complete airfoil shape 150 may be ascertained. For example, each airfoil profile section corresponds to Cartesian coordinate values of X, Y, and Z for a common Cartesian coordinate value of Z in each of TABLES I through VIII. Furthermore, adjacent airfoil profile sections correspond to the Cartesian coordinate values of X, Y, and Z for adjacent Cartesian coordinate values of Z in each of TABLES I through VIII.

[0052] For example, FIG. 4 illustrates an airfoil profile section 160 of an airfoil 100 from along the line 4-4 shown in FIG. 3, which may be representative of an airfoil profile section of the airfoil 100 at any span-wise location, in accordance with embodiments of the present disclosure. As should be appreciated, the airfoil shape 150 of the airfoil 100 may change or vary at each span-wise location (or at each Z value). In this way, a distinct airfoil profile section 160 may be defined at each position along the span-wise direction 118 (or at each Z value) of the airfoil 100. When the airfoil profile sections 160 at each span-wise location (e.g. at each Z value) of the airfoil 100 are connected together with smooth continuous lines, the complete airfoil shape 150 of the airfoil 100 may be defined or obtained.

[0053] A Cartesian coordinate system of X, Y, and Z values given in each of TABLES I through VIII below define respective suction side surfaces or profiles 104 and a pressure side surfaces or profiles 102 of the respective airfoils 100 at various locations along the span-wise direction 118 of the respective airfoils 100. For example, point 120 defines a first pair of suction side X and Y values at the Z value of the airfoil profile section 160 shown in FIG. 4 (line 4-4 shown in FIG. 3), while point 122 defines a second pair of pressure side X and Y values at the same Z value.

[0054] By defining X and Y coordinate values at selected locations in a Z direction normal to the X-Y plane, an airfoil profile section 160 of the airfoil 100 may be obtained at each of the selected Z value location (e.g. by connecting each X and Y coordinate value at a given Z value to adjacent X and Y coordinate values of that same Z value with smooth continuing arcs). At each Z value or location, the suction side profile 104 may joined to the pressure-side profile or surface 102, as shown in FIG. 4, to define the airfoil profile section 160. The airfoil shape 150 of the airfoil 100 may be determined by smoothly connecting the adjacent (e.g., "stacked") airfoil profile sections 160 to one another with smooth continuous arcs.

[0055] The values in each of TABLES I through VIII below are computer-generated and shown to three decimal places. However, certain values in TABLES I through VIII may be shown to less than three decimal places (e.g., 0, 1, or 2 decimal places), because the values are rounded to significant figures, the additional decimal places would merely show trailing zeroes, or a combination thereof. Accordingly, in certain embodiments, any values having less than three decimal places may be shown with trailing zeroes out to 1, 2, or 3 decimal places. Furthermore, in some embodiments and in view of manufacturing constraints, actual values useful for forming the airfoil 100 may be considered valid to fewer than three decimal places for determining the airfoil shape 150 of the airfoil 100.

[0056] As will be appreciated, there are typical manufacturing tolerances which may be accounted for in the airfoil shape 150. Accordingly, the X, Y, and Z values given in each of TABLES I through VIII are for the airfoil shape 150 of a nominal airfoil. It will therefore be appreciated that plus or minus typical manufacturing tolerances (e.g. plus or minus 5%) are applicable to these X, Y, and Z values and that an airfoil 100 having a profile substantially in accordance with those values includes such tolerances.

[0057] As noted previously, the airfoil 100 may also be coated for protection against corrosion, erosion, wear, and oxidation after the airfoil 100 is manufactured, according to the values in any of TABLES I through VIII and within the tolerances explained above. For example, the coating region may include one or more corrosion resistant layers, erosion resistant layers, wear resistant layers, oxidation resistant or anti-oxidation layers, or any combination thereof. For example, in embodiments where the airfoil is measured in inches, an anti-corrosion coating may be provided with an average thickness t of 0.008 inches (0.20 mm), or between 0.001 and 0.1 inches (between 0.025 and 2.5 mm), or between 0.0001 and 1 inches or more (between 0.0025 and 12.7 mm or more). For example, in certain embodiments, the coating may increase X and Y values of a suction side in any of TABLES I through VIII by no greater than approximately 3.5 mm along a first suction portion, a first pressure portion, or both. It is to be noted that additional anti-oxidation coatings may be provided, such as overcoats. The values provided in each of TABLES I through VIII exclude a coated region or coatings of the airfoil 100. In other words, these values correspond to the bare surface of the airfoil 100. The coated region may include one or more coating layers, surface treatments, or a combination thereof, over the bare surface of the airfoil 100.

[0058] TABLES I through VIII below each contain Cartesian coordinate data of an airfoil shape 150 of an airfoil 100, which may be incorporated into one of the compressor section 14 or the turbine section 18 of the gas turbine 10. For example, in many embodiments, TABLES I through VIII below each contain Cartesian coordinate data of an airfoil shape 150 of an airfoil 100 of a stator vane 50, which is disposed in one of the early stage 60, the mid stage 62, or the late stage 64 of the compressor section 14 (such as in any one of stages S1-S14).

[0059] In exemplary embodiments, TABLE I below contains Cartesian coordinate data of an airfoil shape 150 of an airfoil 100 of a stator vane 50, which is disposed in the early stage 60 of the compressor section 14. Specifically, TABLE I below contains Cartesian coordinate data of an airfoil shape 150 of an airfoil 100 of a stator vane 50, which is disposed in the fourth stage S4 of the compressor section 14.

TABLE I

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
2.773	-1.770	1.234		-2.899	2.332	1.234
2.772	-1.772	1.234		-2.898	2.332	1.234
2.771	-1.776	1.234		-2.895	2.334	1.234
2.766	-1.783	1.234		-2.890	2.336	1.234
2.755	-1.793	1.234		-2.879	2.340	1.234
2.731	-1.801	1.234		-2.862	2.341	1.234
2.698	-1.794	1.234		-2.831	2.335	1.234

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
2.656	-1.780	1.234		-2.791	2.320	1.234
2.601	-1.761	1.234		-2.741	2.295	1.234
2.531	-1.737	1.234		-2.681	2.258	1.234
2.440	-1.705	1.234		-2.605	2.207	1.234
2.336	-1.668	1.234		-2.520	2.145	1.234
2.225	-1.628	1.234		-2.431	2.075	1.234
2.107	-1.585	1.234		-2.332	1.996	1.234
1.976	-1.536	1.234		-2.221	1.909	1.234
1.824	-1.479	1.234		-2.100	1.812	1.234
1.665	-1.418	1.234		-1.974	1.710	1.234
1.500	-1.353	1.234		-1.842	1.605	1.234
1.329	-1.285	1.234		-1.704	1.495	1.234
1.151	-1.213	1.234		-1.561	1.382	1.234
0.967	-1.137	1.234		-1.411	1.265	1.234
0.777	-1.057	1.234		-1.255	1.144	1.234
0.580	-0.971	1.234		-1.093	1.020	1.234
0.378	-0.881	1.234		-0.924	0.892	1.234
0.177	-0.788	1.234		-0.755	0.765	1.234
-0.022	-0.693	1.234		-0.586	0.639	1.234
-0.220	-0.593	1.234		-0.416	0.513	1.234
-0.416	-0.490	1.234		-0.246	0.388	1.234
-0.609	-0.382	1.234		-0.076	0.263	1.234
-0.799	-0.269	1.234		0.095	0.139	1.234
-0.986	-0.150	1.234		0.267	0.016	1.234
-1.169	-0.026	1.234		0.438	-0.107	1.234
-1.348	0.105	1.234		0.610	-0.230	1.234
-1.521	0.243	1.234		0.782	-0.353	1.234
-1.689	0.387	1.234		0.954	-0.475	1.234
-1.846	0.533	1.234		1.121	-0.593	1.234
-1.991	0.680	1.234		1.282	-0.707	1.234
-2.126	0.827	1.234		1.438	-0.816	1.234
-2.250	0.973	1.234		1.588	-0.921	1.234
-2.363	1.118	1.234		1.733	-1.021	1.234
-2.467	1.262	1.234		1.872	-1.117	1.234
-2.562	1.403	1.234		2.006	-1.209	1.234
-2.645	1.542	1.234		2.134	-1.295	1.234
-2.716	1.672	1.234		2.245	-1.370	1.234

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-2.776	1.790	1.234		2.345	-1.436	1.234
-2.826	1.897	1.234		2.439	-1.499	1.234
-2.866	2.000	1.234		2.527	-1.557	1.234
-2.896	2.091	1.234		2.604	-1.607	1.234
-2.914	2.163	1.234		2.663	-1.645	1.234
-2.923	2.221	1.234		2.710	-1.675	1.234
-2.925	2.265	1.234		2.746	-1.698	1.234
-2.920	2.298	1.234		2.768	-1.720	1.234
-2.913	2.315	1.234		2.777	-1.743	1.234
-2.906	2.325	1.234		2.777	-1.757	1.234
-2.902	2.329	1.234		2.775	-1.765	1.234
-2.900	2.331	1.234		2.774	-1.768	1.234
2.934	-0.708	6.164		-2.541	2.885	6.164
2.934	-0.710	6.164		-2.540	2.886	6.164
2.932	-0.713	6.164		-2.538	2.888	6.164
2.928	-0.720	6.164		-2.534	2.890	6.164
2.918	-0.729	6.164		-2.523	2.893	6.164
2.896	-0.738	6.164		-2.507	2.894	6.164
2.865	-0.735	6.164		-2.478	2.888	6.164
2.825	-0.724	6.164		-2.441	2.874	6.164
2.772	-0.709	6.164		-2.394	2.851	6.164
2.706	-0.690	6.164		-2.336	2.819	6.164
2.620	-0.666	6.164		-2.263	2.774	6.164
2.520	-0.637	6.164		-2.180	2.721	6.164
2.414	-0.607	6.164		-2.093	2.662	6.164
2.301	-0.575	6.164		-1.995	2.595	6.164
2.176	-0.538	6.164		-1.886	2.521	6.164
2.030	-0.495	6.164		-1.767	2.438	6.164
1.878	-0.449	6.164		-1.642	2.352	6.164
1.720	-0.400	6.164		-1.513	2.262	6.164
1.556	-0.348	6.164		-1.377	2.168	6.164
1.386	-0.292	6.164		-1.237	2.070	6.164
1.210	-0.231	6.164		-1.091	1.968	6.164
1.028	-0.166	6.164		-0.939	1.863	6.164
0.841	-0.096	6.164		-0.782	1.755	6.164
0.648	-0.020	6.164		-0.619	1.643	6.164
0.457	0.059	6.164		-0.456	1.531	6.164

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
0.268	0.142	6.164		-0.293	1.420	6.164
0.081	0.230	6.164		-0.129	1.309	6.164
-0.104	0.322	6.164		0.035	1.198	6.164
-0.287	0.419	6.164		0.199	1.088	6.164
-0.467	0.521	6.164		0.363	0.978	6.164
-0.644	0.629	6.164		0.528	0.869	6.164
-0.817	0.742	6.164		0.693	0.760	6.164
-0.986	0.861	6.164		0.858	0.651	6.164
-1.151	0.986	6.164		1.023	0.543	6.164
-1.311	1.117	6.164		1.189	0.435	6.164
-1.461	1.250	6.164		1.349	0.332	6.164
-1.600	1.383	6.164		1.504	0.232	6.164
-1.730	1.516	6.164		1.654	0.136	6.164
-1.850	1.649	6.164		1.799	0.045	6.164
-1.961	1.781	6.164		1.938	-0.043	6.164
-2.063	1.912	6.164		2.072	-0.127	6.164
-2.157	2.040	6.164		2.201	-0.207	6.164
-2.241	2.166	6.164		2.324	-0.283	6.164
-2.314	2.283	6.164		2.431	-0.349	6.164
-2.376	2.390	6.164		2.526	-0.408	6.164
-2.428	2.487	6.164		2.616	-0.463	6.164
-2.473	2.580	6.164		2.700	-0.514	6.164
-2.509	2.663	6.164		2.774	-0.559	6.164
-2.533	2.727	6.164		2.830	-0.593	6.164
-2.548	2.780	6.164		2.875	-0.620	6.164
-2.556	2.821	6.164		2.909	-0.640	6.164
-2.557	2.852	6.164		2.930	-0.660	6.164
-2.553	2.868	6.164		2.938	-0.682	6.164
-2.548	2.878	6.164		2.938	-0.695	6.164
-2.544	2.883	6.164		2.936	-0.703	6.164
-2.542	2.884	6.164		2.935	-0.706	6.164
3.016	-0.630	10.361		-2.318	2.774	10.361
3.015	-0.632	10.361		-2.317	2.775	10.361
3.014	-0.635	10.361		-2.315	2.776	10.361
3.010	-0.642	10.361		-2.311	2.779	10.361
3.000	-0.651	10.361		-2.301	2.782	10.361
2.979	-0.660	10.361		-2.285	2.783	10.361

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
2.949	-0.657	10.361		-2.257	2.779	10.361
2.911	-0.647	10.361		-2.221	2.767	10.361
2.859	-0.634	10.361		-2.175	2.745	10.361
2.794	-0.617	10.361		-2.119	2.715	10.361
2.710	-0.596	10.361		-2.047	2.673	10.361
2.613	-0.570	10.361		-1.967	2.622	10.361
2.510	-0.543	10.361		-1.883	2.564	10.361
2.401	-0.514	10.361		-1.788	2.499	10.361
2.278	-0.481	10.361		-1.684	2.427	10.361
2.137	-0.442	10.361		-1.569	2.347	10.361
1.989	-0.401	10.361		-1.449	2.262	10.361
1.835	-0.356	10.361		-1.324	2.174	10.361
1.676	-0.309	10.361		-1.194	2.082	10.361
1.510	-0.258	10.361		-1.059	1.987	10.361
1.338	-0.203	10.361		-0.918	1.889	10.361
1.161	-0.143	10.361		-0.771	1.787	10.361
0.979	-0.079	10.361		-0.619	1.682	10.361
0.792	-0.008	10.361		-0.461	1.575	10.361
0.606	0.066	10.361		-0.302	1.469	10.361
0.422	0.144	10.361		-0.143	1.364	10.361
0.240	0.227	10.361		0.017	1.259	10.361
0.060	0.314	10.361		0.177	1.155	10.361
-0.117	0.407	10.361		0.337	1.051	10.361
-0.292	0.506	10.361		0.497	0.947	10.361
-0.462	0.610	10.361		0.658	0.843	10.361
-0.629	0.721	10.361		0.818	0.739	10.361
-0.793	0.836	10.361		0.979	0.636	10.361
-0.952	0.957	10.361		1.140	0.534	10.361
-1.108	1.082	10.361		1.302	0.432	10.361
-1.254	1.209	10.361		1.458	0.334	10.361
-1.391	1.336	10.361		1.610	0.240	10.361
-1.518	1.463	10.361		1.756	0.151	10.361
-1.637	1.590	10.361		1.898	0.065	10.361
-1.747	1.715	10.361		2.035	-0.017	10.361
-1.848	1.839	10.361		2.166	-0.095	10.361
-1.941	1.961	10.361		2.292	-0.169	10.361
-2.026	2.081	10.361		2.413	-0.239	10.361

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-2.098	2.193	10.361		2.518	-0.300	10.361
-2.161	2.296	10.361		2.612	-0.354	10.361
-2.213	2.389	10.361		2.700	-0.404	10.361
-2.257	2.478	10.361		2.784	-0.451	10.361
-2.291	2.558	10.361		2.856	-0.492	10.361
-2.314	2.621	10.361		2.911	-0.523	10.361
-2.328	2.672	10.361		2.956	-0.548	10.361
-2.334	2.712	10.361		2.989	-0.567	10.361
-2.334	2.742	10.361		3.011	-0.585	10.361
-2.330	2.758	10.361		3.019	-0.605	10.361
-2.325	2.767	10.361		3.019	-0.618	10.361
-2.321	2.771	10.361		3.018	-0.625	10.361
-2.319	2.773	10.361		3.017	-0.628	10.361
2.893	-1.015	14.780		-2.229	2.290	14.780
2.893	-1.016	14.780		-2.228	2.291	14.780
2.891	-1.019	14.780		-2.226	2.292	14.780
2.887	-1.026	14.780		-2.221	2.294	14.780
2.878	-1.034	14.780		-2.211	2.296	14.780
2.857	-1.041	14.780		-2.196	2.295	14.780
2.829	-1.037	14.780		-2.170	2.287	14.780
2.791	-1.027	14.780		-2.137	2.271	14.780
2.742	-1.015	14.780		-2.095	2.245	14.780
2.680	-1.000	14.780		-2.045	2.209	14.780
2.599	-0.979	14.780		-1.982	2.160	14.780
2.507	-0.956	14.780		-1.911	2.103	14.780
2.408	-0.930	14.780		-1.834	2.041	14.780
2.303	-0.902	14.780		-1.749	1.971	14.780
2.186	-0.871	14.780		-1.653	1.894	14.780
2.050	-0.833	14.780		-1.548	1.810	14.780
1.909	-0.793	14.780		-1.437	1.723	14.780
1.762	-0.750	14.780		-1.321	1.632	14.780
1.609	-0.703	14.780		-1.199	1.538	14.780
1.451	-0.653	14.780		-1.072	1.442	14.780
1.288	-0.598	14.780		-0.939	1.344	14.780
1.119	-0.538	14.780		-0.800	1.243	14.780
0.945	-0.474	14.780		-0.655	1.139	14.780
0.767	-0.403	14.780		-0.504	1.035	14.780

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
0.591	-0.329	14.780		-0.352	0.932	14.780
0.416	-0.250	14.780		-0.198	0.830	14.780
0.244	-0.166	14.780		-0.043	0.731	14.780
0.074	-0.078	14.780		0.112	0.633	14.780
-0.093	0.016	14.780		0.268	0.535	14.780
-0.257	0.116	14.780		0.424	0.438	14.780
-0.418	0.220	14.780		0.581	0.341	14.780
-0.575	0.329	14.780		0.737	0.244	14.780
-0.729	0.443	14.780		0.894	0.148	14.780
-0.879	0.562	14.780		1.051	0.052	14.780
-1.026	0.685	14.780		1.209	-0.042	14.780
-1.164	0.809	14.780		1.362	-0.133	14.780
-1.293	0.933	14.780		1.511	-0.219	14.780
-1.414	1.055	14.780		1.654	-0.302	14.780
-1.527	1.177	14.780		1.793	-0.381	14.780
-1.632	1.297	14.780		1.926	-0.456	14.780
-1.730	1.415	14.780		2.055	-0.528	14.780
-1.820	1.531	14.780		2.179	-0.595	14.780
-1.904	1.644	14.780		2.297	-0.660	14.780
-1.977	1.749	14.780		2.400	-0.715	14.780
-2.040	1.845	14.780		2.492	-0.764	14.780
-2.094	1.932	14.780		2.579	-0.810	14.780
-2.143	2.014	14.780		2.660	-0.852	14.780
-2.182	2.087	14.780		2.731	-0.889	14.780
-2.209	2.145	14.780		2.786	-0.918	14.780
-2.228	2.193	14.780		2.829	-0.940	14.780
-2.238	2.230	14.780		2.862	-0.957	14.780
-2.240	2.258	14.780		2.885	-0.972	14.780
-2.238	2.274	14.780		2.895	-0.990	14.780
-2.234	2.283	14.780		2.896	-1.003	14.780
-2.231	2.287	14.780		2.895	-1.010	14.780
-2.230	2.289	14.780		2.894	-1.013	14.780
2.673	-1.519	19.328		-2.104	2.325	19.328
2.672	-1.521	19.328		-2.103	2.326	19.328
2.670	-1.524	19.328		-2.101	2.327	19.328
2.666	-1.530	19.328		-2.096	2.327	19.328
2.656	-1.538	19.328		-2.086	2.326	19.328

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
2.633	-1.539	19.328		-2.072	2.319	19.328
2.605	-1.532	19.328		-2.049	2.303	19.328
2.568	-1.522	19.328		-2.022	2.277	19.328
2.518	-1.508	19.328		-1.988	2.241	19.328
2.456	-1.491	19.328		-1.949	2.193	19.328
2.375	-1.467	19.328		-1.900	2.128	19.328
2.282	-1.440	19.328		-1.845	2.052	19.328
2.183	-1.410	19.328		-1.787	1.971	19.328
2.078	-1.377	19.328		-1.722	1.880	19.328
1.962	-1.340	19.328		-1.648	1.780	19.328
1.827	-1.295	19.328		-1.565	1.671	19.328
1.687	-1.245	19.328		-1.478	1.558	19.328
1.541	-1.192	19.328		-1.384	1.441	19.328
1.390	-1.134	19.328		-1.285	1.321	19.328
1.235	-1.071	19.328		-1.179	1.198	19.328
1.075	-1.002	19.328		-1.067	1.073	19.328
0.910	-0.927	19.328		-0.949	0.945	19.328
0.741	-0.845	19.328		-0.823	0.816	19.328
0.569	-0.756	19.328		-0.689	0.685	19.328
0.400	-0.662	19.328		-0.552	0.558	19.328
0.233	-0.563	19.328		-0.412	0.435	19.328
0.070	-0.458	19.328		-0.269	0.314	19.328
-0.089	-0.348	19.328		-0.123	0.198	19.328
-0.245	-0.233	19.328		0.025	0.084	19.328
-0.397	-0.112	19.328		0.176	-0.026	19.328
-0.545	0.013	19.328		0.329	-0.133	19.328
-0.689	0.142	19.328		0.483	-0.239	19.328
-0.828	0.277	19.328		0.638	-0.343	19.328
-0.963	0.416	19.328		0.794	-0.445	19.328
-1.093	0.560	19.328		0.951	-0.546	19.328
-1.214	0.703	19.328		1.104	-0.642	19.328
-1.327	0.845	19.328		1.253	-0.733	19.328
-1.431	0.984	19.328		1.397	-0.819	19.328
-1.527	1.122	19.328		1.537	-0.900	19.328
-1.617	1.256	19.328		1.673	-0.977	19.328
-1.699	1.388	19.328		1.803	-1.050	19.328
-1.775	1.516	19.328		1.929	-1.118	19.328

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-1.845	1.639	19.328		2.051	-1.182	19.328
-1.906	1.753	19.328		2.156	-1.236	19.328
-1.958	1.857	19.328		2.250	-1.284	19.328
-2.004	1.950	19.328		2.339	-1.328	19.328
-2.044	2.038	19.328		2.423	-1.369	19.328
-2.075	2.116	19.328		2.496	-1.404	19.328
-2.096	2.177	19.328		2.553	-1.431	19.328
-2.110	2.227	19.328		2.598	-1.452	19.328
-2.116	2.265	19.328		2.632	-1.467	19.328
-2.118	2.294	19.328		2.657	-1.479	19.328
-2.115	2.310	19.328		2.672	-1.495	19.328
-2.111	2.319	19.328		2.674	-1.507	19.328
-2.107	2.323	19.328		2.674	-1.514	19.328
-2.105	2.325	19.328		2.673	-1.517	19.328

[0060] In exemplary embodiments, TABLE II below contains Cartesian coordinate data of an airfoil shape 150 of an airfoil 100 of a stator vane 50, which is disposed in the mid stage 62 of the compressor section 14. Specifically, TABLE II below contains Cartesian coordinate data of an airfoil shape 150 of an airfoil 100 of a stator vane 50, which is disposed in the fifth stage S5 of the compressor section 14.

TABLE II

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
2.995	-2.132	1.252		-2.943	2.466	1.252
2.994	-2.134	1.252		-2.942	2.467	1.252
2.992	-2.137	1.252		-2.939	2.468	1.252
2.986	-2.145	1.252		-2.934	2.471	1.252
2.973	-2.154	1.252		-2.922	2.473	1.252
2.946	-2.159	1.252		-2.903	2.472	1.252
2.913	-2.147	1.252		-2.871	2.463	1.252
2.871	-2.126	1.252		-2.830	2.443	1.252
2.814	-2.099	1.252		-2.778	2.412	1.252
2.743	-2.065	1.252		-2.718	2.366	1.252
2.650	-2.023	1.252		-2.641	2.305	1.252
2.542	-1.975	1.252		-2.554	2.233	1.252
2.426	-1.926	1.252		-2.462	2.155	1.252
2.302	-1.874	1.252		-2.359	2.066	1.252
2.164	-1.817	1.252		-2.245	1.966	1.252
2.004	-1.751	1.252		-2.120	1.857	1.252

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
1.836	-1.683	1.252		-1.989	1.743	1.252
1.661	-1.611	1.252		-1.852	1.624	1.252
1.479	-1.537	1.252		-1.708	1.502	1.252
1.290	-1.458	1.252		-1.558	1.376	1.252
1.095	-1.374	1.252		-1.400	1.246	1.252
0.893	-1.286	1.252		-1.237	1.112	1.252
0.685	-1.192	1.252		-1.066	0.974	1.252
0.471	-1.092	1.252		-0.889	0.833	1.252
0.259	-0.988	1.252		-0.712	0.692	1.252
0.049	-0.879	1.252		-0.534	0.551	1.252
-0.158	-0.765	1.252		-0.356	0.411	1.252
-0.362	-0.646	1.252		-0.177	0.272	1.252
-0.562	-0.520	1.252		0.002	0.134	1.252
-0.758	-0.389	1.252		0.182	-0.005	1.252
-0.950	-0.251	1.252		0.361	-0.143	1.252
-1.137	-0.108	1.252		0.541	-0.281	1.252
-1.320	0.042	1.252		0.721	-0.419	1.252
-1.497	0.199	1.252		0.901	-0.557	1.252
-1.667	0.362	1.252		1.081	-0.694	1.252
-1.827	0.526	1.252		1.256	-0.826	1.252
-1.975	0.689	1.252		1.425	-0.954	1.252
-2.112	0.851	1.252		1.588	-1.076	1.252
-2.239	1.012	1.252		1.745	-1.194	1.252
-2.356	1.170	1.252		1.896	-1.307	1.252
-2.463	1.326	1.252		2.042	-1.415	1.252
-2.561	1.478	1.252		2.182	-1.518	1.252
-2.649	1.627	1.252		2.316	-1.615	1.252
-2.725	1.765	1.252		2.433	-1.699	1.252
-2.790	1.891	1.252		2.538	-1.773	1.252
-2.843	2.005	1.252		2.637	-1.842	1.252
-2.889	2.114	1.252		2.731	-1.905	1.252
-2.924	2.210	1.252		2.813	-1.959	1.252
-2.948	2.285	1.252		2.877	-2.000	1.252
-2.962	2.347	1.252		2.928	-2.032	1.252
-2.966	2.394	1.252		2.967	-2.056	1.252
-2.963	2.429	1.252		2.992	-2.078	1.252
-2.958	2.448	1.252		3.001	-2.103	1.252

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-2.951	2.458	1.252		3.000	-2.118	1.252
-2.947	2.463	1.252		2.998	-2.126	1.252
-2.944	2.465	1.252		2.996	-2.130	1.252
2.894	-1.179	6.744		-2.644	2.526	6.744
2.893	-1.181	6.744		-2.643	2.527	6.744
2.892	-1.184	6.744		-2.641	2.528	6.744
2.887	-1.190	6.744		-2.636	2.531	6.744
2.876	-1.200	6.744		-2.626	2.534	6.744
2.853	-1.206	6.744		-2.609	2.534	6.744
2.823	-1.199	6.744		-2.580	2.527	6.744
2.784	-1.184	6.744		-2.544	2.509	6.744
2.731	-1.165	6.744		-2.499	2.479	6.744
2.665	-1.142	6.744		-2.444	2.441	6.744
2.579	-1.112	6.744		-2.375	2.388	6.744
2.480	-1.079	6.744		-2.296	2.326	6.744
2.373	-1.046	6.744		-2.212	2.258	6.744
2.259	-1.011	6.744		-2.119	2.182	6.744
2.132	-0.972	6.744		-2.015	2.098	6.744
1.985	-0.926	6.744		-1.900	2.005	6.744
1.832	-0.879	6.744		-1.779	1.909	6.744
1.671	-0.829	6.744		-1.653	1.809	6.744
1.505	-0.777	6.744		-1.520	1.707	6.744
1.332	-0.720	6.744		-1.381	1.602	6.744
1.153	-0.660	6.744		-1.236	1.494	6.744
0.969	-0.594	6.744		-1.084	1.383	6.744
0.778	-0.524	6.744		-0.926	1.271	6.744
0.583	-0.447	6.744		-0.760	1.156	6.744
0.390	-0.366	6.744		-0.594	1.042	6.744
0.198	-0.281	6.744		-0.428	0.930	6.744
0.009	-0.190	6.744		-0.260	0.818	6.744
-0.177	-0.094	6.744		-0.092	0.707	6.744
-0.361	0.008	6.744		0.076	0.597	6.744
-0.541	0.115	6.744		0.244	0.487	6.744
-0.717	0.229	6.744		0.413	0.378	6.744
-0.890	0.348	6.744		0.582	0.268	6.744
-1.058	0.473	6.744		0.751	0.159	6.744
-1.222	0.604	6.744		0.920	0.050	6.744

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-1.381	0.740	6.744		1.090	-0.058	6.744
-1.531	0.877	6.744		1.254	-0.162	6.744
-1.671	1.014	6.744		1.413	-0.263	6.744
-1.801	1.150	6.744		1.566	-0.359	6.744
-1.923	1.285	6.744		1.714	-0.451	6.744
-2.036	1.419	6.744		1.857	-0.539	6.744
-2.140	1.550	6.744		1.994	-0.623	6.744
-2.236	1.679	6.744		2.126	-0.703	6.744
-2.324	1.806	6.744		2.253	-0.778	6.744
-2.400	1.923	6.744		2.362	-0.843	6.744
-2.466	2.030	6.744		2.461	-0.900	6.744
-2.521	2.127	6.744		2.554	-0.953	6.744
-2.569	2.220	6.744		2.643	-1.001	6.744
-2.608	2.303	6.744		2.720	-1.042	6.744
-2.634	2.368	6.744		2.779	-1.073	6.744
-2.652	2.420	6.744		2.827	-1.097	6.744
-2.661	2.461	6.744		2.863	-1.114	6.744
-2.661	2.493	6.744		2.888	-1.131	6.744
-2.657	2.509	6.744		2.897	-1.152	6.744
-2.651	2.519	6.744		2.898	-1.166	6.744
-2.647	2.523	6.744		2.896	-1.174	6.744
-2.645	2.525	6.744		2.895	-1.177	6.744
2.972	-1.176	9.833		-2.505	2.456	9.833
2.971	-1.178	9.833		-2.503	2.457	9.833
2.969	-1.181	9.833		-2.501	2.458	9.833
2.965	-1.188	9.833		-2.496	2.460	9.833
2.954	-1.196	9.833		-2.486	2.462	9.833
2.931	-1.202	9.833		-2.470	2.461	9.833
2.902	-1.194	9.833		-2.442	2.451	9.833
2.863	-1.181	9.833		-2.407	2.432	9.833
2.810	-1.163	9.833		-2.364	2.401	9.833
2.745	-1.142	9.833		-2.311	2.361	9.833
2.660	-1.115	9.833		-2.245	2.307	9.833
2.561	-1.085	9.833		-2.169	2.242	9.833
2.456	-1.054	9.833		-2.088	2.174	9.833
2.344	-1.021	9.833		-1.998	2.096	9.833
2.218	-0.985	9.833		-1.898	2.010	9.833

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
2.073	-0.942	9.833		-1.787	1.915	9.833
1.922	-0.897	9.833		-1.670	1.818	9.833
1.764	-0.849	9.833		-1.548	1.717	9.833
1.600	-0.797	9.833		-1.418	1.614	9.833
1.430	-0.742	9.833		-1.283	1.508	9.833
1.255	-0.682	9.833		-1.140	1.400	9.833
1.073	-0.617	9.833		-0.992	1.290	9.833
0.887	-0.546	9.833		-0.837	1.177	9.833
0.696	-0.469	9.833		-0.675	1.062	9.833
0.506	-0.388	9.833		-0.512	0.949	9.833
0.319	-0.301	9.833		-0.347	0.837	9.833
0.135	-0.209	9.833		-0.182	0.727	9.833
-0.046	-0.111	9.833		-0.017	0.618	9.833
-0.225	-0.007	9.833		0.150	0.510	9.833
-0.400	0.102	9.833		0.317	0.402	9.833
-0.572	0.215	9.833		0.484	0.295	9.833
-0.740	0.334	9.833		0.651	0.189	9.833
-0.905	0.459	9.833		0.819	0.083	9.833
-1.065	0.588	9.833		0.988	-0.021	9.833
-1.222	0.722	9.833		1.158	-0.124	9.833
-1.370	0.856	9.833		1.322	-0.224	9.833
-1.508	0.989	9.833		1.481	-0.319	9.833
-1.638	1.122	9.833		1.634	-0.410	9.833
-1.759	1.253	9.833		1.783	-0.497	9.833
-1.872	1.382	9.833		1.926	-0.580	9.833
-1.977	1.510	9.833		2.064	-0.659	9.833
-2.073	1.635	9.833		2.196	-0.733	9.833
-2.162	1.758	9.833		2.324	-0.804	9.833
-2.239	1.871	9.833		2.434	-0.864	9.833
-2.306	1.975	9.833		2.533	-0.917	9.833
-2.363	2.069	9.833		2.627	-0.966	9.833
-2.414	2.159	9.833		2.715	-1.011	9.833
-2.456	2.238	9.833		2.793	-1.049	9.833
-2.484	2.301	9.833		2.852	-1.077	9.833
-2.504	2.352	9.833		2.900	-1.099	9.833
-2.516	2.391	9.833		2.937	-1.115	9.833
-2.519	2.422	9.833		2.962	-1.130	9.833

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-2.516	2.439	9.833		2.974	-1.150	9.833
-2.511	2.449	9.833		2.975	-1.163	9.833
-2.508	2.453	9.833		2.973	-1.171	9.833
-2.506	2.455	9.833		2.972	-1.174	9.833
3.049	-1.541	16.137		-2.032	2.056	16.137
3.049	-1.542	16.137		-2.031	2.056	16.137
3.047	-1.545	16.137		-2.029	2.058	16.137
3.043	-1.552	16.137		-2.024	2.059	16.137
3.032	-1.559	16.137		-2.014	2.060	16.137
3.010	-1.562	16.137		-1.999	2.057	16.137
2.983	-1.553	16.137		-1.973	2.045	16.137
2.946	-1.541	16.137		-1.941	2.024	16.137
2.896	-1.524	16.137		-1.902	1.992	16.137
2.835	-1.505	16.137		-1.856	1.950	16.137
2.754	-1.479	16.137		-1.797	1.894	16.137
2.661	-1.451	16.137		-1.730	1.828	16.137
2.562	-1.421	16.137		-1.659	1.757	16.137
2.457	-1.389	16.137		-1.578	1.678	16.137
2.339	-1.353	16.137		-1.489	1.590	16.137
2.203	-1.310	16.137		-1.389	1.493	16.137
2.061	-1.264	16.137		-1.285	1.394	16.137
1.914	-1.215	16.137		-1.175	1.290	16.137
1.761	-1.161	16.137		-1.060	1.184	16.137
1.603	-1.102	16.137		-0.938	1.076	16.137
1.440	-1.038	16.137		-0.810	0.965	16.137
1.272	-0.968	16.137		-0.675	0.852	16.137
1.100	-0.893	16.137		-0.534	0.736	16.137
0.924	-0.810	16.137		-0.388	0.618	16.137
0.750	-0.723	16.137		-0.239	0.503	16.137
0.579	-0.631	16.137		-0.089	0.389	16.137
0.411	-0.533	16.137		0.063	0.278	16.137
0.246	-0.431	16.137		0.217	0.169	16.137
0.084	-0.324	16.137		0.372	0.062	16.137
-0.076	-0.212	16.137		0.527	-0.045	16.137
-0.232	-0.097	16.137		0.683	-0.150	16.137
-0.385	0.023	16.137		0.840	-0.254	16.137
-0.534	0.148	16.137		0.998	-0.358	16.137

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-0.680	0.276	16.137		1.156	-0.459	16.137
-0.823	0.409	16.137		1.315	-0.560	16.137
-0.957	0.540	16.137		1.470	-0.656	16.137
-1.084	0.669	16.137		1.620	-0.747	16.137
-1.203	0.797	16.137		1.766	-0.835	16.137
-1.315	0.924	16.137		1.906	-0.917	16.137
-1.419	1.048	16.137		2.043	-0.995	16.137
-1.515	1.170	16.137		2.174	-1.069	16.137
-1.605	1.289	16.137		2.301	-1.138	16.137
-1.689	1.404	16.137		2.423	-1.203	16.137
-1.763	1.511	16.137		2.528	-1.258	16.137
-1.827	1.608	16.137		2.623	-1.307	16.137
-1.882	1.696	16.137		2.713	-1.352	16.137
-1.933	1.779	16.137		2.798	-1.393	16.137
-1.974	1.852	16.137		2.872	-1.427	16.137
-2.004	1.910	16.137		2.929	-1.453	16.137
-2.025	1.957	16.137		2.975	-1.473	16.137
-2.037	1.994	16.137		3.010	-1.488	16.137
-2.042	2.023	16.137		3.035	-1.500	16.137
-2.041	2.039	16.137		3.049	-1.516	16.137
-2.038	2.049	16.137		3.052	-1.528	16.137
-2.035	2.053	16.137		3.051	-1.536	16.137
-2.033	2.055	16.137		3.050	-1.539	16.137
3.026	-1.718	18.764		-1.621	1.913	18.764
3.025	-1.720	18.764		-1.620	1.914	18.764
3.023	-1.722	18.764		-1.618	1.915	18.764
3.019	-1.728	18.764		-1.613	1.916	18.764
3.009	-1.735	18.764		-1.604	1.916	18.764
2.988	-1.737	18.764		-1.589	1.911	18.764
2.961	-1.728	18.764		-1.566	1.898	18.764
2.926	-1.716	18.764		-1.538	1.876	18.764
2.879	-1.701	18.764		-1.504	1.842	18.764
2.820	-1.683	18.764		-1.464	1.798	18.764
2.743	-1.659	18.764		-1.415	1.738	18.764
2.654	-1.632	18.764		-1.359	1.668	18.764
2.559	-1.604	18.764		-1.300	1.593	18.764
2.459	-1.573	18.764		-1.232	1.509	18.764

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
2.346	-1.538	18.764		-1.157	1.417	18.764
2.217	-1.496	18.764		-1.072	1.316	18.764
2.082	-1.450	18.764		-0.983	1.211	18.764
1.942	-1.400	18.764		-0.889	1.104	18.764
1.797	-1.346	18.764		-0.788	0.993	18.764
1.648	-1.286	18.764		-0.683	0.879	18.764
1.494	-1.222	18.764		-0.571	0.763	18.764
1.335	-1.151	18.764		-0.453	0.644	18.764
1.173	-1.074	18.764		-0.329	0.523	18.764
1.008	-0.990	18.764		-0.198	0.401	18.764
0.845	-0.900	18.764		-0.064	0.282	18.764
0.685	-0.806	18.764		0.072	0.166	18.764
0.529	-0.706	18.764		0.211	0.053	18.764
0.376	-0.601	18.764		0.353	-0.057	18.764
0.226	-0.491	18.764		0.496	-0.165	18.764
0.080	-0.377	18.764		0.641	-0.270	18.764
-0.063	-0.258	18.764		0.787	-0.374	18.764
-0.203	-0.135	18.764		0.934	-0.476	18.764
-0.338	-0.008	18.764		1.082	-0.577	18.764
-0.469	0.123	18.764		1.231	-0.676	18.764
-0.596	0.258	18.764		1.381	-0.774	18.764
-0.715	0.392	18.764		1.527	-0.868	18.764
-0.827	0.525	18.764		1.668	-0.957	18.764
-0.931	0.656	18.764		1.806	-1.042	18.764
-1.028	0.785	18.764		1.939	-1.122	18.764
-1.118	0.910	18.764		2.067	-1.198	18.764
-1.202	1.032	18.764		2.192	-1.269	18.764
-1.280	1.152	18.764		2.312	-1.336	18.764
-1.352	1.267	18.764		2.427	-1.399	18.764
-1.415	1.374	18.764		2.527	-1.451	18.764
-1.470	1.471	18.764		2.618	-1.498	18.764
-1.516	1.558	18.764		2.703	-1.540	18.764
-1.558	1.641	18.764		2.784	-1.579	18.764
-1.592	1.714	18.764		2.854	-1.612	18.764
-1.614	1.772	18.764		2.909	-1.636	18.764
-1.628	1.819	18.764		2.953	-1.655	18.764
-1.635	1.856	18.764		2.986	-1.669	18.764

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-1.635	1.884	18.764		3.011	-1.680	18.764
-1.632	1.899	18.764		3.025	-1.695	18.764
-1.627	1.907	18.764		3.027	-1.706	18.764
-1.624	1.911	18.764		3.027	-1.713	18.764
-1.622	1.913	18.764		3.026	-1.716	18.764

[0061] In exemplary embodiments, TABLE III below contains Cartesian coordinate data of an airfoil shape 150 of an airfoil 100 of a stator vane 50, which is disposed in the mid stage 62 of the compressor section 14. Specifically, TABLE III below contains Cartesian coordinate data of an airfoil shape 150 of an airfoil 100 of a stator vane 50, which is disposed in the sixth stage S6 of the compressor section 14.

TABLE III

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
2.149	-1.314	0.792		-1.474	1.272	0.792
2.148	-1.315	0.792		-1.473	1.272	0.792
2.147	-1.317	0.792		-1.472	1.273	0.792
2.144	-1.322	0.792		-1.468	1.275	0.792
2.137	-1.328	0.792		-1.462	1.277	0.792
2.121	-1.331	0.792		-1.450	1.277	0.792
2.100	-1.325	0.792		-1.431	1.274	0.792
2.073	-1.317	0.792		-1.406	1.264	0.792
2.037	-1.306	0.792		-1.374	1.247	0.792
1.992	-1.292	0.792		-1.337	1.223	0.792
1.933	-1.273	0.792		-1.289	1.190	0.792
1.866	-1.251	0.792		-1.234	1.150	0.792
1.794	-1.228	0.792		-1.177	1.107	0.792
1.718	-1.203	0.792		-1.113	1.058	0.792
1.633	-1.174	0.792		-1.043	1.003	0.792
1.534	-1.141	0.792		-0.965	0.942	0.792
1.431	-1.106	0.792		-0.884	0.878	0.792
1.324	-1.068	0.792		-0.800	0.812	0.792
1.213	-1.029	0.792		-0.713	0.742	0.792
1.098	-0.987	0.792		-0.621	0.671	0.792
0.978	-0.943	0.792		-0.525	0.597	0.792
0.854	-0.896	0.792		-0.425	0.521	0.792
0.727	-0.846	0.792		-0.321	0.443	0.792
0.596	-0.792	0.792		-0.213	0.363	0.792
0.465	-0.736	0.792		-0.105	0.284	0.792

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
0.336	-0.678	0.792		0.004	0.206	0.792
0.208	-0.617	0.792		0.113	0.127	0.792
0.082	-0.553	0.792		0.221	0.047	0.792
-0.043	-0.485	0.792		0.329	-0.033	0.792
-0.164	-0.413	0.792		0.436	-0.113	0.792
-0.283	-0.336	0.792		0.544	-0.193	0.792
-0.399	-0.254	0.792		0.652	-0.272	0.792
-0.512	-0.168	0.792		0.761	-0.351	0.792
-0.621	-0.078	0.792		0.870	-0.430	0.792
-0.728	0.015	0.792		0.979	-0.508	0.792
-0.827	0.109	0.792		1.085	-0.583	0.792
-0.920	0.204	0.792		1.188	-0.654	0.792
-1.005	0.299	0.792		1.287	-0.723	0.792
-1.083	0.394	0.792		1.383	-0.789	0.792
-1.156	0.487	0.792		1.476	-0.851	0.792
-1.220	0.580	0.792		1.566	-0.911	0.792
-1.277	0.672	0.792		1.651	-0.968	0.792
-1.330	0.762	0.792		1.734	-1.021	0.792
-1.374	0.846	0.792		1.805	-1.068	0.792
-1.409	0.923	0.792		1.869	-1.109	0.792
-1.437	0.993	0.792		1.930	-1.147	0.792
-1.461	1.060	0.792		1.986	-1.183	0.792
-1.478	1.119	0.792		2.036	-1.214	0.792
-1.489	1.165	0.792		2.074	-1.238	0.792
-1.494	1.202	0.792		2.104	-1.257	0.792
-1.494	1.231	0.792		2.127	-1.271	0.792
-1.489	1.251	0.792		2.143	-1.282	0.792
-1.484	1.262	0.792		2.150	-1.296	0.792
-1.479	1.268	0.792		2.151	-1.305	0.792
-1.476	1.270	0.792		2.150	-1.310	0.792
-1.475	1.271	0.792		2.149	-1.313	0.792
2.124	-1.074	1.523		-1.447	1.373	1.523
2.124	-1.076	1.523		-1.446	1.374	1.523
2.123	-1.078	1.523		-1.445	1.375	1.523
2.120	-1.082	1.523		-1.442	1.376	1.523
2.113	-1.088	1.523		-1.435	1.379	1.523
2.097	-1.092	1.523		-1.425	1.380	1.523

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
2.077	-1.087	1.523		-1.405	1.378	1.523
2.051	-1.080	1.523		-1.380	1.370	1.523
2.015	-1.070	1.523		-1.349	1.355	1.523
1.971	-1.057	1.523		-1.311	1.333	1.523
1.914	-1.040	1.523		-1.263	1.303	1.523
1.848	-1.021	1.523		-1.209	1.266	1.523
1.778	-1.000	1.523		-1.152	1.227	1.523
1.703	-0.977	1.523		-1.088	1.181	1.523
1.620	-0.951	1.523		-1.018	1.130	1.523
1.523	-0.921	1.523		-0.940	1.073	1.523
1.423	-0.889	1.523		-0.860	1.014	1.523
1.318	-0.856	1.523		-0.776	0.951	1.523
1.209	-0.819	1.523		-0.689	0.886	1.523
1.096	-0.781	1.523		-0.597	0.819	1.523
0.979	-0.740	1.523		-0.503	0.750	1.523
0.858	-0.696	1.523		-0.404	0.678	1.523
0.733	-0.649	1.523		-0.301	0.604	1.523
0.605	-0.599	1.523		-0.195	0.528	1.523
0.478	-0.547	1.523		-0.088	0.453	1.523
0.352	-0.492	1.523		0.018	0.378	1.523
0.226	-0.434	1.523		0.125	0.302	1.523
0.103	-0.373	1.523		0.232	0.226	1.523
-0.018	-0.309	1.523		0.338	0.150	1.523
-0.138	-0.239	1.523		0.443	0.073	1.523
-0.254	-0.166	1.523		0.549	-0.003	1.523
-0.367	-0.087	1.523		0.656	-0.079	1.523
-0.477	-0.005	1.523		0.762	-0.155	1.523
-0.585	0.081	1.523		0.869	-0.231	1.523
-0.690	0.171	1.523		0.976	-0.305	1.523
-0.788	0.260	1.523		1.080	-0.377	1.523
-0.879	0.350	1.523		1.180	-0.446	1.523
-0.964	0.441	1.523		1.278	-0.512	1.523
-1.042	0.531	1.523		1.372	-0.574	1.523
-1.115	0.620	1.523		1.463	-0.634	1.523
-1.180	0.709	1.523		1.551	-0.691	1.523
-1.239	0.797	1.523		1.635	-0.745	1.523
-1.292	0.882	1.523		1.716	-0.796	1.523

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-1.337	0.962	1.523		1.787	-0.840	1.523
-1.374	1.036	1.523		1.849	-0.879	1.523
-1.404	1.103	1.523		1.909	-0.916	1.523
-1.428	1.168	1.523		1.965	-0.950	1.523
-1.447	1.224	1.523		2.013	-0.979	1.523
-1.458	1.269	1.523		2.050	-1.001	1.523
-1.464	1.305	1.523		2.080	-1.019	1.523
-1.465	1.332	1.523		2.103	-1.033	1.523
-1.461	1.353	1.523		2.119	-1.044	1.523
-1.456	1.363	1.523		2.126	-1.057	1.523
-1.452	1.369	1.523		2.126	-1.066	1.523
-1.449	1.372	1.523		2.125	-1.071	1.523
-1.448	1.373	1.523		2.125	-1.073	1.523
1.971	-0.468	4.820		-1.294	1.643	4.820
1.971	-0.469	4.820		-1.293	1.643	4.820
1.970	-0.471	4.820		-1.292	1.644	4.820
1.968	-0.475	4.820		-1.289	1.646	4.820
1.962	-0.481	4.820		-1.283	1.648	4.820
1.949	-0.486	4.820		-1.274	1.650	4.820
1.930	-0.484	4.820		-1.256	1.649	4.820
1.906	-0.479	4.820		-1.234	1.642	4.820
1.874	-0.472	4.820		-1.205	1.629	4.820
1.834	-0.464	4.820		-1.171	1.610	4.820
1.781	-0.453	4.820		-1.128	1.583	4.820
1.721	-0.439	4.820		-1.080	1.549	4.820
1.657	-0.425	4.820		-1.029	1.513	4.820
1.588	-0.409	4.820		-0.972	1.471	4.820
1.512	-0.391	4.820		-0.909	1.425	4.820
1.424	-0.369	4.820		-0.840	1.374	4.820
1.333	-0.345	4.820		-0.768	1.320	4.820
1.237	-0.319	4.820		-0.692	1.264	4.820
1.138	-0.291	4.820		-0.613	1.206	4.820
1.036	-0.260	4.820		-0.531	1.146	4.820
0.930	-0.226	4.820		-0.446	1.084	4.820
0.820	-0.190	4.820		-0.356	1.020	4.820
0.707	-0.150	4.820		-0.264	0.955	4.820
0.592	-0.106	4.820		-0.168	0.887	4.820

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
0.477	-0.060	4.820		-0.071	0.821	4.820
0.364	-0.010	4.820		0.027	0.755	4.820
0.252	0.042	4.820		0.124	0.690	4.820
0.142	0.098	4.820		0.222	0.625	4.820
0.034	0.158	4.820		0.320	0.560	4.820
-0.072	0.221	4.820		0.417	0.494	4.820
-0.176	0.288	4.820		0.515	0.429	4.820
-0.277	0.359	4.820		0.612	0.364	4.820
-0.377	0.433	4.820		0.710	0.299	4.820
-0.474	0.509	4.820		0.808	0.234	4.820
-0.568	0.589	4.820		0.907	0.170	4.820
-0.657	0.668	4.820		1.003	0.109	4.820
-0.741	0.748	4.820		1.096	0.051	4.820
-0.818	0.828	4.820		1.186	-0.004	4.820
-0.891	0.907	4.820		1.273	-0.057	4.820
-0.958	0.985	4.820		1.357	-0.107	4.820
-1.019	1.062	4.820		1.438	-0.154	4.820
-1.076	1.138	4.820		1.516	-0.198	4.820
-1.127	1.213	4.820		1.591	-0.240	4.820
-1.171	1.283	4.820		1.657	-0.276	4.820
-1.209	1.347	4.820		1.715	-0.308	4.820
-1.240	1.405	4.820		1.770	-0.337	4.820
-1.267	1.460	4.820		1.822	-0.365	4.820
-1.288	1.510	4.820		1.868	-0.388	4.820
-1.300	1.549	4.820		1.902	-0.406	4.820
-1.307	1.581	4.820		1.930	-0.420	4.820
-1.308	1.606	4.820		1.951	-0.431	4.820
-1.306	1.624	4.820		1.966	-0.440	4.820
-1.302	1.633	4.820		1.972	-0.452	4.820
-1.298	1.639	4.820		1.973	-0.460	4.820
-1.296	1.641	4.820		1.972	-0.465	4.820
-1.294	1.642	4.820		1.972	-0.467	4.820
1.969	-0.692	8.487		-1.226	1.443	8.487
1.968	-0.693	8.487		-1.226	1.444	8.487
1.967	-0.695	8.487		-1.224	1.445	8.487
1.965	-0.699	8.487		-1.221	1.446	8.487
1.960	-0.705	8.487		-1.215	1.447	8.487

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
1.948	-0.711	8.487		-1.206	1.447	8.487
1.930	-0.710	8.487		-1.189	1.442	8.487
1.906	-0.705	8.487		-1.168	1.432	8.487
1.875	-0.697	8.487		-1.142	1.415	8.487
1.836	-0.687	8.487		-1.111	1.392	8.487
1.786	-0.674	8.487		-1.073	1.359	8.487
1.727	-0.658	8.487		-1.030	1.318	8.487
1.665	-0.641	8.487		-0.986	1.274	8.487
1.600	-0.623	8.487		-0.937	1.224	8.487
1.526	-0.601	8.487		-0.883	1.168	8.487
1.442	-0.576	8.487		-0.823	1.108	8.487
1.353	-0.548	8.487		-0.759	1.045	8.487
1.262	-0.518	8.487		-0.692	0.980	8.487
1.167	-0.485	8.487		-0.621	0.914	8.487
1.069	-0.449	8.487		-0.546	0.846	8.487
0.967	-0.410	8.487		-0.466	0.777	8.487
0.863	-0.368	8.487		-0.383	0.707	8.487
0.756	-0.323	8.487		-0.296	0.636	8.487
0.646	-0.273	8.487		-0.204	0.564	8.487
0.537	-0.221	8.487		-0.111	0.493	8.487
0.429	-0.167	8.487		-0.017	0.424	8.487
0.323	-0.109	8.487		0.078	0.357	8.487
0.219	-0.049	8.487		0.175	0.291	8.487
0.116	0.014	8.487		0.272	0.227	8.487
0.016	0.081	8.487		0.370	0.164	8.487
-0.084	0.149	8.487		0.469	0.102	8.487
-0.181	0.220	8.487		0.568	0.040	8.487
-0.277	0.293	8.487		0.668	-0.021	8.487
-0.371	0.369	8.487		0.768	-0.080	8.487
-0.463	0.447	8.487		0.869	-0.138	8.487
-0.550	0.524	8.487		0.968	-0.193	8.487
-0.632	0.601	8.487		1.064	-0.245	8.487
-0.710	0.677	8.487		1.156	-0.294	8.487
-0.783	0.752	8.487		1.246	-0.340	8.487
-0.850	0.826	8.487		1.334	-0.383	8.487
-0.914	0.899	8.487		1.418	-0.424	8.487
-0.973	0.969	8.487		1.499	-0.462	8.487

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-1.029	1.039	8.487		1.577	-0.497	8.487
-1.077	1.103	8.487		1.644	-0.527	8.487
-1.119	1.162	8.487		1.705	-0.554	8.487
-1.154	1.215	8.487		1.762	-0.578	8.487
-1.184	1.268	8.487		1.816	-0.600	8.487
-1.208	1.314	8.487		1.863	-0.620	8.487
-1.223	1.352	8.487		1.899	-0.634	8.487
-1.232	1.382	8.487		1.928	-0.646	8.487
-1.236	1.406	8.487		1.949	-0.654	8.487
-1.236	1.424	8.487		1.964	-0.664	8.487
-1.233	1.434	8.487		1.969	-0.676	8.487
-1.230	1.439	8.487		1.970	-0.684	8.487
-1.228	1.442	8.487		1.969	-0.689	8.487
-1.227	1.443	8.487		1.969	-0.691	8.487
1.993	-0.999	10.650		-1.197	1.183	10.650
1.993	-1.000	10.650		-1.196	1.183	10.650
1.992	-1.002	10.650		-1.195	1.184	10.650
1.990	-1.006	10.650		-1.192	1.185	10.650
1.984	-1.012	10.650		-1.186	1.186	10.650
1.971	-1.018	10.650		-1.176	1.184	10.650
1.954	-1.016	10.650		-1.160	1.178	10.650
1.930	-1.010	10.650		-1.140	1.166	10.650
1.898	-1.003	10.650		-1.115	1.147	10.650
1.859	-0.993	10.650		-1.085	1.122	10.650
1.808	-0.980	10.650		-1.048	1.087	10.650
1.749	-0.965	10.650		-1.007	1.044	10.650
1.687	-0.949	10.650		-0.964	0.999	10.650
1.621	-0.930	10.650		-0.917	0.947	10.650
1.547	-0.909	10.650		-0.864	0.889	10.650
1.462	-0.884	10.650		-0.805	0.826	10.650
1.373	-0.856	10.650		-0.742	0.761	10.650
1.281	-0.825	10.650		-0.676	0.694	10.650
1.186	-0.792	10.650		-0.606	0.626	10.650
1.087	-0.755	10.650		-0.532	0.556	10.650
0.985	-0.716	10.650		-0.454	0.485	10.650
0.881	-0.673	10.650		-0.372	0.412	10.650
0.773	-0.626	10.650		-0.285	0.339	10.650

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
0.663	-0.575	10.650		-0.194	0.265	10.650
0.555	-0.521	10.650		-0.102	0.192	10.650
0.448	-0.464	10.650		-0.008	0.121	10.650
0.342	-0.405	10.650		0.087	0.051	10.650
0.238	-0.342	10.650		0.183	-0.016	10.650
0.136	-0.276	10.650		0.280	-0.082	10.650
0.036	-0.207	10.650		0.378	-0.147	10.650
-0.062	-0.136	10.650		0.477	-0.210	10.650
-0.159	-0.063	10.650		0.576	-0.273	10.650
-0.254	0.012	10.650		0.677	-0.334	10.650
-0.347	0.090	10.650		0.778	-0.394	10.650
-0.438	0.170	10.650		0.879	-0.453	10.650
-0.524	0.249	10.650		0.978	-0.509	10.650
-0.606	0.328	10.650		1.075	-0.561	10.650
-0.682	0.405	10.650		1.168	-0.610	10.650
-0.754	0.482	10.650		1.259	-0.656	10.650
-0.821	0.558	10.650		1.347	-0.699	10.650
-0.884	0.632	10.650		1.432	-0.740	10.650
-0.942	0.704	10.650		1.514	-0.777	10.650
-0.997	0.774	10.650		1.593	-0.812	10.650
-1.044	0.840	10.650		1.661	-0.841	10.650
-1.086	0.899	10.650		1.723	-0.867	10.650
-1.121	0.954	10.650		1.781	-0.890	10.650
-1.151	1.006	10.650		1.835	-0.912	10.650
-1.175	1.053	10.650		1.883	-0.930	10.650
-1.190	1.091	10.650		1.920	-0.944	10.650
-1.200	1.121	10.650		1.949	-0.955	10.650
-1.205	1.145	10.650		1.971	-0.963	10.650
-1.206	1.163	10.650		1.986	-0.971	10.650
-1.204	1.173	10.650		1.993	-0.983	10.650
-1.201	1.179	10.650		1.994	-0.991	10.650
-1.199	1.181	10.650		1.994	-0.996	10.650
-1.198	1.182	10.650		1.993	-0.997	10.650
1.939	-1.242	12.153		-1.125	1.279	12.153
1.939	-1.243	12.153		-1.124	1.279	12.153
1.938	-1.245	12.153		-1.123	1.280	12.153
1.936	-1.249	12.153		-1.119	1.280	12.153

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
1.930	-1.256	12.153		-1.113	1.280	12.153
1.917	-1.261	12.153		-1.104	1.276	12.153
1.898	-1.259	12.153		-1.089	1.266	12.153
1.874	-1.253	12.153		-1.071	1.249	12.153
1.841	-1.245	12.153		-1.049	1.226	12.153
1.801	-1.235	12.153		-1.023	1.195	12.153
1.748	-1.221	12.153		-0.991	1.153	12.153
1.687	-1.204	12.153		-0.956	1.104	12.153
1.623	-1.185	12.153		-0.919	1.051	12.153
1.555	-1.165	12.153		-0.877	0.991	12.153
1.479	-1.140	12.153		-0.831	0.925	12.153
1.392	-1.111	12.153		-0.778	0.853	12.153
1.301	-1.078	12.153		-0.723	0.778	12.153
1.207	-1.042	12.153		-0.663	0.702	12.153
1.110	-1.003	12.153		-0.600	0.623	12.153
1.010	-0.960	12.153		-0.533	0.542	12.153
0.907	-0.914	12.153		-0.461	0.460	12.153
0.802	-0.862	12.153		-0.386	0.376	12.153
0.694	-0.806	12.153		-0.306	0.290	12.153
0.584	-0.745	12.153		-0.221	0.203	12.153
0.477	-0.680	12.153		-0.135	0.117	12.153
0.371	-0.612	12.153		-0.048	0.034	12.153
0.268	-0.540	12.153		0.042	-0.048	12.153
0.168	-0.464	12.153		0.133	-0.128	12.153
0.070	-0.385	12.153		0.226	-0.205	12.153
-0.026	-0.304	12.153		0.321	-0.281	12.153
-0.119	-0.220	12.153		0.418	-0.354	12.153
-0.210	-0.134	12.153		0.515	-0.426	12.153
-0.299	-0.044	12.153		0.613	-0.498	12.153
-0.385	0.047	12.153		0.712	-0.567	12.153
-0.469	0.140	12.153		0.813	-0.635	12.153
-0.548	0.233	12.153		0.911	-0.699	12.153
-0.621	0.324	12.153		1.007	-0.759	12.153
-0.690	0.414	12.153		1.100	-0.815	12.153
-0.755	0.502	12.153		1.192	-0.868	12.153
-0.814	0.588	12.153		1.280	-0.916	12.153
-0.869	0.672	12.153		1.366	-0.962	12.153

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-0.919	0.754	12.153		1.449	-1.003	12.153
-0.966	0.834	12.153		1.529	-1.042	12.153
-1.006	0.907	12.153		1.599	-1.074	12.153
-1.041	0.974	12.153		1.661	-1.103	12.153
-1.071	1.034	12.153		1.721	-1.128	12.153
-1.096	1.092	12.153		1.777	-1.151	12.153
-1.114	1.143	12.153		1.825	-1.171	12.153
-1.126	1.183	12.153		1.863	-1.186	12.153
-1.133	1.216	12.153		1.893	-1.197	12.153
-1.136	1.241	12.153		1.916	-1.206	12.153
-1.135	1.260	12.153		1.932	-1.214	12.153
-1.133	1.270	12.153		1.939	-1.226	12.153
-1.129	1.276	12.153		1.940	-1.234	12.153
-1.127	1.278	12.153		1.940	-1.239	12.153
-1.126	1.279	12.153		1.940	-1.241	12.153

[0062] In exemplary embodiments, TABLE IV below contains Cartesian coordinate data of an airfoil shape 150 of an airfoil 100 of a stator vane 50, which is disposed in the mid stage 62 of the compressor section 14. Specifically, TABLE IV below contains Cartesian coordinate data of an airfoil shape 150 of an airfoil 100 of a stator vane 50, which is disposed in the seventh stage S7 of the compressor section 14.

TABLE IV

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
1.493	-0.917	0.688		-1.119	1.055	0.688
1.492	-0.918	0.688		-1.119	1.056	0.688
1.491	-0.920	0.688		-1.118	1.056	0.688
1.489	-0.923	0.688		-1.115	1.057	0.688
1.484	-0.928	0.688		-1.110	1.059	0.688
1.472	-0.932	0.688		-1.102	1.060	0.688
1.457	-0.929	0.688		-1.087	1.058	0.688
1.437	-0.923	0.688		-1.069	1.051	0.688
1.410	-0.915	0.688		-1.046	1.038	0.688
1.377	-0.905	0.688		-1.019	1.019	0.688
1.333	-0.892	0.688		-0.985	0.992	0.688
1.283	-0.877	0.688		-0.948	0.960	0.688
1.230	-0.860	0.688		-0.908	0.925	0.688
1.173	-0.843	0.688		-0.864	0.885	0.688
1.110	-0.823	0.688		-0.815	0.841	0.688

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
1.037	-0.799	0.688		-0.762	0.792	0.688
0.960	-0.774	0.688		-0.706	0.740	0.688
0.881	-0.747	0.688		-0.648	0.687	0.688
0.798	-0.719	0.688		-0.587	0.631	0.688
0.712	-0.689	0.688		-0.523	0.574	0.688
0.624	-0.656	0.688		-0.456	0.515	0.688
0.533	-0.621	0.688		-0.387	0.454	0.688
0.439	-0.582	0.688		-0.314	0.392	0.688
0.343	-0.541	0.688		-0.238	0.329	0.688
0.247	-0.497	0.688		-0.162	0.266	0.688
0.153	-0.451	0.688		-0.085	0.204	0.688
0.061	-0.402	0.688		-0.007	0.142	0.688
-0.030	-0.350	0.688		0.071	0.081	0.688
-0.119	-0.295	0.688		0.148	0.020	0.688
-0.206	-0.236	0.688		0.226	-0.042	0.688
-0.291	-0.173	0.688		0.304	-0.103	0.688
-0.372	-0.108	0.688		0.382	-0.163	0.688
-0.452	-0.040	0.688		0.461	-0.222	0.688
-0.529	0.031	0.688		0.541	-0.281	0.688
-0.604	0.105	0.688		0.621	-0.339	0.688
-0.674	0.178	0.688		0.700	-0.394	0.688
-0.738	0.252	0.688		0.776	-0.446	0.688
-0.798	0.325	0.688		0.850	-0.496	0.688
-0.853	0.397	0.688		0.921	-0.543	0.688
-0.902	0.469	0.688		0.991	-0.587	0.688
-0.948	0.539	0.688		1.058	-0.630	0.688
-0.988	0.609	0.688		1.122	-0.670	0.688
-1.025	0.677	0.688		1.184	-0.708	0.688
-1.055	0.740	0.688		1.237	-0.741	0.688
-1.080	0.797	0.688		1.285	-0.770	0.688
-1.100	0.849	0.688		1.330	-0.797	0.688
-1.117	0.899	0.688		1.373	-0.822	0.688
-1.129	0.943	0.688		1.410	-0.844	0.688
-1.136	0.977	0.688		1.438	-0.861	0.688
-1.138	1.005	0.688		1.461	-0.874	0.688
-1.136	1.026	0.688		1.478	-0.884	0.688
-1.132	1.041	0.688		1.489	-0.894	0.688

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-1.127	1.048	0.688		1.494	-0.904	0.688
-1.123	1.052	0.688		1.494	-0.911	0.688
-1.121	1.054	0.688		1.493	-0.915	0.688
-1.120	1.055	0.688		1.493	-0.916	0.688
1.447	-0.690	1.329		-1.118	1.088	1.329
1.447	-0.691	1.329		-1.118	1.088	1.329
1.446	-0.692	1.329		-1.117	1.089	1.329
1.444	-0.696	1.329		-1.114	1.090	1.329
1.439	-0.700	1.329		-1.110	1.091	1.329
1.429	-0.705	1.329		-1.102	1.093	1.329
1.414	-0.703	1.329		-1.088	1.091	1.329
1.395	-0.698	1.329		-1.070	1.086	1.329
1.369	-0.691	1.329		-1.047	1.075	1.329
1.337	-0.682	1.329		-1.020	1.059	1.329
1.296	-0.670	1.329		-0.987	1.035	1.329
1.248	-0.657	1.329		-0.949	1.007	1.329
1.197	-0.642	1.329		-0.910	0.975	1.329
1.143	-0.627	1.329		-0.866	0.940	1.329
1.082	-0.609	1.329		-0.817	0.900	1.329
1.012	-0.588	1.329		-0.764	0.856	1.329
0.939	-0.566	1.329		-0.708	0.810	1.329
0.863	-0.543	1.329		-0.650	0.762	1.329
0.784	-0.518	1.329		-0.589	0.712	1.329
0.703	-0.490	1.329		-0.525	0.661	1.329
0.618	-0.461	1.329		-0.459	0.608	1.329
0.531	-0.430	1.329		-0.390	0.554	1.329
0.441	-0.396	1.329		-0.317	0.498	1.329
0.349	-0.359	1.329		-0.242	0.441	1.329
0.257	-0.320	1.329		-0.166	0.385	1.329
0.167	-0.279	1.329		-0.090	0.329	1.329
0.077	-0.235	1.329		-0.014	0.274	1.329
-0.011	-0.189	1.329		0.063	0.219	1.329
-0.098	-0.140	1.329		0.139	0.164	1.329
-0.182	-0.088	1.329		0.215	0.108	1.329
-0.265	-0.032	1.329		0.292	0.053	1.329
-0.345	0.026	1.329		0.369	-0.002	1.329
-0.423	0.087	1.329		0.446	-0.056	1.329

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-0.500	0.151	1.329		0.524	-0.109	1.329
-0.574	0.217	1.329		0.602	-0.162	1.329
-0.644	0.283	1.329		0.678	-0.212	1.329
-0.709	0.349	1.329		0.753	-0.259	1.329
-0.769	0.415	1.329		0.824	-0.305	1.329
-0.825	0.481	1.329		0.894	-0.347	1.329
-0.876	0.546	1.329		0.961	-0.388	1.329
-0.923	0.610	1.329		1.026	-0.427	1.329
-0.966	0.673	1.329		1.089	-0.463	1.329
-1.005	0.735	1.329		1.148	-0.498	1.329
-1.037	0.793	1.329		1.200	-0.528	1.329
-1.065	0.846	1.329		1.247	-0.554	1.329
-1.087	0.894	1.329		1.290	-0.579	1.329
-1.106	0.940	1.329		1.332	-0.602	1.329
-1.121	0.980	1.329		1.367	-0.622	1.329
-1.129	1.012	1.329		1.395	-0.637	1.329
-1.133	1.039	1.329		1.417	-0.649	1.329
-1.132	1.059	1.329		1.433	-0.658	1.329
-1.129	1.073	1.329		1.444	-0.667	1.329
-1.125	1.080	1.329		1.448	-0.678	1.329
-1.122	1.085	1.329		1.448	-0.684	1.329
-1.120	1.086	1.329		1.448	-0.688	1.329
-1.119	1.087	1.329		1.447	-0.689	1.329
1.377	-0.319	3.014		-1.098	1.299	3.014
1.377	-0.320	3.014		-1.097	1.299	3.014
1.376	-0.321	3.014		-1.096	1.300	3.014
1.375	-0.325	3.014		-1.094	1.301	3.014
1.370	-0.329	3.014		-1.089	1.303	3.014
1.361	-0.334	3.014		-1.082	1.304	3.014
1.347	-0.334	3.014		-1.069	1.302	3.014
1.329	-0.329	3.014		-1.052	1.296	3.014
1.304	-0.323	3.014		-1.031	1.285	3.014
1.274	-0.316	3.014		-1.006	1.268	3.014
1.234	-0.306	3.014		-0.975	1.245	3.014
1.189	-0.295	3.014		-0.941	1.216	3.014
1.140	-0.282	3.014		-0.905	1.184	3.014
1.089	-0.269	3.014		-0.865	1.149	3.014

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
1.031	-0.253	3.014		-0.820	1.110	3.014
0.965	-0.235	3.014		-0.770	1.067	3.014
0.895	-0.216	3.014		-0.718	1.023	3.014
0.823	-0.195	3.014		-0.663	0.977	3.014
0.748	-0.172	3.014		-0.605	0.930	3.014
0.671	-0.148	3.014		-0.544	0.882	3.014
0.590	-0.122	3.014		-0.480	0.833	3.014
0.507	-0.093	3.014		-0.414	0.782	3.014
0.422	-0.062	3.014		-0.344	0.731	3.014
0.335	-0.028	3.014		-0.271	0.679	3.014
0.248	0.007	3.014		-0.198	0.628	3.014
0.162	0.045	3.014		-0.124	0.577	3.014
0.077	0.085	3.014		-0.050	0.527	3.014
-0.007	0.128	3.014		0.025	0.478	3.014
-0.089	0.174	3.014		0.100	0.429	3.014
-0.170	0.222	3.014		0.175	0.380	3.014
-0.248	0.273	3.014		0.250	0.331	3.014
-0.326	0.327	3.014		0.325	0.282	3.014
-0.401	0.382	3.014		0.400	0.234	3.014
-0.475	0.440	3.014		0.476	0.187	3.014
-0.547	0.500	3.014		0.553	0.141	3.014
-0.615	0.560	3.014		0.627	0.097	3.014
-0.679	0.621	3.014		0.699	0.055	3.014
-0.738	0.681	3.014		0.769	0.015	3.014
-0.794	0.741	3.014		0.837	-0.022	3.014
-0.845	0.800	3.014		0.903	-0.058	3.014
-0.892	0.859	3.014		0.966	-0.091	3.014
-0.935	0.916	3.014		1.027	-0.123	3.014
-0.974	0.973	3.014		1.085	-0.153	3.014
-1.007	1.026	3.014		1.136	-0.178	3.014
-1.036	1.074	3.014		1.182	-0.201	3.014
-1.060	1.118	3.014		1.224	-0.222	3.014
-1.081	1.161	3.014		1.265	-0.242	3.014
-1.096	1.198	3.014		1.299	-0.259	3.014
-1.105	1.228	3.014		1.326	-0.271	3.014
-1.110	1.253	3.014		1.348	-0.282	3.014
-1.110	1.272	3.014		1.364	-0.289	3.014

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-1.107	1.285	3.014		1.374	-0.298	3.014
-1.104	1.292	3.014		1.378	-0.307	3.014
-1.101	1.296	3.014		1.379	-0.313	3.014
-1.099	1.298	3.014		1.378	-0.317	3.014
-1.098	1.299	3.014		1.378	-0.318	3.014
1.408	-0.517	6.348		-1.000	1.060	6.348
1.408	-0.518	6.348		-0.999	1.060	6.348
1.408	-0.520	6.348		-0.998	1.061	6.348
1.406	-0.523	6.348		-0.996	1.062	6.348
1.402	-0.528	6.348		-0.991	1.063	6.348
1.393	-0.533	6.348		-0.984	1.062	6.348
1.379	-0.532	6.348		-0.972	1.058	6.348
1.361	-0.528	6.348		-0.956	1.050	6.348
1.338	-0.523	6.348		-0.937	1.037	6.348
1.308	-0.516	6.348		-0.914	1.019	6.348
1.270	-0.507	6.348		-0.886	0.993	6.348
1.226	-0.497	6.348		-0.855	0.963	6.348
1.179	-0.486	6.348		-0.822	0.929	6.348
1.129	-0.473	6.348		-0.786	0.892	6.348
1.073	-0.459	6.348		-0.745	0.850	6.348
1.008	-0.442	6.348		-0.699	0.805	6.348
0.941	-0.424	6.348		-0.651	0.758	6.348
0.871	-0.403	6.348		-0.601	0.710	6.348
0.799	-0.381	6.348		-0.547	0.661	6.348
0.724	-0.357	6.348		-0.490	0.610	6.348
0.647	-0.330	6.348		-0.430	0.559	6.348
0.567	-0.301	6.348		-0.368	0.507	6.348
0.485	-0.269	6.348		-0.302	0.454	6.348
0.402	-0.234	6.348		-0.232	0.401	6.348
0.319	-0.197	6.348		-0.162	0.349	6.348
0.237	-0.158	6.348		-0.091	0.298	6.348
0.156	-0.116	6.348		-0.019	0.249	6.348
0.077	-0.071	6.348		0.054	0.200	6.348
-0.001	-0.025	6.348		0.128	0.153	6.348
-0.077	0.025	6.348		0.201	0.106	6.348
-0.152	0.076	6.348		0.276	0.060	6.348
-0.226	0.129	6.348		0.350	0.014	6.348

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-0.298	0.184	6.348		0.425	-0.030	6.348
-0.369	0.241	6.348		0.501	-0.074	6.348
-0.438	0.300	6.348		0.577	-0.117	6.348
-0.504	0.358	6.348		0.652	-0.158	6.348
-0.565	0.417	6.348		0.724	-0.196	6.348
-0.623	0.475	6.348		0.794	-0.231	6.348
-0.677	0.532	6.348		0.862	-0.264	6.348
-0.727	0.588	6.348		0.928	-0.296	6.348
-0.774	0.644	6.348		0.992	-0.325	6.348
-0.818	0.698	6.348		1.053	-0.352	6.348
-0.858	0.751	6.348		1.112	-0.377	6.348
-0.893	0.801	6.348		1.163	-0.399	6.348
-0.923	0.846	6.348		1.209	-0.418	6.348
-0.949	0.887	6.348		1.252	-0.435	6.348
-0.971	0.927	6.348		1.292	-0.451	6.348
-0.988	0.962	6.348		1.328	-0.465	6.348
-0.999	0.991	6.348		1.355	-0.476	6.348
-1.005	1.014	6.348		1.377	-0.484	6.348
-1.008	1.032	6.348		1.393	-0.490	6.348
-1.007	1.046	6.348		1.404	-0.497	6.348
-1.005	1.053	6.348		1.409	-0.506	6.348
-1.003	1.057	6.348		1.409	-0.512	6.348
-1.001	1.059	6.348		1.409	-0.515	6.348
-1.000	1.060	6.348		1.409	-0.517	6.348
1.585	-0.908	8.594		-0.909	0.827	8.594
1.585	-0.909	8.594		-0.908	0.827	8.594
1.584	-0.911	8.594		-0.907	0.828	8.594
1.582	-0.914	8.594		-0.905	0.829	8.594
1.578	-0.919	8.594		-0.900	0.829	8.594
1.568	-0.923	8.594		-0.893	0.827	8.594
1.553	-0.921	8.594		-0.880	0.821	8.594
1.535	-0.917	8.594		-0.865	0.810	8.594
1.510	-0.912	8.594		-0.846	0.795	8.594
1.478	-0.905	8.594		-0.823	0.773	8.594
1.438	-0.896	8.594		-0.796	0.744	8.594
1.391	-0.885	8.594		-0.765	0.710	8.594
1.341	-0.873	8.594		-0.732	0.673	8.594

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
1.288	-0.860	8.594		-0.696	0.630	8.594
1.229	-0.845	8.594		-0.656	0.583	8.594
1.161	-0.828	8.594		-0.611	0.532	8.594
1.090	-0.808	8.594		-0.564	0.479	8.594
1.016	-0.787	8.594		-0.514	0.425	8.594
0.939	-0.763	8.594		-0.461	0.369	8.594
0.860	-0.737	8.594		-0.405	0.311	8.594
0.778	-0.708	8.594		-0.345	0.252	8.594
0.694	-0.676	8.594		-0.283	0.193	8.594
0.608	-0.642	8.594		-0.217	0.132	8.594
0.520	-0.603	8.594		-0.147	0.071	8.594
0.433	-0.562	8.594		-0.076	0.012	8.594
0.348	-0.518	8.594		-0.003	-0.045	8.594
0.264	-0.470	8.594		0.071	-0.101	8.594
0.182	-0.420	8.594		0.146	-0.155	8.594
0.102	-0.366	8.594		0.223	-0.208	8.594
0.024	-0.311	8.594		0.300	-0.259	8.594
-0.054	-0.254	8.594		0.378	-0.309	8.594
-0.129	-0.195	8.594		0.457	-0.357	8.594
-0.203	-0.133	8.594		0.536	-0.405	8.594
-0.275	-0.069	8.594		0.616	-0.452	8.594
-0.346	-0.004	8.594		0.697	-0.498	8.594
-0.412	0.062	8.594		0.776	-0.540	8.594
-0.474	0.126	8.594		0.852	-0.580	8.594
-0.532	0.191	8.594		0.927	-0.617	8.594
-0.586	0.254	8.594		0.999	-0.652	8.594
-0.637	0.316	8.594		1.070	-0.684	8.594
-0.684	0.377	8.594		1.138	-0.714	8.594
-0.727	0.436	8.594		1.203	-0.742	8.594
-0.767	0.494	8.594		1.266	-0.767	8.594
-0.802	0.548	8.594		1.320	-0.789	8.594
-0.832	0.597	8.594		1.369	-0.808	8.594
-0.857	0.642	8.594		1.416	-0.826	8.594
-0.878	0.685	8.594		1.459	-0.842	8.594
-0.895	0.724	8.594		1.497	-0.856	8.594
-0.906	0.754	8.594		1.526	-0.867	8.594
-0.913	0.778	8.594		1.549	-0.875	8.594

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-0.916	0.797	8.594		1.566	-0.881	8.594
-0.916	0.812	8.594		1.579	-0.887	8.594
-0.915	0.820	8.594		1.585	-0.896	8.594
-0.912	0.824	8.594		1.586	-0.902	8.594
-0.910	0.826	8.594		1.585	-0.906	8.594
-0.909	0.827	8.594		1.585	-0.907	8.594

[0063] In exemplary embodiments, TABLE V below contains Cartesian coordinate data of an airfoil shape 150 of an airfoil 100 of a stator vane 50, which is disposed in the mid stage 62 of the compressor section 14. Specifically, TABLE V below contains Cartesian coordinate data of an airfoil shape 150 of an airfoil 100 of a stator vane 50, which is disposed in the eighth stage S8 of the compressor section 14.

TABLE V

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
2.430	-1.262	1.178		-1.804	1.794	1.178
2.429	-1.263	1.178		-1.803	1.795	1.178
2.428	-1.266	1.178		-1.801	1.796	1.178
2.424	-1.272	1.178		-1.797	1.798	1.178
2.416	-1.279	1.178		-1.790	1.801	1.178
2.399	-1.287	1.178		-1.776	1.802	1.178
2.374	-1.284	1.178		-1.753	1.800	1.178
2.342	-1.275	1.178		-1.723	1.790	1.178
2.299	-1.264	1.178		-1.685	1.772	1.178
2.245	-1.249	1.178		-1.639	1.746	1.178
2.176	-1.230	1.178		-1.581	1.710	1.178
2.095	-1.208	1.178		-1.515	1.667	1.178
2.010	-1.184	1.178		-1.446	1.619	1.178
1.919	-1.157	1.178		-1.369	1.564	1.178
1.818	-1.127	1.178		-1.285	1.502	1.178
1.701	-1.090	1.178		-1.192	1.432	1.178
1.580	-1.051	1.178		-1.096	1.359	1.178
1.453	-1.009	1.178		-0.995	1.283	1.178
1.322	-0.964	1.178		-0.891	1.204	1.178
1.186	-0.915	1.178		-0.782	1.121	1.178
1.045	-0.863	1.178		-0.669	1.035	1.178
0.900	-0.807	1.178		-0.552	0.946	1.178
0.750	-0.747	1.178		-0.430	0.854	1.178
0.597	-0.680	1.178		-0.305	0.759	1.178

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
0.446	-0.611	1.178		-0.179	0.664	1.178
0.296	-0.539	1.178		-0.052	0.570	1.178
0.147	-0.462	1.178		0.074	0.476	1.178
0.001	-0.382	1.178		0.200	0.381	1.178
-0.143	-0.298	1.178		0.325	0.285	1.178
-0.284	-0.209	1.178		0.451	0.190	1.178
-0.422	-0.116	1.178		0.577	0.095	1.178
-0.556	-0.017	1.178		0.703	0.001	1.178
-0.687	0.086	1.178		0.830	-0.093	1.178
-0.815	0.194	1.178		0.956	-0.187	1.178
-0.938	0.306	1.178		1.083	-0.281	1.178
-1.053	0.418	1.178		1.206	-0.372	1.178
-1.160	0.531	1.178		1.324	-0.458	1.178
-1.259	0.644	1.178		1.440	-0.541	1.178
-1.349	0.757	1.178		1.551	-0.620	1.178
-1.432	0.868	1.178		1.659	-0.696	1.178
-1.507	0.979	1.178		1.762	-0.768	1.178
-1.574	1.088	1.178		1.861	-0.837	1.178
-1.635	1.194	1.178		1.956	-0.903	1.178
-1.686	1.292	1.178		2.039	-0.959	1.178
-1.728	1.383	1.178		2.113	-1.009	1.178
-1.760	1.466	1.178		2.182	-1.056	1.178
-1.788	1.545	1.178		2.248	-1.100	1.178
-1.808	1.614	1.178		2.305	-1.138	1.178
-1.820	1.668	1.178		2.349	-1.167	1.178
-1.826	1.712	1.178		2.384	-1.190	1.178
-1.826	1.746	1.178		2.410	-1.207	1.178
-1.821	1.770	1.178		2.427	-1.224	1.178
-1.815	1.782	1.178		2.432	-1.241	1.178
-1.810	1.789	1.178		2.432	-1.252	1.178
-1.806	1.792	1.178		2.431	-1.258	1.178
-1.805	1.794	1.178		2.430	-1.260	1.178
2.530	-0.599	3.170		-1.790	2.066	3.170
2.530	-0.601	3.170		-1.789	2.066	3.170
2.529	-0.603	3.170		-1.787	2.067	3.170
2.526	-0.609	3.170		-1.784	2.069	3.170
2.518	-0.617	3.170		-1.776	2.072	3.170

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
2.501	-0.625	3.170		-1.764	2.075	3.170
2.477	-0.624	3.170		-1.741	2.073	3.170
2.445	-0.618	3.170		-1.711	2.065	3.170
2.403	-0.609	3.170		-1.674	2.049	3.170
2.350	-0.599	3.170		-1.628	2.025	3.170
2.281	-0.586	3.170		-1.571	1.992	3.170
2.201	-0.570	3.170		-1.505	1.953	3.170
2.117	-0.553	3.170		-1.436	1.909	3.170
2.027	-0.535	3.170		-1.359	1.858	3.170
1.926	-0.514	3.170		-1.274	1.801	3.170
1.810	-0.489	3.170		-1.181	1.738	3.170
1.689	-0.462	3.170		-1.084	1.672	3.170
1.562	-0.432	3.170		-0.983	1.603	3.170
1.431	-0.399	3.170		-0.877	1.532	3.170
1.295	-0.364	3.170		-0.767	1.458	3.170
1.154	-0.326	3.170		-0.652	1.381	3.170
1.009	-0.284	3.170		-0.533	1.303	3.170
0.860	-0.236	3.170		-0.409	1.221	3.170
0.706	-0.184	3.170		-0.280	1.137	3.170
0.554	-0.128	3.170		-0.152	1.054	3.170
0.403	-0.069	3.170		-0.023	0.972	3.170
0.254	-0.005	3.170		0.106	0.889	3.170
0.108	0.064	3.170		0.236	0.807	3.170
-0.037	0.138	3.170		0.364	0.724	3.170
-0.179	0.216	3.170		0.493	0.641	3.170
-0.318	0.299	3.170		0.622	0.558	3.170
-0.454	0.387	3.170		0.751	0.475	3.170
-0.587	0.480	3.170		0.880	0.392	3.170
-0.717	0.578	3.170		1.010	0.311	3.170
-0.843	0.680	3.170		1.140	0.230	3.170
-0.961	0.783	3.170		1.266	0.153	3.170
-1.071	0.886	3.170		1.388	0.078	3.170
-1.173	0.990	3.170		1.507	0.007	3.170
-1.268	1.094	3.170		1.621	-0.061	3.170
-1.356	1.196	3.170		1.732	-0.124	3.170
-1.436	1.298	3.170		1.838	-0.185	3.170
-1.509	1.399	3.170		1.941	-0.243	3.170

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-1.576	1.497	3.170		2.039	-0.297	3.170
-1.633	1.589	3.170		2.124	-0.344	3.170
-1.680	1.674	3.170		2.200	-0.386	3.170
-1.719	1.751	3.170		2.272	-0.424	3.170
-1.752	1.825	3.170		2.340	-0.461	3.170
-1.778	1.891	3.170		2.398	-0.492	3.170
-1.795	1.942	3.170		2.443	-0.516	3.170
-1.805	1.984	3.170		2.480	-0.535	3.170
-1.807	2.016	3.170		2.507	-0.549	3.170
-1.805	2.040	3.170		2.525	-0.563	3.170
-1.800	2.053	3.170		2.532	-0.579	3.170
-1.795	2.060	3.170		2.532	-0.589	3.170
-1.792	2.063	3.170		2.531	-0.595	3.170
-1.790	2.065	3.170		2.531	-0.598	3.170
2.714	-0.574	6.431		-1.724	2.146	6.431
2.714	-0.576	6.431		-1.723	2.147	6.431
2.713	-0.578	6.431		-1.721	2.148	6.431
2.709	-0.584	6.431		-1.717	2.150	6.431
2.702	-0.592	6.431		-1.709	2.152	6.431
2.684	-0.598	6.431		-1.696	2.151	6.431
2.660	-0.595	6.431		-1.673	2.144	6.431
2.628	-0.588	6.431		-1.645	2.130	6.431
2.585	-0.580	6.431		-1.610	2.108	6.431
2.531	-0.569	6.431		-1.567	2.077	6.431
2.462	-0.554	6.431		-1.514	2.034	6.431
2.382	-0.537	6.431		-1.453	1.985	6.431
2.296	-0.518	6.431		-1.388	1.931	6.431
2.206	-0.497	6.431		-1.316	1.871	6.431
2.105	-0.474	6.431		-1.235	1.804	6.431
1.988	-0.445	6.431		-1.146	1.730	6.431
1.867	-0.414	6.431		-1.052	1.654	6.431
1.740	-0.380	6.431		-0.954	1.576	6.431
1.609	-0.343	6.431		-0.850	1.495	6.431
1.473	-0.302	6.431		-0.742	1.413	6.431
1.332	-0.257	6.431		-0.628	1.328	6.431
1.187	-0.209	6.431		-0.509	1.242	6.431
1.038	-0.155	6.431		-0.385	1.154	6.431

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
0.885	-0.097	6.431		-0.256	1.065	6.431
0.733	-0.035	6.431		-0.125	0.977	6.431
0.583	0.030	6.431		0.007	0.891	6.431
0.435	0.100	6.431		0.140	0.808	6.431
0.288	0.173	6.431		0.274	0.725	6.431
0.144	0.251	6.431		0.409	0.643	6.431
0.002	0.333	6.431		0.544	0.563	6.431
-0.137	0.419	6.431		0.680	0.483	6.431
-0.274	0.509	6.431		0.816	0.403	6.431
-0.409	0.602	6.431		0.952	0.325	6.431
-0.540	0.700	6.431		1.090	0.249	6.431
-0.669	0.801	6.431		1.228	0.174	6.431
-0.791	0.903	6.431		1.362	0.102	6.431
-0.905	1.004	6.431		1.492	0.034	6.431
-1.012	1.106	6.431		1.618	-0.031	6.431
-1.112	1.206	6.431		1.740	-0.092	6.431
-1.205	1.306	6.431		1.858	-0.150	6.431
-1.292	1.404	6.431		1.971	-0.205	6.431
-1.372	1.501	6.431		2.080	-0.257	6.431
-1.445	1.596	6.431		2.185	-0.306	6.431
-1.509	1.685	6.431		2.275	-0.347	6.431
-1.565	1.766	6.431		2.357	-0.384	6.431
-1.611	1.840	6.431		2.433	-0.418	6.431
-1.653	1.910	6.431		2.505	-0.450	6.431
-1.687	1.973	6.431		2.568	-0.477	6.431
-1.710	2.022	6.431		2.616	-0.498	6.431
-1.725	2.063	6.431		2.654	-0.515	6.431
-1.733	2.095	6.431		2.683	-0.527	6.431
-1.735	2.119	6.431		2.704	-0.538	6.431
-1.732	2.133	6.431		2.714	-0.553	6.431
-1.729	2.141	6.431		2.716	-0.564	6.431
-1.726	2.144	6.431		2.715	-0.570	6.431
-1.724	2.146	6.431		2.715	-0.573	6.431
2.808	-1.157	10.424		-1.607	1.638	10.424
2.807	-1.159	10.424		-1.606	1.639	10.424
2.806	-1.161	10.424		-1.605	1.640	10.424
2.803	-1.167	10.424		-1.601	1.641	10.424

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
2.795	-1.175	10.424		-1.592	1.642	10.424
2.777	-1.180	10.424		-1.579	1.641	10.424
2.753	-1.176	10.424		-1.557	1.632	10.424
2.720	-1.170	10.424		-1.530	1.617	10.424
2.677	-1.162	10.424		-1.495	1.593	10.424
2.624	-1.152	10.424		-1.454	1.559	10.424
2.554	-1.138	10.424		-1.403	1.514	10.424
2.473	-1.122	10.424		-1.345	1.460	10.424
2.387	-1.104	10.424		-1.284	1.401	10.424
2.297	-1.084	10.424		-1.215	1.336	10.424
2.195	-1.060	10.424		-1.138	1.264	10.424
2.078	-1.032	10.424		-1.052	1.185	10.424
1.956	-1.001	10.424		-0.962	1.104	10.424
1.829	-0.966	10.424		-0.867	1.020	10.424
1.698	-0.928	10.424		-0.767	0.934	10.424
1.562	-0.886	10.424		-0.662	0.846	10.424
1.421	-0.840	10.424		-0.551	0.756	10.424
1.277	-0.788	10.424		-0.435	0.665	10.424
1.128	-0.732	10.424		-0.313	0.572	10.424
0.977	-0.669	10.424		-0.186	0.478	10.424
0.826	-0.602	10.424		-0.057	0.386	10.424
0.678	-0.532	10.424		0.074	0.296	10.424
0.532	-0.457	10.424		0.206	0.209	10.424
0.388	-0.377	10.424		0.339	0.124	10.424
0.247	-0.294	10.424		0.474	0.040	10.424
0.108	-0.206	10.424		0.609	-0.042	10.424
-0.029	-0.115	10.424		0.746	-0.122	10.424
-0.164	-0.021	10.424		0.882	-0.202	10.424
-0.296	0.077	10.424		1.020	-0.280	10.424
-0.425	0.178	10.424		1.159	-0.357	10.424
-0.552	0.283	10.424		1.298	-0.432	10.424
-0.671	0.388	10.424		1.433	-0.503	10.424
-0.784	0.492	10.424		1.565	-0.571	10.424
-0.889	0.595	10.424		1.692	-0.635	10.424
-0.988	0.697	10.424		1.815	-0.696	10.424
-1.081	0.798	10.424		1.934	-0.753	10.424
-1.167	0.898	10.424		2.049	-0.806	10.424

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-1.247	0.995	10.424		2.160	-0.856	10.424
-1.321	1.090	10.424		2.266	-0.903	10.424
-1.386	1.178	10.424		2.358	-0.943	10.424
-1.443	1.259	10.424		2.441	-0.978	10.424
-1.491	1.332	10.424		2.519	-1.011	10.424
-1.534	1.402	10.424		2.592	-1.041	10.424
-1.569	1.464	10.424		2.655	-1.066	10.424
-1.592	1.513	10.424		2.705	-1.086	10.424
-1.608	1.554	10.424		2.744	-1.101	10.424
-1.616	1.586	10.424		2.773	-1.113	10.424
-1.618	1.611	10.424		2.795	-1.122	10.424
-1.616	1.624	10.424		2.807	-1.136	10.424
-1.612	1.632	10.424		2.809	-1.147	10.424
-1.610	1.636	10.424		2.808	-1.153	10.424
-1.608	1.637	10.424		2.808	-1.156	10.424
2.934	-1.483	12.409		-1.566	1.724	12.409
2.934	-1.484	12.409		-1.565	1.724	12.409
2.933	-1.487	12.409		-1.563	1.725	12.409
2.929	-1.493	12.409		-1.559	1.726	12.409
2.920	-1.501	12.409		-1.550	1.725	12.409
2.901	-1.505	12.409		-1.537	1.720	12.409
2.875	-1.500	12.409		-1.515	1.707	12.409
2.841	-1.494	12.409		-1.489	1.685	12.409
2.795	-1.485	12.409		-1.457	1.654	12.409
2.738	-1.473	12.409		-1.419	1.613	12.409
2.663	-1.458	12.409		-1.372	1.557	12.409
2.578	-1.440	12.409		-1.319	1.492	12.409
2.487	-1.419	12.409		-1.262	1.422	12.409
2.390	-1.397	12.409		-1.199	1.343	12.409
2.283	-1.371	12.409		-1.127	1.257	12.409
2.159	-1.338	12.409		-1.047	1.163	12.409
2.029	-1.302	12.409		-0.962	1.065	12.409
1.895	-1.263	12.409		-0.872	0.965	12.409
1.756	-1.218	12.409		-0.777	0.862	12.409
1.613	-1.170	12.409		-0.675	0.757	12.409
1.465	-1.116	12.409		-0.567	0.650	12.409
1.313	-1.056	12.409		-0.454	0.542	12.409

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
1.158	-0.989	12.409		-0.333	0.432	12.409
0.999	-0.916	12.409		-0.206	0.322	12.409
0.842	-0.838	12.409		-0.076	0.214	12.409
0.688	-0.755	12.409		0.055	0.109	12.409
0.537	-0.666	12.409		0.190	0.007	12.409
0.389	-0.573	12.409		0.326	-0.091	12.409
0.244	-0.476	12.409		0.464	-0.187	12.409
0.102	-0.374	12.409		0.605	-0.280	12.409
-0.038	-0.269	12.409		0.746	-0.372	12.409
-0.174	-0.160	12.409		0.889	-0.461	12.409
-0.308	-0.046	12.409		1.033	-0.548	12.409
-0.438	0.071	12.409		1.179	-0.633	12.409
-0.564	0.192	12.409		1.325	-0.716	12.409
-0.683	0.312	12.409		1.468	-0.794	12.409
-0.793	0.432	12.409		1.607	-0.868	12.409
-0.897	0.551	12.409		1.742	-0.937	12.409
-0.993	0.668	12.409		1.873	-1.002	12.409
-1.082	0.783	12.409		1.999	-1.063	12.409
-1.165	0.896	12.409		2.121	-1.120	12.409
-1.241	1.007	12.409		2.239	-1.173	12.409
-1.310	1.115	12.409		2.353	-1.222	12.409
-1.370	1.214	12.409		2.451	-1.263	12.409
-1.423	1.305	12.409		2.539	-1.300	12.409
-1.467	1.388	12.409		2.622	-1.333	12.409
-1.506	1.466	12.409		2.701	-1.364	12.409
-1.536	1.535	12.409		2.769	-1.391	12.409
-1.557	1.590	12.409		2.821	-1.411	12.409
-1.570	1.635	12.409		2.863	-1.426	12.409
-1.577	1.669	12.409		2.895	-1.438	12.409
-1.578	1.695	12.409		2.919	-1.447	12.409
-1.576	1.709	12.409		2.932	-1.461	12.409
-1.572	1.718	12.409		2.935	-1.471	12.409
-1.569	1.721	12.409		2.935	-1.478	12.409
-1.567	1.723	12.409		2.935	-1.481	12.409

[0064] In exemplary embodiments, TABLE VI below contains Cartesian coordinate data of an airfoil shape 150 of an airfoil 100 of a stator vane 50, which is disposed in the mid stage 62 of the compressor section 14. Specifically, TABLE VI below contains Cartesian coordinate data of an airfoil shape 150 of an airfoil 100 of a stator vane 50, which is disposed in the ninth stage S9 of the compressor section 14.

TABLE VI

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
2.064	-1.274	0.935		-1.502	1.387	0.935
2.064	-1.275	0.935		-1.501	1.388	0.935
2.063	-1.277	0.935		-1.500	1.389	0.935
2.060	-1.282	0.935		-1.496	1.390	0.935
2.054	-1.290	0.935		-1.490	1.393	0.935
2.039	-1.298	0.935		-1.479	1.396	0.935
2.018	-1.298	0.935		-1.459	1.398	0.935
1.990	-1.291	0.935		-1.432	1.394	0.935
1.953	-1.282	0.935		-1.399	1.382	0.935
1.906	-1.270	0.935		-1.360	1.360	0.935
1.846	-1.254	0.935		-1.312	1.326	0.935
1.777	-1.236	0.935		-1.259	1.285	0.935
1.702	-1.216	0.935		-1.203	1.239	0.935
1.624	-1.195	0.935		-1.141	1.187	0.935
1.536	-1.172	0.935		-1.073	1.129	0.935
1.434	-1.143	0.935		-0.998	1.064	0.935
1.328	-1.113	0.935		-0.921	0.996	0.935
1.218	-1.080	0.935		-0.840	0.924	0.935
1.103	-1.044	0.935		-0.755	0.850	0.935
0.985	-1.006	0.935		-0.667	0.774	0.935
0.862	-0.964	0.935		-0.575	0.695	0.935
0.736	-0.917	0.935		-0.479	0.613	0.935
0.607	-0.867	0.935		-0.380	0.529	0.935
0.474	-0.811	0.935		-0.276	0.444	0.935
0.343	-0.752	0.935		-0.171	0.358	0.935
0.214	-0.689	0.935		-0.067	0.273	0.935
0.087	-0.621	0.935		0.038	0.189	0.935
-0.038	-0.549	0.935		0.144	0.105	0.935
-0.159	-0.473	0.935		0.249	0.021	0.935
-0.278	-0.392	0.935		0.355	-0.062	0.935
-0.394	-0.306	0.935		0.461	-0.145	0.935
-0.506	-0.216	0.935		0.568	-0.227	0.935
-0.615	-0.122	0.935		0.676	-0.309	0.935
-0.720	-0.024	0.935		0.783	-0.390	0.935
-0.821	0.079	0.935		0.892	-0.470	0.935
-0.914	0.181	0.935		0.997	-0.547	0.935

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-1.001	0.284	0.935		1.099	-0.620	0.935
-1.081	0.385	0.935		1.199	-0.689	0.935
-1.155	0.486	0.935		1.295	-0.756	0.935
-1.222	0.585	0.935		1.388	-0.818	0.935
-1.283	0.682	0.935		1.478	-0.878	0.935
-1.339	0.778	0.935		1.565	-0.934	0.935
-1.388	0.871	0.935		1.649	-0.986	0.935
-1.430	0.957	0.935		1.721	-1.031	0.935
-1.465	1.036	0.935		1.787	-1.071	0.935
-1.492	1.108	0.935		1.848	-1.107	0.935
-1.515	1.176	0.935		1.906	-1.142	0.935
-1.531	1.236	0.935		1.957	-1.171	0.935
-1.538	1.284	0.935		1.996	-1.194	0.935
-1.537	1.322	0.935		2.027	-1.212	0.935
-1.531	1.350	0.935		2.050	-1.226	0.935
-1.521	1.369	0.935		2.063	-1.241	0.935
-1.513	1.378	0.935		2.067	-1.256	0.935
-1.507	1.383	0.935		2.066	-1.265	0.935
-1.504	1.386	0.935		2.065	-1.271	0.935
-1.503	1.387	0.935		2.065	-1.273	0.935
2.068	-0.711	2.214		-1.480	1.574	2.214
2.068	-0.712	2.214		-1.479	1.574	2.214
2.067	-0.714	2.214		-1.478	1.575	2.214
2.064	-0.719	2.214		-1.475	1.577	2.214
2.058	-0.725	2.214		-1.469	1.580	2.214
2.045	-0.734	2.214		-1.459	1.584	2.214
2.025	-0.735	2.214		-1.440	1.586	2.214
1.998	-0.729	2.214		-1.415	1.583	2.214
1.963	-0.720	2.214		-1.382	1.573	2.214
1.919	-0.710	2.214		-1.344	1.555	2.214
1.862	-0.697	2.214		-1.296	1.526	2.214
1.796	-0.681	2.214		-1.244	1.490	2.214
1.726	-0.665	2.214		-1.188	1.450	2.214
1.651	-0.647	2.214		-1.127	1.405	2.214
1.568	-0.628	2.214		-1.058	1.354	2.214
1.471	-0.605	2.214		-0.984	1.297	2.214
1.370	-0.580	2.214		-0.906	1.237	2.214

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
1.265	-0.554	2.214		-0.825	1.176	2.214
1.156	-0.526	2.214		-0.739	1.112	2.214
1.042	-0.496	2.214		-0.651	1.046	2.214
0.925	-0.463	2.214		-0.558	0.978	2.214
0.804	-0.427	2.214		-0.461	0.908	2.214
0.679	-0.387	2.214		-0.360	0.837	2.214
0.552	-0.342	2.214		-0.255	0.764	2.214
0.425	-0.294	2.214		-0.150	0.691	2.214
0.300	-0.243	2.214		-0.045	0.619	2.214
0.176	-0.188	2.214		0.061	0.548	2.214
0.055	-0.128	2.214		0.167	0.477	2.214
-0.065	-0.064	2.214		0.274	0.406	2.214
-0.182	0.004	2.214		0.380	0.335	2.214
-0.296	0.076	2.214		0.486	0.264	2.214
-0.408	0.152	2.214		0.593	0.193	2.214
-0.517	0.233	2.214		0.700	0.123	2.214
-0.623	0.317	2.214		0.807	0.054	2.214
-0.725	0.406	2.214		0.915	-0.014	2.214
-0.822	0.494	2.214		1.020	-0.079	2.214
-0.911	0.583	2.214		1.122	-0.141	2.214
-0.995	0.672	2.214		1.220	-0.201	2.214
-1.073	0.760	2.214		1.315	-0.257	2.214
-1.144	0.847	2.214		1.407	-0.311	2.214
-1.210	0.933	2.214		1.496	-0.362	2.214
-1.271	1.017	2.214		1.581	-0.410	2.214
-1.325	1.100	2.214		1.663	-0.456	2.214
-1.372	1.177	2.214		1.734	-0.495	2.214
-1.412	1.248	2.214		1.798	-0.529	2.214
-1.444	1.313	2.214		1.858	-0.561	2.214
-1.472	1.374	2.214		1.914	-0.592	2.214
-1.492	1.429	2.214		1.963	-0.617	2.214
-1.503	1.473	2.214		2.001	-0.637	2.214
-1.506	1.509	2.214		2.031	-0.653	2.214
-1.503	1.536	2.214		2.053	-0.665	2.214
-1.496	1.555	2.214		2.066	-0.680	2.214
-1.490	1.564	2.214		2.070	-0.694	2.214
-1.485	1.570	2.214		2.070	-0.702	2.214

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-1.482	1.572	2.214		2.069	-0.707	2.214
-1.481	1.573	2.214		2.068	-0.709	2.214
2.093	-0.308	3.667		-1.453	1.844	3.667
2.093	-0.309	3.667		-1.452	1.844	3.667
2.092	-0.311	3.667		-1.451	1.845	3.667
2.089	-0.316	3.667		-1.448	1.847	3.667
2.084	-0.322	3.667		-1.442	1.850	3.667
2.071	-0.330	3.667		-1.432	1.853	3.667
2.051	-0.331	3.667		-1.413	1.853	3.667
2.025	-0.325	3.667		-1.388	1.848	3.667
1.991	-0.318	3.667		-1.357	1.836	3.667
1.948	-0.308	3.667		-1.320	1.816	3.667
1.892	-0.295	3.667		-1.275	1.786	3.667
1.828	-0.280	3.667		-1.225	1.749	3.667
1.759	-0.265	3.667		-1.171	1.709	3.667
1.686	-0.248	3.667		-1.111	1.663	3.667
1.604	-0.229	3.667		-1.045	1.612	3.667
1.510	-0.207	3.667		-0.972	1.555	3.667
1.412	-0.184	3.667		-0.896	1.497	3.667
1.309	-0.159	3.667		-0.815	1.437	3.667
1.202	-0.132	3.667		-0.731	1.375	3.667
1.091	-0.104	3.667		-0.643	1.311	3.667
0.976	-0.072	3.667		-0.550	1.247	3.667
0.858	-0.037	3.667		-0.454	1.180	3.667
0.736	0.001	3.667		-0.353	1.113	3.667
0.611	0.043	3.667		-0.248	1.044	3.667
0.487	0.088	3.667		-0.142	0.977	3.667
0.364	0.136	3.667		-0.036	0.910	3.667
0.242	0.188	3.667		0.071	0.844	3.667
0.122	0.244	3.667		0.178	0.778	3.667
0.004	0.304	3.667		0.285	0.713	3.667
-0.111	0.367	3.667		0.393	0.648	3.667
-0.225	0.434	3.667		0.500	0.583	3.667
-0.337	0.505	3.667		0.608	0.519	3.667
-0.445	0.580	3.667		0.716	0.455	3.667
-0.552	0.659	3.667		0.825	0.392	3.667
-0.656	0.740	3.667		0.934	0.330	3.667

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-0.753	0.823	3.667		1.039	0.270	3.667
-0.845	0.906	3.667		1.142	0.213	3.667
-0.930	0.988	3.667		1.241	0.159	3.667
-1.010	1.071	3.667		1.336	0.107	3.667
-1.084	1.152	3.667		1.429	0.058	3.667
-1.152	1.233	3.667		1.518	0.012	3.667
-1.215	1.312	3.667		1.604	-0.032	3.667
-1.272	1.390	3.667		1.686	-0.073	3.667
-1.322	1.463	3.667		1.757	-0.109	3.667
-1.364	1.530	3.667		1.821	-0.140	3.667
-1.399	1.591	3.667		1.881	-0.170	3.667
-1.430	1.650	3.667		1.938	-0.197	3.667
-1.453	1.702	3.667		1.986	-0.221	3.667
-1.466	1.744	3.667		2.024	-0.239	3.667
-1.472	1.779	3.667		2.054	-0.253	3.667
-1.472	1.805	3.667		2.077	-0.264	3.667
-1.467	1.824	3.667		2.090	-0.278	3.667
-1.462	1.834	3.667		2.095	-0.291	3.667
-1.457	1.840	3.667		2.095	-0.300	3.667
-1.455	1.842	3.667		2.094	-0.305	3.667
-1.453	1.843	3.667		2.094	-0.307	3.667
2.127	-0.308	5.350		-1.419	1.853	5.350
2.127	-0.309	5.350		-1.418	1.854	5.350
2.126	-0.311	5.350		-1.417	1.855	5.350
2.123	-0.316	5.350		-1.414	1.856	5.350
2.118	-0.323	5.350		-1.407	1.858	5.350
2.105	-0.331	5.350		-1.397	1.860	5.350
2.085	-0.331	5.350		-1.378	1.857	5.350
2.059	-0.326	5.350		-1.355	1.849	5.350
2.025	-0.318	5.350		-1.325	1.833	5.350
1.982	-0.309	5.350		-1.291	1.809	5.350
1.926	-0.296	5.350		-1.248	1.774	5.350
1.862	-0.282	5.350		-1.201	1.733	5.350
1.794	-0.266	5.350		-1.151	1.689	5.350
1.721	-0.250	5.350		-1.094	1.639	5.350
1.640	-0.231	5.350		-1.031	1.584	5.350
1.546	-0.209	5.350		-0.961	1.524	5.350

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
1.447	-0.186	5.350		-0.887	1.461	5.350
1.345	-0.160	5.350		-0.809	1.398	5.350
1.239	-0.133	5.350		-0.727	1.332	5.350
1.129	-0.103	5.350		-0.641	1.266	5.350
1.015	-0.071	5.350		-0.550	1.198	5.350
0.897	-0.035	5.350		-0.455	1.129	5.350
0.776	0.005	5.350		-0.355	1.059	5.350
0.652	0.048	5.350		-0.251	0.988	5.350
0.529	0.095	5.350		-0.146	0.919	5.350
0.407	0.146	5.350		-0.040	0.851	5.350
0.287	0.200	5.350		0.067	0.785	5.350
0.169	0.258	5.350		0.175	0.720	5.350
0.052	0.319	5.350		0.283	0.655	5.350
-0.062	0.384	5.350		0.391	0.592	5.350
-0.175	0.453	5.350		0.500	0.528	5.350
-0.285	0.525	5.350		0.609	0.466	5.350
-0.393	0.600	5.350		0.719	0.404	5.350
-0.499	0.679	5.350		0.829	0.343	5.350
-0.602	0.761	5.350		0.940	0.284	5.350
-0.699	0.844	5.350		1.047	0.227	5.350
-0.790	0.926	5.350		1.152	0.174	5.350
-0.875	1.008	5.350		1.253	0.123	5.350
-0.955	1.090	5.350		1.351	0.075	5.350
-1.029	1.171	5.350		1.445	0.029	5.350
-1.098	1.251	5.350		1.536	-0.014	5.350
-1.161	1.329	5.350		1.624	-0.054	5.350
-1.219	1.406	5.350		1.708	-0.092	5.350
-1.270	1.478	5.350		1.781	-0.125	5.350
-1.313	1.544	5.350		1.846	-0.153	5.350
-1.350	1.604	5.350		1.908	-0.180	5.350
-1.383	1.661	5.350		1.966	-0.205	5.350
-1.408	1.712	5.350		2.016	-0.226	5.350
-1.424	1.753	5.350		2.054	-0.243	5.350
-1.432	1.787	5.350		2.085	-0.256	5.350
-1.434	1.814	5.350		2.108	-0.266	5.350
-1.431	1.833	5.350		2.123	-0.278	5.350
-1.427	1.843	5.350		2.128	-0.291	5.350

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-1.423	1.849	5.350		2.129	-0.300	5.350
-1.421	1.852	5.350		2.128	-0.305	5.350
-1.419	1.853	5.350		2.127	-0.307	5.350
2.149	-0.732	7.423		-1.374	1.482	7.423
2.148	-0.733	7.423		-1.374	1.482	7.423
2.148	-0.735	7.423		-1.372	1.483	7.423
2.145	-0.740	7.423		-1.369	1.484	7.423
2.140	-0.746	7.423		-1.363	1.486	7.423
2.126	-0.754	7.423		-1.352	1.486	7.423
2.107	-0.754	7.423		-1.334	1.480	7.423
2.081	-0.749	7.423		-1.311	1.469	7.423
2.047	-0.741	7.423		-1.283	1.450	7.423
2.004	-0.732	7.423		-1.251	1.423	7.423
1.948	-0.721	7.423		-1.211	1.385	7.423
1.884	-0.707	7.423		-1.166	1.341	7.423
1.815	-0.692	7.423		-1.118	1.293	7.423
1.742	-0.676	7.423		-1.065	1.239	7.423
1.661	-0.657	7.423		-1.004	1.180	7.423
1.567	-0.636	7.423		-0.938	1.116	7.423
1.469	-0.613	7.423		-0.867	1.049	7.423
1.367	-0.587	7.423		-0.793	0.981	7.423
1.260	-0.560	7.423		-0.714	0.910	7.423
1.150	-0.530	7.423		-0.631	0.838	7.423
1.037	-0.496	7.423		-0.544	0.765	7.423
0.920	-0.459	7.423		-0.452	0.691	7.423
0.800	-0.417	7.423		-0.356	0.615	7.423
0.676	-0.371	7.423		-0.255	0.539	7.423
0.555	-0.321	7.423		-0.153	0.464	7.423
0.435	-0.267	7.423		-0.049	0.392	7.423
0.316	-0.209	7.423		0.056	0.321	7.423
0.200	-0.147	7.423		0.162	0.253	7.423
0.086	-0.081	7.423		0.270	0.186	7.423
-0.025	-0.012	7.423		0.378	0.121	7.423
-0.135	0.061	7.423		0.488	0.057	7.423
-0.242	0.137	7.423		0.598	-0.006	7.423
-0.347	0.217	7.423		0.708	-0.067	7.423
-0.450	0.299	7.423		0.820	-0.126	7.423

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-0.550	0.384	7.423		0.933	-0.184	7.423
-0.645	0.470	7.423		1.042	-0.238	7.423
-0.734	0.554	7.423		1.149	-0.289	7.423
-0.817	0.638	7.423		1.252	-0.337	7.423
-0.895	0.722	7.423		1.352	-0.381	7.423
-0.968	0.803	7.423		1.449	-0.424	7.423
-1.036	0.884	7.423		1.542	-0.463	7.423
-1.099	0.963	7.423		1.632	-0.500	7.423
-1.158	1.040	7.423		1.718	-0.535	7.423
-1.209	1.111	7.423		1.793	-0.564	7.423
-1.253	1.176	7.423		1.860	-0.590	7.423
-1.291	1.235	7.423		1.923	-0.614	7.423
-1.325	1.291	7.423		1.982	-0.637	7.423
-1.352	1.342	7.423		2.033	-0.656	7.423
-1.370	1.382	7.423		2.073	-0.671	7.423
-1.381	1.415	7.423		2.104	-0.682	7.423
-1.385	1.441	7.423		2.128	-0.691	7.423
-1.385	1.461	7.423		2.143	-0.702	7.423
-1.382	1.471	7.423		2.150	-0.715	7.423
-1.379	1.477	7.423		2.150	-0.723	7.423
-1.376	1.480	7.423		2.150	-0.728	7.423
-1.375	1.481	7.423		2.149	-0.730	7.423
2.115	-1.225	9.200		-1.393	0.996	9.200
2.114	-1.227	9.200		-1.392	0.996	9.200
2.114	-1.229	9.200		-1.390	0.997	9.200
2.111	-1.233	9.200		-1.387	0.998	9.200
2.105	-1.240	9.200		-1.381	0.999	9.200
2.092	-1.247	9.200		-1.370	0.998	9.200
2.073	-1.247	9.200		-1.353	0.990	9.200
2.047	-1.241	9.200		-1.331	0.977	9.200
2.013	-1.234	9.200		-1.304	0.957	9.200
1.970	-1.225	9.200		-1.273	0.928	9.200
1.914	-1.214	9.200		-1.235	0.889	9.200
1.850	-1.200	9.200		-1.192	0.842	9.200
1.782	-1.185	9.200		-1.146	0.792	9.200
1.709	-1.170	9.200		-1.095	0.736	9.200
1.628	-1.152	9.200		-1.037	0.675	9.200

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SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
1.534	-1.131	9.200		-0.973	0.607	9.200
1.436	-1.108	9.200		-0.905	0.538	9.200
1.334	-1.083	9.200		-0.833	0.467	9.200
1.229	-1.055	9.200		-0.757	0.394	9.200
1.119	-1.025	9.200		-0.676	0.319	9.200
1.006	-0.991	9.200		-0.591	0.244	9.200
0.890	-0.953	9.200		-0.501	0.167	9.200
0.770	-0.911	9.200		-0.407	0.089	9.200
0.647	-0.864	9.200		-0.307	0.011	9.200
0.527	-0.813	9.200		-0.206	-0.065	9.200
0.407	-0.758	9.200		-0.103	-0.139	9.200
0.290	-0.699	9.200		0.002	-0.211	9.200
0.175	-0.636	9.200		0.108	-0.280	9.200
0.063	-0.569	9.200		0.216	-0.347	9.200
-0.048	-0.499	9.200		0.324	-0.412	9.200
-0.157	-0.425	9.200		0.434	-0.475	9.200
-0.263	-0.349	9.200		0.545	-0.537	9.200
-0.367	-0.269	9.200		0.656	-0.597	9.200
-0.469	-0.186	9.200		0.769	-0.655	9.200
-0.568	-0.100	9.200		0.882	-0.711	9.200
-0.662	-0.015	9.200		0.993	-0.764	9.200
-0.750	0.070	9.200		1.100	-0.813	9.200
-0.832	0.155	9.200		1.205	-0.859	9.200
-0.910	0.238	9.200		1.306	-0.901	9.200
-0.982	0.320	9.200		1.404	-0.941	9.200
-1.049	0.400	9.200		1.498	-0.978	9.200
-1.112	0.480	9.200		1.589	-1.012	9.200
-1.169	0.556	9.200		1.676	-1.044	9.200
-1.220	0.628	9.200		1.752	-1.071	9.200
-1.264	0.693	9.200		1.820	-1.094	9.200
-1.303	0.751	9.200		1.884	-1.116	9.200
-1.337	0.807	9.200		1.944	-1.137	9.200
-1.364	0.857	9.200		1.996	-1.154	9.200
-1.383	0.897	9.200		2.036	-1.168	9.200
-1.395	0.929	9.200		2.068	-1.179	9.200
-1.400	0.955	9.200		2.092	-1.186	9.200
-1.402	0.975	9.200		2.108	-1.196	9.200

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-1.400	0.985	9.200		2.115	-1.209	9.200
-1.397	0.992	9.200		2.116	-1.217	9.200
-1.395	0.994	9.200		2.115	-1.222	9.200
-1.393	0.995	9.200		2.115	-1.224	9.200
2.094	-1.528	10.244		-1.398	0.780	10.244
2.093	-1.530	10.244		-1.397	0.780	10.244
2.093	-1.532	10.244		-1.396	0.781	10.244
2.090	-1.537	10.244		-1.393	0.781	10.244
2.084	-1.543	10.244		-1.386	0.781	10.244
2.071	-1.550	10.244		-1.376	0.778	10.244
2.051	-1.549	10.244		-1.359	0.769	10.244
2.025	-1.544	10.244		-1.339	0.753	10.244
1.990	-1.537	10.244		-1.314	0.729	10.244
1.947	-1.528	10.244		-1.286	0.697	10.244
1.890	-1.516	10.244		-1.250	0.654	10.244
1.825	-1.502	10.244		-1.211	0.603	10.244
1.756	-1.487	10.244		-1.170	0.549	10.244
1.682	-1.471	10.244		-1.122	0.489	10.244
1.600	-1.453	10.244		-1.068	0.422	10.244
1.505	-1.431	10.244		-1.008	0.350	10.244
1.406	-1.408	10.244		-0.943	0.276	10.244
1.303	-1.382	10.244		-0.874	0.200	10.244
1.196	-1.353	10.244		-0.800	0.123	10.244
1.085	-1.322	10.244		-0.722	0.044	10.244
0.970	-1.287	10.244		-0.638	-0.035	10.244
0.852	-1.248	10.244		-0.549	-0.115	10.244
0.732	-1.204	10.244		-0.455	-0.196	10.244
0.608	-1.155	10.244		-0.356	-0.277	10.244
0.486	-1.102	10.244		-0.255	-0.355	10.244
0.366	-1.045	10.244		-0.151	-0.431	10.244
0.248	-0.984	10.244		-0.046	-0.505	10.244
0.132	-0.918	10.244		0.061	-0.576	10.244
0.018	-0.849	10.244		0.169	-0.644	10.244
-0.093	-0.777	10.244		0.279	-0.710	10.244
-0.202	-0.701	10.244		0.390	-0.774	10.244
-0.309	-0.622	10.244		0.502	-0.837	10.244
-0.414	-0.539	10.244		0.615	-0.898	10.244

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-0.515	-0.454	10.244		0.728	-0.957	10.244
-0.615	-0.365	10.244		0.843	-1.014	10.244
-0.708	-0.277	10.244		0.955	-1.068	10.244
-0.795	-0.188	10.244		1.064	-1.117	10.244
-0.876	-0.100	10.244		1.170	-1.163	10.244
-0.952	-0.013	10.244		1.272	-1.206	10.244
-1.022	0.072	10.244		1.371	-1.246	10.244
-1.086	0.157	10.244		1.467	-1.283	10.244
-1.146	0.240	10.244		1.559	-1.318	10.244
-1.201	0.321	10.244		1.647	-1.350	10.244
-1.248	0.395	10.244		1.724	-1.376	10.244
-1.289	0.464	10.244		1.793	-1.400	10.244
-1.324	0.525	10.244		1.858	-1.421	10.244
-1.355	0.584	10.244		1.919	-1.441	10.244
-1.379	0.637	10.244		1.971	-1.459	10.244
-1.395	0.678	10.244		2.012	-1.472	10.244
-1.404	0.712	10.244		2.045	-1.482	10.244
-1.408	0.738	10.244		2.069	-1.490	10.244
-1.409	0.758	10.244		2.086	-1.499	10.244
-1.406	0.769	10.244		2.094	-1.512	10.244
-1.403	0.775	10.244		2.095	-1.520	10.244
-1.400	0.778	10.244		2.094	-1.525	10.244
-1.399	0.779	10.244		2.094	-1.527	10.244

[0065] In exemplary embodiments, TABLE VII below contains Cartesian coordinate data of an airfoil shape 150 of an airfoil 100 of a stator vane 50, which is disposed in the late stage 64 of the compressor section 14. Specifically, TABLE VII below contains Cartesian coordinate data of an airfoil shape 150 of an airfoil 100 of a stator vane 50, which is disposed in the eleventh stage S11 of the compressor section 14.

TABLE VII

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
1.938	-1.128	0.780		-1.131	1.024	0.780
1.938	-1.130	0.780		-1.131	1.024	0.780
1.937	-1.131	0.780		-1.130	1.025	0.780
1.935	-1.136	0.780		-1.127	1.026	0.780
1.930	-1.142	0.780		-1.121	1.029	0.780
1.920	-1.151	0.780		-1.112	1.030	0.780
1.903	-1.157	0.780		-1.095	1.029	0.780

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
1.880	-1.154	0.780		-1.074	1.022	0.780
1.849	-1.145	0.780		-1.047	1.008	0.780
1.811	-1.133	0.780		-1.014	0.988	0.780
1.762	-1.118	0.780		-0.974	0.961	0.780
1.705	-1.100	0.780		-0.928	0.927	0.780
1.644	-1.081	0.780		-0.880	0.890	0.780
1.579	-1.062	0.780		-0.826	0.848	0.780
1.507	-1.039	0.780		-0.768	0.800	0.780
1.424	-1.013	0.780		-0.704	0.747	0.780
1.337	-0.984	0.780		-0.637	0.691	0.780
1.247	-0.953	0.780		-0.568	0.632	0.780
1.153	-0.920	0.780		-0.495	0.571	0.780
1.057	-0.884	0.780		-0.420	0.508	0.780
0.956	-0.845	0.780		-0.341	0.443	0.780
0.853	-0.804	0.780		-0.259	0.375	0.780
0.747	-0.759	0.780		-0.174	0.306	0.780
0.638	-0.711	0.780		-0.085	0.235	0.780
0.529	-0.661	0.780		0.004	0.164	0.780
0.422	-0.608	0.780		0.093	0.094	0.780
0.317	-0.553	0.780		0.184	0.025	0.780
0.212	-0.496	0.780		0.274	-0.043	0.780
0.109	-0.436	0.780		0.366	-0.111	0.780
0.008	-0.373	0.780		0.457	-0.178	0.780
-0.091	-0.307	0.780		0.549	-0.245	0.780
-0.189	-0.238	0.780		0.642	-0.311	0.780
-0.284	-0.166	0.780		0.735	-0.376	0.780
-0.377	-0.091	0.780		0.828	-0.441	0.780
-0.467	-0.013	0.780		0.922	-0.504	0.780
-0.551	0.066	0.780		1.013	-0.565	0.780
-0.630	0.144	0.780		1.102	-0.623	0.780
-0.703	0.223	0.780		1.189	-0.678	0.780
-0.771	0.301	0.780		1.272	-0.730	0.780
-0.833	0.378	0.780		1.353	-0.779	0.780
-0.891	0.454	0.780		1.432	-0.825	0.780
-0.943	0.529	0.780		1.507	-0.869	0.780
-0.990	0.603	0.780		1.580	-0.909	0.780
-1.030	0.671	0.780		1.643	-0.944	0.780

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-1.064	0.735	0.780		1.700	-0.974	0.780
-1.091	0.792	0.780		1.754	-1.001	0.780
-1.114	0.847	0.780		1.806	-1.025	0.780
-1.131	0.896	0.780		1.850	-1.045	0.780
-1.142	0.934	0.780		1.885	-1.060	0.780
-1.148	0.965	0.780		1.913	-1.072	0.780
-1.149	0.989	0.780		1.931	-1.085	0.780
-1.145	1.006	0.780		1.939	-1.100	0.780
-1.140	1.015	0.780		1.941	-1.114	0.780
-1.136	1.020	0.780		1.940	-1.121	0.780
-1.133	1.022	0.780		1.939	-1.126	0.780
-1.132	1.023	0.780		1.938	-1.127	0.780
1.925	-0.757	1.879		-1.157	1.219	1.879
1.924	-0.758	1.879		-1.156	1.220	1.879
1.923	-0.760	1.879		-1.155	1.220	1.879
1.921	-0.764	1.879		-1.152	1.222	1.879
1.917	-0.770	1.879		-1.147	1.224	1.879
1.906	-0.778	1.879		-1.138	1.225	1.879
1.889	-0.782	1.879		-1.121	1.223	1.879
1.867	-0.777	1.879		-1.100	1.215	1.879
1.838	-0.768	1.879		-1.074	1.201	1.879
1.801	-0.757	1.879		-1.043	1.182	1.879
1.753	-0.743	1.879		-1.003	1.155	1.879
1.697	-0.727	1.879		-0.958	1.123	1.879
1.638	-0.710	1.879		-0.911	1.088	1.879
1.575	-0.692	1.879		-0.858	1.047	1.879
1.505	-0.672	1.879		-0.799	1.002	1.879
1.424	-0.648	1.879		-0.736	0.952	1.879
1.339	-0.623	1.879		-0.669	0.899	1.879
1.250	-0.595	1.879		-0.599	0.844	1.879
1.159	-0.566	1.879		-0.526	0.787	1.879
1.064	-0.535	1.879		-0.450	0.729	1.879
0.965	-0.501	1.879		-0.371	0.668	1.879
0.864	-0.464	1.879		-0.289	0.605	1.879
0.760	-0.424	1.879		-0.203	0.541	1.879
0.653	-0.381	1.879		-0.114	0.475	1.879
0.546	-0.336	1.879		-0.025	0.409	1.879

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
0.441	-0.288	1.879		0.065	0.344	1.879
0.337	-0.239	1.879		0.156	0.280	1.879
0.234	-0.186	1.879		0.247	0.217	1.879
0.132	-0.131	1.879		0.338	0.154	1.879
0.032	-0.074	1.879		0.431	0.093	1.879
-0.066	-0.013	1.879		0.523	0.032	1.879
-0.163	0.050	1.879		0.617	-0.028	1.879
-0.258	0.116	1.879		0.711	-0.087	1.879
-0.351	0.185	1.879		0.805	-0.144	1.879
-0.441	0.256	1.879		0.900	-0.201	1.879
-0.526	0.329	1.879		0.993	-0.256	1.879
-0.606	0.401	1.879		1.083	-0.307	1.879
-0.680	0.474	1.879		1.170	-0.356	1.879
-0.750	0.546	1.879		1.254	-0.402	1.879
-0.815	0.617	1.879		1.336	-0.445	1.879
-0.874	0.687	1.879		1.414	-0.486	1.879
-0.929	0.757	1.879		1.490	-0.524	1.879
-0.980	0.825	1.879		1.563	-0.560	1.879
-1.024	0.888	1.879		1.626	-0.591	1.879
-1.061	0.947	1.879		1.683	-0.617	1.879
-1.092	1.000	1.879		1.737	-0.641	1.879
-1.119	1.051	1.879		1.788	-0.663	1.879
-1.140	1.096	1.879		1.833	-0.681	1.879
-1.155	1.132	1.879		1.867	-0.695	1.879
-1.164	1.161	1.879		1.895	-0.706	1.879
-1.168	1.184	1.879		1.914	-0.716	1.879
-1.167	1.201	1.879		1.924	-0.730	1.879
-1.164	1.210	1.879		1.927	-0.742	1.879
-1.160	1.215	1.879		1.926	-0.750	1.879
-1.158	1.218	1.879		1.925	-0.754	1.879
-1.157	1.219	1.879		1.925	-0.756	1.879
1.912	-0.573	3.134		-1.135	1.401	3.134
1.911	-0.574	3.134		-1.135	1.402	3.134
1.911	-0.576	3.134		-1.134	1.403	3.134
1.909	-0.580	3.134		-1.131	1.404	3.134
1.904	-0.586	3.134		-1.125	1.406	3.134
1.893	-0.593	3.134		-1.116	1.407	3.134

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
1.876	-0.594	3.134		-1.100	1.404	3.134
1.854	-0.588	3.134		-1.080	1.396	3.134
1.824	-0.579	3.134		-1.054	1.381	3.134
1.788	-0.568	3.134		-1.024	1.361	3.134
1.740	-0.554	3.134		-0.985	1.333	3.134
1.686	-0.538	3.134		-0.941	1.300	3.134
1.627	-0.521	3.134		-0.895	1.263	3.134
1.565	-0.503	3.134		-0.844	1.222	3.134
1.495	-0.483	3.134		-0.787	1.176	3.134
1.415	-0.460	3.134		-0.725	1.125	3.134
1.331	-0.434	3.134		-0.660	1.071	3.134
1.243	-0.407	3.134		-0.591	1.015	3.134
1.153	-0.378	3.134		-0.520	0.958	3.134
1.059	-0.346	3.134		-0.446	0.898	3.134
0.961	-0.312	3.134		-0.368	0.837	3.134
0.861	-0.276	3.134		-0.287	0.774	3.134
0.758	-0.236	3.134		-0.202	0.710	3.134
0.652	-0.192	3.134		-0.115	0.643	3.134
0.547	-0.147	3.134		-0.027	0.577	3.134
0.443	-0.099	3.134		0.062	0.512	3.134
0.340	-0.049	3.134		0.151	0.448	3.134
0.239	0.003	3.134		0.242	0.385	3.134
0.139	0.058	3.134		0.332	0.323	3.134
0.040	0.116	3.134		0.423	0.262	3.134
-0.057	0.177	3.134		0.515	0.201	3.134
-0.152	0.240	3.134		0.608	0.142	3.134
-0.246	0.306	3.134		0.701	0.083	3.134
-0.337	0.375	3.134		0.795	0.026	3.134
-0.426	0.446	3.134		0.889	-0.031	3.134
-0.510	0.519	3.134		0.981	-0.084	3.134
-0.589	0.591	3.134		1.070	-0.135	3.134
-0.662	0.663	3.134		1.157	-0.183	3.134
-0.731	0.734	3.134		1.241	-0.228	3.134
-0.794	0.805	3.134		1.322	-0.270	3.134
-0.853	0.875	3.134		1.400	-0.311	3.134
-0.908	0.944	3.134		1.476	-0.348	3.134
-0.958	1.012	3.134		1.548	-0.383	3.134

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-1.001	1.074	3.134		1.611	-0.413	3.134
-1.038	1.132	3.134		1.668	-0.439	3.134
-1.069	1.185	3.134		1.721	-0.463	3.134
-1.096	1.235	3.134		1.772	-0.484	3.134
-1.117	1.280	3.134		1.816	-0.502	3.134
-1.132	1.315	3.134		1.850	-0.516	3.134
-1.142	1.344	3.134		1.877	-0.527	3.134
-1.146	1.366	3.134		1.898	-0.535	3.134
-1.145	1.383	3.134		1.909	-0.547	3.134
-1.142	1.392	3.134		1.913	-0.559	3.134
-1.139	1.398	3.134		1.913	-0.566	3.134
-1.137	1.400	3.134		1.913	-0.570	3.134
-1.136	1.401	3.134		1.912	-0.572	3.134
1.912	-0.688	4.466		-1.113	1.303	4.466
1.912	-0.689	4.466		-1.112	1.303	4.466
1.911	-0.691	4.466		-1.111	1.304	4.466
1.909	-0.695	4.466		-1.109	1.306	4.466
1.904	-0.701	4.466		-1.103	1.307	4.466
1.892	-0.707	4.466		-1.094	1.308	4.466
1.875	-0.707	4.466		-1.078	1.304	4.466
1.853	-0.701	4.466		-1.058	1.295	4.466
1.824	-0.692	4.466		-1.033	1.280	4.466
1.788	-0.682	4.466		-1.003	1.259	4.466
1.740	-0.668	4.466		-0.965	1.230	4.466
1.685	-0.652	4.466		-0.922	1.196	4.466
1.627	-0.636	4.466		-0.877	1.158	4.466
1.564	-0.619	4.466		-0.827	1.116	4.466
1.495	-0.599	4.466		-0.771	1.068	4.466
1.414	-0.576	4.466		-0.710	1.016	4.466
1.330	-0.552	4.466		-0.647	0.961	4.466
1.243	-0.525	4.466		-0.580	0.904	4.466
1.152	-0.496	4.466		-0.510	0.845	4.466
1.059	-0.465	4.466		-0.437	0.784	4.466
0.962	-0.431	4.466		-0.361	0.721	4.466
0.862	-0.394	4.466		-0.282	0.656	4.466
0.759	-0.354	4.466		-0.199	0.590	4.466
0.654	-0.310	4.466		-0.112	0.522	4.466

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
0.549	-0.264	4.466		-0.026	0.455	4.466
0.446	-0.215	4.466		0.062	0.389	4.466
0.344	-0.164	4.466		0.151	0.324	4.466
0.243	-0.110	4.466		0.240	0.260	4.466
0.144	-0.054	4.466		0.330	0.197	4.466
0.047	0.006	4.466		0.420	0.135	4.466
-0.049	0.068	4.466		0.512	0.074	4.466
-0.143	0.132	4.466		0.604	0.015	4.466
-0.235	0.200	4.466		0.697	-0.044	4.466
-0.325	0.270	4.466		0.790	-0.101	4.466
-0.413	0.343	4.466		0.884	-0.158	4.466
-0.495	0.416	4.466		0.976	-0.211	4.466
-0.572	0.490	4.466		1.066	-0.261	4.466
-0.645	0.562	4.466		1.152	-0.308	4.466
-0.712	0.635	4.466		1.236	-0.353	4.466
-0.775	0.706	4.466		1.318	-0.394	4.466
-0.833	0.777	4.466		1.396	-0.434	4.466
-0.887	0.846	4.466		1.472	-0.470	4.466
-0.936	0.913	4.466		1.545	-0.505	4.466
-0.979	0.976	4.466		1.608	-0.534	4.466
-1.015	1.034	4.466		1.665	-0.559	4.466
-1.046	1.087	4.466		1.718	-0.582	4.466
-1.073	1.137	4.466		1.769	-0.603	4.466
-1.094	1.181	4.466		1.813	-0.621	4.466
-1.109	1.217	4.466		1.848	-0.634	4.466
-1.119	1.245	4.466		1.875	-0.644	4.466
-1.123	1.268	4.466		1.895	-0.652	4.466
-1.122	1.285	4.466		1.908	-0.662	4.466
-1.120	1.294	4.466		1.913	-0.674	4.466
-1.117	1.299	4.466		1.913	-0.681	4.466
-1.115	1.302	4.466		1.913	-0.685	4.466
-1.114	1.303	4.466		1.912	-0.687	4.466
1.916	-0.942	5.768		-1.090	1.029	5.768
1.916	-0.943	5.768		-1.090	1.029	5.768
1.915	-0.945	5.768		-1.088	1.030	5.768
1.913	-0.949	5.768		-1.086	1.031	5.768
1.908	-0.955	5.768		-1.080	1.033	5.768

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
1.896	-0.961	5.768		-1.071	1.033	5.768
1.880	-0.960	5.768		-1.055	1.028	5.768
1.858	-0.954	5.768		-1.036	1.019	5.768
1.829	-0.946	5.768		-1.011	1.003	5.768
1.793	-0.936	5.768		-0.982	0.981	5.768
1.746	-0.923	5.768		-0.946	0.952	5.768
1.691	-0.908	5.768		-0.904	0.916	5.768
1.633	-0.892	5.768		-0.860	0.878	5.768
1.571	-0.875	5.768		-0.811	0.835	5.768
1.502	-0.856	5.768		-0.756	0.787	5.768
1.422	-0.833	5.768		-0.697	0.734	5.768
1.339	-0.808	5.768		-0.634	0.678	5.768
1.253	-0.782	5.768		-0.569	0.621	5.768
1.163	-0.753	5.768		-0.500	0.561	5.768
1.070	-0.722	5.768		-0.428	0.499	5.768
0.974	-0.688	5.768		-0.353	0.436	5.768
0.875	-0.651	5.768		-0.275	0.371	5.768
0.774	-0.611	5.768		-0.193	0.305	5.768
0.670	-0.567	5.768		-0.108	0.237	5.768
0.566	-0.521	5.768		-0.022	0.170	5.768
0.464	-0.472	5.768		0.066	0.105	5.768
0.364	-0.421	5.768		0.154	0.041	5.768
0.264	-0.367	5.768		0.243	-0.022	5.768
0.166	-0.311	5.768		0.333	-0.084	5.768
0.070	-0.251	5.768		0.423	-0.145	5.768
-0.024	-0.189	5.768		0.514	-0.205	5.768
-0.117	-0.125	5.768		0.606	-0.264	5.768
-0.208	-0.058	5.768		0.699	-0.321	5.768
-0.297	0.012	5.768		0.792	-0.377	5.768
-0.384	0.084	5.768		0.886	-0.432	5.768
-0.466	0.157	5.768		0.978	-0.484	5.768
-0.543	0.229	5.768		1.068	-0.533	5.768
-0.615	0.301	5.768		1.154	-0.578	5.768
-0.682	0.372	5.768		1.239	-0.621	5.768
-0.745	0.442	5.768		1.320	-0.662	5.768
-0.803	0.512	5.768		1.399	-0.699	5.768
-0.857	0.579	5.768		1.475	-0.734	5.768

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-0.906	0.646	5.768		1.547	-0.767	5.768
-0.949	0.708	5.768		1.611	-0.795	5.768
-0.987	0.765	5.768		1.668	-0.819	5.768
-1.018	0.816	5.768		1.721	-0.841	5.768
-1.046	0.865	5.768		1.772	-0.861	5.768
-1.068	0.909	5.768		1.816	-0.878	5.768
-1.083	0.943	5.768		1.851	-0.890	5.768
-1.094	0.972	5.768		1.878	-0.900	5.768
-1.098	0.994	5.768		1.898	-0.907	5.768
-1.099	1.011	5.768		1.912	-0.917	5.768
-1.097	1.020	5.768		1.917	-0.928	5.768
-1.094	1.025	5.768		1.917	-0.935	5.768
-1.092	1.027	5.768		1.917	-0.940	5.768
-1.091	1.028	5.768		1.916	-0.941	5.768
1.861	-1.198	6.832		-1.071	0.813	6.832
1.861	-1.199	6.832		-1.071	0.813	6.832
1.860	-1.200	6.832		-1.069	0.814	6.832
1.858	-1.204	6.832		-1.067	0.815	6.832
1.853	-1.210	6.832		-1.061	0.816	6.832
1.842	-1.216	6.832		-1.052	0.815	6.832
1.825	-1.215	6.832		-1.037	0.809	6.832
1.804	-1.209	6.832		-1.019	0.797	6.832
1.775	-1.201	6.832		-0.997	0.779	6.832
1.739	-1.191	6.832		-0.970	0.754	6.832
1.692	-1.178	6.832		-0.937	0.721	6.832
1.638	-1.163	6.832		-0.899	0.683	6.832
1.581	-1.147	6.832		-0.858	0.642	6.832
1.520	-1.130	6.832		-0.813	0.595	6.832
1.451	-1.110	6.832		-0.763	0.544	6.832
1.373	-1.087	6.832		-0.707	0.487	6.832
1.291	-1.061	6.832		-0.649	0.428	6.832
1.206	-1.034	6.832		-0.587	0.367	6.832
1.117	-1.004	6.832		-0.523	0.304	6.832
1.026	-0.971	6.832		-0.455	0.240	6.832
0.931	-0.936	6.832		-0.383	0.174	6.832
0.834	-0.898	6.832		-0.308	0.106	6.832
0.734	-0.856	6.832		-0.229	0.038	6.832

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
0.631	-0.811	6.832		-0.146	-0.032	6.832
0.530	-0.764	6.832		-0.062	-0.100	6.832
0.430	-0.714	6.832		0.023	-0.167	6.832
0.331	-0.661	6.832		0.109	-0.232	6.832
0.233	-0.606	6.832		0.196	-0.296	6.832
0.138	-0.548	6.832		0.285	-0.358	6.832
0.044	-0.488	6.832		0.374	-0.419	6.832
-0.049	-0.424	6.832		0.464	-0.479	6.832
-0.139	-0.358	6.832		0.555	-0.537	6.832
-0.227	-0.289	6.832		0.647	-0.594	6.832
-0.314	-0.218	6.832		0.740	-0.650	6.832
-0.398	-0.143	6.832		0.834	-0.704	6.832
-0.476	-0.069	6.832		0.925	-0.755	6.832
-0.550	0.005	6.832		1.014	-0.803	6.832
-0.619	0.078	6.832		1.100	-0.848	6.832
-0.683	0.151	6.832		1.184	-0.890	6.832
-0.743	0.223	6.832		1.265	-0.929	6.832
-0.798	0.293	6.832		1.344	-0.965	6.832
-0.849	0.362	6.832		1.419	-0.999	6.832
-0.896	0.430	6.832		1.492	-1.031	6.832
-0.937	0.492	6.832		1.555	-1.057	6.832
-0.972	0.550	6.832		1.612	-1.080	6.832
-1.002	0.601	6.832		1.666	-1.101	6.832
-1.028	0.651	6.832		1.717	-1.120	6.832
-1.049	0.694	6.832		1.761	-1.136	6.832
-1.064	0.728	6.832		1.795	-1.148	6.832
-1.075	0.757	6.832		1.822	-1.157	6.832
-1.079	0.778	6.832		1.843	-1.164	6.832
-1.080	0.795	6.832		1.856	-1.172	6.832
-1.078	0.804	6.832		1.862	-1.183	6.832
-1.075	0.809	6.832		1.863	-1.191	6.832
-1.073	0.812	6.832		1.862	-1.195	6.832
-1.072	0.813	6.832		1.862	-1.197	6.832

[0066] In exemplary embodiments, TABLE VIII below contains Cartesian coordinate data of an airfoil shape 150 of an airfoil 100 of a stator vane 50, which is disposed in the late stage 64 of the compressor section 14. Specifically, TABLE VIII below contains Cartesian coordinate data of an airfoil shape 150 of an airfoil 100 of a stator vane 50, which is disposed in the thirteenth stage S13 of the compressor section 14.

TABLE VIII

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
1.900	-1.459	0.746		-1.231	1.220	0.746
1.900	-1.461	0.746		-1.230	1.220	0.746
1.899	-1.462	0.746		-1.229	1.221	0.746
1.896	-1.467	0.746		-1.226	1.223	0.746
1.889	-1.473	0.746		-1.220	1.225	0.746
1.875	-1.478	0.746		-1.209	1.227	0.746
1.856	-1.474	0.746		-1.191	1.226	0.746
1.832	-1.465	0.746		-1.167	1.220	0.746
1.799	-1.453	0.746		-1.136	1.206	0.746
1.759	-1.437	0.746		-1.101	1.185	0.746
1.706	-1.416	0.746		-1.056	1.153	0.746
1.646	-1.392	0.746		-1.007	1.116	0.746
1.582	-1.365	0.746		-0.955	1.074	0.746
1.514	-1.336	0.746		-0.898	1.025	0.746
1.439	-1.302	0.746		-0.836	0.970	0.746
1.352	-1.262	0.746		-0.768	0.908	0.746
1.262	-1.219	0.746		-0.699	0.842	0.746
1.169	-1.173	0.746		-0.627	0.773	0.746
1.072	-1.123	0.746		-0.553	0.700	0.746
0.972	-1.070	0.746		-0.476	0.624	0.746
0.870	-1.014	0.746		-0.397	0.544	0.746
0.764	-0.955	0.746		-0.315	0.461	0.746
0.655	-0.891	0.746		-0.231	0.375	0.746
0.543	-0.824	0.746		-0.143	0.285	0.746
0.433	-0.756	0.746		-0.056	0.196	0.746
0.323	-0.685	0.746		0.032	0.108	0.746
0.215	-0.613	0.746		0.120	0.020	0.746
0.108	-0.538	0.746		0.209	-0.068	0.746
0.002	-0.462	0.746		0.299	-0.155	0.746
-0.102	-0.384	0.746		0.389	-0.241	0.746
-0.204	-0.304	0.746		0.480	-0.327	0.746
-0.305	-0.221	0.746		0.572	-0.411	0.746
-0.403	-0.135	0.746		0.665	-0.495	0.746
-0.499	-0.047	0.746		0.759	-0.577	0.746
-0.593	0.043	0.746		0.853	-0.659	0.746
-0.680	0.134	0.746		0.946	-0.736	0.746

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-0.762	0.224	0.746		1.036	-0.810	0.746
-0.837	0.314	0.746		1.124	-0.880	0.746
-0.906	0.403	0.746		1.209	-0.947	0.746
-0.970	0.491	0.746		1.292	-1.010	0.746
-1.026	0.578	0.746		1.372	-1.070	0.746
-1.077	0.664	0.746		1.449	-1.126	0.746
-1.123	0.748	0.746		1.524	-1.179	0.746
-1.161	0.826	0.746		1.589	-1.224	0.746
-1.191	0.898	0.746		1.647	-1.264	0.746
-1.215	0.963	0.746		1.703	-1.300	0.746
-1.234	1.026	0.746		1.755	-1.335	0.746
-1.248	1.080	0.746		1.801	-1.364	0.746
-1.255	1.123	0.746		1.836	-1.386	0.746
-1.256	1.158	0.746		1.864	-1.403	0.746
-1.253	1.184	0.746		1.886	-1.416	0.746
-1.246	1.202	0.746		1.899	-1.429	0.746
-1.240	1.211	0.746		1.903	-1.443	0.746
-1.236	1.216	0.746		1.903	-1.451	0.746
-1.233	1.218	0.746		1.901	-1.456	0.746
-1.232	1.219	0.746		1.901	-1.458	0.746
1.939	-0.934	1.927		-1.104	1.265	1.927
1.939	-0.935	1.927		-1.104	1.265	1.927
1.938	-0.937	1.927		-1.102	1.266	1.927
1.935	-0.941	1.927		-1.100	1.268	1.927
1.929	-0.946	1.927		-1.094	1.270	1.927
1.917	-0.952	1.927		-1.085	1.273	1.927
1.899	-0.952	1.927		-1.068	1.274	1.927
1.877	-0.944	1.927		-1.046	1.270	1.927
1.847	-0.934	1.927		-1.017	1.260	1.927
1.809	-0.922	1.927		-0.983	1.244	1.927
1.760	-0.905	1.927		-0.940	1.220	1.927
1.704	-0.886	1.927		-0.891	1.190	1.927
1.644	-0.865	1.927		-0.840	1.157	1.927
1.580	-0.843	1.927		-0.784	1.118	1.927
1.509	-0.818	1.927		-0.723	1.073	1.927
1.427	-0.788	1.927		-0.657	1.023	1.927
1.341	-0.757	1.927		-0.588	0.969	1.927

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
1.252	-0.723	1.927		-0.517	0.913	1.927
1.160	-0.687	1.927		-0.443	0.853	1.927
1.064	-0.649	1.927		-0.367	0.790	1.927
0.965	-0.608	1.927		-0.288	0.725	1.927
0.863	-0.565	1.927		-0.207	0.657	1.927
0.758	-0.518	1.927		-0.123	0.586	1.927
0.650	-0.468	1.927		-0.036	0.513	1.927
0.542	-0.417	1.927		0.051	0.440	1.927
0.436	-0.364	1.927		0.139	0.366	1.927
0.331	-0.308	1.927		0.226	0.294	1.927
0.227	-0.250	1.927		0.314	0.221	1.927
0.124	-0.191	1.927		0.402	0.150	1.927
0.022	-0.128	1.927		0.491	0.079	1.927
-0.077	-0.063	1.927		0.580	0.008	1.927
-0.175	0.005	1.927		0.670	-0.061	1.927
-0.271	0.076	1.927		0.761	-0.129	1.927
-0.364	0.150	1.927		0.853	-0.197	1.927
-0.454	0.227	1.927		0.945	-0.263	1.927
-0.539	0.305	1.927		1.035	-0.326	1.927
-0.618	0.383	1.927		1.123	-0.386	1.927
-0.692	0.461	1.927		1.208	-0.444	1.927
-0.759	0.539	1.927		1.290	-0.498	1.927
-0.822	0.615	1.927		1.369	-0.550	1.927
-0.879	0.692	1.927		1.446	-0.599	1.927
-0.930	0.767	1.927		1.520	-0.645	1.927
-0.976	0.841	1.927		1.590	-0.690	1.927
-1.015	0.910	1.927		1.652	-0.727	1.927
-1.048	0.974	1.927		1.707	-0.761	1.927
-1.074	1.032	1.927		1.758	-0.793	1.927
-1.095	1.087	1.927		1.807	-0.822	1.927
-1.111	1.136	1.927		1.849	-0.847	1.927
-1.119	1.175	1.927		1.882	-0.867	1.927
-1.123	1.207	1.927		1.908	-0.882	1.927
-1.122	1.230	1.927		1.928	-0.894	1.927
-1.117	1.248	1.927		1.939	-0.907	1.927
-1.112	1.256	1.927		1.942	-0.919	1.927
-1.108	1.261	1.927		1.941	-0.927	1.927

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-1.106	1.263	1.927		1.940	-0.931	1.927
-1.105	1.264	1.927		1.940	-0.933	1.927
1.959	-0.766	2.913		-0.998	1.369	2.913
1.958	-0.767	2.913		-0.997	1.370	2.913
1.957	-0.768	2.913		-0.996	1.371	2.913
1.955	-0.772	2.913		-0.993	1.372	2.913
1.950	-0.778	2.913		-0.988	1.374	2.913
1.938	-0.784	2.913		-0.979	1.376	2.913
1.921	-0.784	2.913		-0.963	1.375	2.913
1.898	-0.777	2.913		-0.941	1.369	2.913
1.869	-0.768	2.913		-0.914	1.357	2.913
1.832	-0.757	2.913		-0.883	1.339	2.913
1.784	-0.742	2.913		-0.843	1.312	2.913
1.729	-0.724	2.913		-0.799	1.279	2.913
1.670	-0.706	2.913		-0.753	1.242	2.913
1.608	-0.686	2.913		-0.701	1.201	2.913
1.538	-0.663	2.913		-0.644	1.154	2.913
1.458	-0.636	2.913		-0.582	1.102	2.913
1.374	-0.607	2.913		-0.518	1.048	2.913
1.286	-0.577	2.913		-0.450	0.991	2.913
1.195	-0.544	2.913		-0.379	0.932	2.913
1.101	-0.509	2.913		-0.306	0.871	2.913
1.004	-0.472	2.913		-0.229	0.808	2.913
0.904	-0.432	2.913		-0.150	0.742	2.913
0.801	-0.388	2.913		-0.067	0.675	2.913
0.695	-0.342	2.913		0.020	0.607	2.913
0.590	-0.293	2.913		0.107	0.539	2.913
0.486	-0.242	2.913		0.194	0.471	2.913
0.384	-0.188	2.913		0.282	0.404	2.913
0.283	-0.132	2.913		0.369	0.337	2.913
0.183	-0.072	2.913		0.457	0.270	2.913
0.086	-0.009	2.913		0.544	0.203	2.913
-0.009	0.057	2.913		0.632	0.136	2.913
-0.101	0.127	2.913		0.721	0.070	2.913
-0.191	0.200	2.913		0.810	0.005	2.913
-0.278	0.276	2.913		0.900	-0.059	2.913
-0.363	0.354	2.913		0.990	-0.123	2.913

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-0.443	0.433	2.913		1.078	-0.183	2.913
-0.517	0.511	2.913		1.163	-0.241	2.913
-0.587	0.589	2.913		1.246	-0.295	2.913
-0.651	0.666	2.913		1.326	-0.347	2.913
-0.710	0.742	2.913		1.404	-0.397	2.913
-0.765	0.817	2.913		1.479	-0.444	2.913
-0.815	0.890	2.913		1.550	-0.488	2.913
-0.860	0.962	2.913		1.619	-0.530	2.913
-0.899	1.028	2.913		1.679	-0.567	2.913
-0.932	1.089	2.913		1.733	-0.599	2.913
-0.959	1.145	2.913		1.783	-0.629	2.913
-0.983	1.198	2.913		1.831	-0.657	2.913
-1.000	1.245	2.913		1.872	-0.681	2.913
-1.010	1.282	2.913		1.904	-0.700	2.913
-1.014	1.313	2.913		1.929	-0.715	2.913
-1.014	1.336	2.913		1.948	-0.726	2.913
-1.010	1.353	2.913		1.958	-0.739	2.913
-1.006	1.361	2.913		1.961	-0.751	2.913
-1.002	1.366	2.913		1.961	-0.759	2.913
-1.000	1.368	2.913		1.960	-0.763	2.913
-0.998	1.369	2.913		1.959	-0.765	2.913
1.993	-0.900	4.063		-0.873	1.253	4.063
1.993	-0.901	4.063		-0.873	1.253	4.063
1.992	-0.903	4.063		-0.871	1.254	4.063
1.989	-0.907	4.063		-0.869	1.255	4.063
1.984	-0.912	4.063		-0.863	1.256	4.063
1.973	-0.919	4.063		-0.854	1.256	4.063
1.956	-0.919	4.063		-0.838	1.252	4.063
1.934	-0.913	4.063		-0.819	1.242	4.063
1.905	-0.905	4.063		-0.795	1.227	4.063
1.869	-0.894	4.063		-0.766	1.204	4.063
1.821	-0.880	4.063		-0.731	1.173	4.063
1.767	-0.864	4.063		-0.692	1.136	4.063
1.709	-0.846	4.063		-0.651	1.095	4.063
1.647	-0.827	4.063		-0.605	1.048	4.063
1.579	-0.805	4.063		-0.554	0.997	4.063
1.500	-0.779	4.063		-0.498	0.941	4.063

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
1.417	-0.752	4.063		-0.439	0.882	4.063
1.331	-0.722	4.063		-0.376	0.822	4.063
1.242	-0.690	4.063		-0.311	0.759	4.063
1.150	-0.656	4.063		-0.242	0.695	4.063
1.054	-0.618	4.063		-0.170	0.629	4.063
0.956	-0.577	4.063		-0.095	0.561	4.063
0.856	-0.533	4.063		-0.016	0.492	4.063
0.753	-0.485	4.063		0.067	0.422	4.063
0.651	-0.434	4.063		0.151	0.352	4.063
0.552	-0.380	4.063		0.235	0.285	4.063
0.453	-0.322	4.063		0.321	0.218	4.063
0.358	-0.261	4.063		0.408	0.153	4.063
0.264	-0.197	4.063		0.495	0.088	4.063
0.173	-0.129	4.063		0.583	0.025	4.063
0.084	-0.058	4.063		0.671	-0.039	4.063
-0.003	0.015	4.063		0.759	-0.102	4.063
-0.089	0.090	4.063		0.848	-0.165	4.063
-0.172	0.168	4.063		0.937	-0.227	4.063
-0.252	0.248	4.063		1.027	-0.287	4.063
-0.328	0.327	4.063		1.115	-0.345	4.063
-0.399	0.406	4.063		1.200	-0.401	4.063
-0.465	0.484	4.063		1.282	-0.453	4.063
-0.526	0.561	4.063		1.362	-0.503	4.063
-0.583	0.637	4.063		1.439	-0.550	4.063
-0.636	0.711	4.063		1.514	-0.595	4.063
-0.685	0.783	4.063		1.585	-0.637	4.063
-0.729	0.854	4.063		1.654	-0.677	4.063
-0.768	0.919	4.063		1.714	-0.711	4.063
-0.801	0.979	4.063		1.767	-0.742	4.063
-0.829	1.032	4.063		1.818	-0.770	4.063
-0.852	1.084	4.063		1.865	-0.797	4.063
-0.870	1.130	4.063		1.906	-0.819	4.063
-0.881	1.167	4.063		1.938	-0.837	4.063
-0.886	1.196	4.063		1.964	-0.851	4.063
-0.887	1.219	4.063		1.982	-0.861	4.063
-0.885	1.236	4.063		1.993	-0.874	4.063
-0.881	1.245	4.063		1.996	-0.886	4.063

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-0.877	1.249	4.063		1.995	-0.893	4.063
-0.875	1.251	4.063		1.994	-0.897	4.063
-0.874	1.252	4.063		1.994	-0.899	4.063
1.997	-1.197	4.885		-0.800	1.040	4.885
1.996	-1.198	4.885		-0.799	1.040	4.885
1.995	-1.200	4.885		-0.798	1.041	4.885
1.993	-1.203	4.885		-0.795	1.042	4.885
1.988	-1.209	4.885		-0.789	1.042	4.885
1.976	-1.215	4.885		-0.780	1.041	4.885
1.959	-1.216	4.885		-0.765	1.035	4.885
1.938	-1.209	4.885		-0.747	1.023	4.885
1.909	-1.200	4.885		-0.725	1.005	4.885
1.873	-1.189	4.885		-0.698	0.980	4.885
1.826	-1.174	4.885		-0.666	0.946	4.885
1.772	-1.157	4.885		-0.630	0.905	4.885
1.715	-1.138	4.885		-0.592	0.861	4.885
1.654	-1.117	4.885		-0.550	0.812	4.885
1.586	-1.093	4.885		-0.502	0.757	4.885
1.508	-1.065	4.885		-0.449	0.697	4.885
1.427	-1.035	4.885		-0.394	0.636	4.885
1.343	-1.002	4.885		-0.335	0.572	4.885
1.255	-0.967	4.885		-0.273	0.506	4.885
1.165	-0.928	4.885		-0.208	0.438	4.885
1.072	-0.887	4.885		-0.139	0.368	4.885
0.976	-0.842	4.885		-0.066	0.297	4.885
0.878	-0.794	4.885		0.010	0.225	4.885
0.777	-0.741	4.885		0.089	0.151	4.885
0.678	-0.686	4.885		0.170	0.079	4.885
0.581	-0.628	4.885		0.252	0.008	4.885
.0.486	-0.566	4.885		0.336	-0.062	4.885
0.394	-0.501	4.885		0.420	-0.130	4.885
0.303	-0.433	4.885		0.506	-0.197	4.885
0.215	-0.362	4.885		0.592	-0.263	4.885
0.129	-0.289	4.885		0.679	-0.328	4.885
0.045	-0.213	4.885		0.766	-0.393	4.885
-0.038	-0.135	4.885		0.854	-0.457	4.885
-0.118	-0.055	4.885		0.942	-0.521	4.885

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-0.196	0.027	4.885		1.031	-0.583	4.885
-0.269	0.108	4.885		1.117	-0.643	4.885
-0.338	0.188	4.885		1.202	-0.699	4.885
-0.402	0.268	4.885		1.284	-0.753	4.885
-0.461	0.346	4.885		1.363	-0.803	4.885
-0.516	0.422	4.885		1.440	-0.851	4.885
-0.568	0.497	4.885		1.514	-0.896	4.885
-0.615	0.570	4.885		1.586	-0.938	4.885
-0.658	0.641	4.885		1.655	-0.978	4.885
-0.696	0.706	4.885		1.715	-1.012	4.885
-0.728	0.766	4.885		1.768	-1.042	4.885
-0.755	0.820	4.885		1.819	-1.070	4.885
-0.778	0.872	4.885		1.867	-1.096	4.885
-0.795	0.918	4.885		1.908	-1.118	4.885
-0.805	0.954	4.885		1.940	-1.135	4.885
-0.811	0.984	4.885		1.966	-1.148	4.885
-0.813	1.006	4.885		1.985	-1.159	4.885
-0.811	1.023	4.885		1.996	-1.171	4.885
-0.807	1.032	4.885		1.999	-1.183	4.885
-0.804	1.037	4.885		1.999	-1.190	4.885
-0.802	1.039	4.885		1.998	-1.194	4.885
-0.800	1.040	4.885		1.997	-1.196	4.885
1.922	-1.470	5.571		-0.764	0.924	5.571
1.921	-1.471	5.571		-0.763	0.925	5.571
1.920	-1.473	5.571		-0.762	0.925	5.571
1.918	-1.477	5.571		-0.759	0.926	5.571
1.913	-1.482	5.571		-0.753	0.925	5.571
1.901	-1.488	5.571		-0.744	0.922	5.571
1.884	-1.488	5.571		-0.731	0.913	5.571
1.862	-1.481	5.571		-0.714	0.899	5.571
1.834	-1.471	5.571		-0.694	0.877	5.571
1.798	-1.458	5.571		-0.671	0.849	5.571
1.751	-1.442	5.571		-0.643	0.811	5.571
1.698	-1.422	5.571		-0.612	0.766	5.571
1.641	-1.401	5.571		-0.579	0.718	5.571
1.581	-1.378	5.571		-0.542	0.664	5.571
1.514	-1.351	5.571		-0.500	0.604	5.571

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
1.437	-1.319	5.571		-0.453	0.539	5.571
1.357	-1.284	5.571		-0.403	0.472	5.571
1.274	-1.246	5.571		-0.349	0.402	5.571
1.188	-1.206	5.571		-0.293	0.331	5.571
1.100	-1.162	5.571		-0.233	0.257	5.571
1.009	-1.115	5.571		-0.169	0.182	5.571
0.915	-1.065	5.571		-0.101	0.106	5.571
0.820	-1.011	5.571		-0.029	0.028	5.571
0.722	-0.952	5.571		0.046	-0.051	5.571
0.626	-0.891	5.571		0.123	-0.129	5.571
0.532	-0.827	5.571		0.202	-0.205	5.571
0.441	-0.759	5.571		0.283	-0.279	5.571
0.351	-0.689	5.571		0.364	-0.352	5.571
0.264	-0.616	5.571		0.448	-0.423	5.571
0.179	-0.540	5.571		0.532	-0.492	5.571
0.096	-0.462	5.571		0.618	-0.561	5.571
0.015	-0.382	5.571		0.703	-0.629	5.571
-0.063	-0.300	5.571		0.789	-0.696	5.571
-0.139	-0.215	5.571		0.876	-0.763	5.571
-0.213	-0.129	5.571		0.963	-0.829	5.571
-0.282	-0.043	5.571		1.048	-0.892	5.571
-0.346	0.042	5.571		1.131	-0.952	5.571
-0.405	0.125	5.571		1.212	-1.008	5.571
-0.460	0.207	5.571		1.290	-1.062	5.571
-0.511	0.287	5.571		1.366	-1.112	5.571
-0.557	0.366	5.571		1.440	-1.160	5.571
-0.600	0.442	5.571		1.511	-1.204	5.571
-0.639	0.515	5.571		1.579	-1.246	5.571
-0.673	0.583	5.571		1.639	-1.281	5.571
-0.702	0.645	5.571		1.693	-1.313	5.571
-0.726	0.701	5.571		1.743	-1.341	5.571
-0.746	0.754	5.571		1.791	-1.368	5.571
-0.761	0.801	5.571		1.833	-1.391	5.571
-0.770	0.838	5.571		1.865	-1.408	5.571
-0.775	0.868	5.571		1.891	-1.421	5.571
-0.776	0.890	5.571		1.910	-1.432	5.571
-0.774	0.907	5.571		1.921	-1.444	5.571

(continued)

SUCTION SIDE				PRESSURE SIDE		
X	Y	Z		X	Y	Z
-0.771	0.916	5.571		1.924	-1.456	5.571
-0.768	0.921	5.571		1.924	-1.463	5.571
-0.766	0.923	5.571		1.923	-1.467	5.571
-0.764	0.924	5.571		1.922	-1.469	5.571

[0067] It will also be appreciated that the airfoil 100 disclosed in any one of the above TABLES I through VIII may be scaled up or down geometrically for use in other similar turbine designs. Consequently, the coordinate values set forth in any one of TABLES I through VIII may be scaled upwardly or downwardly such that the airfoil profile shape remains unchanged. A scaled version of the coordinates in any one of TABLES I through VIII would be represented by X, Y and Z coordinate values, with the X, Y and Z non-dimensional coordinate values converted to units of distance (e.g., inches), multiplied or divided by a constant number.

[0068] As shown in FIG. 4, each airfoil 100 may define a stagger angle α (alpha) measured between the chord line 110 and the axial direction A of the gas turbine 10. Specifically, the stagger angle α may be measured between the chord line 110 of an airfoil 100 and the axial centerline 23 (or rotary axis) of the gas turbine 10 at the trailing edge 108 of the airfoil 100. The stagger angle α of each airfoil 100 disclosed herein may advantageously vary along the span-wise direction 118 (or radial direction R) according to a respective stagger angle distribution. The stagger angle distribution may be a collection of stagger angles α for a given airfoil 100 at each span-wise location (or radial location) along the airfoil 100.

[0069] In many embodiments, each stage S1-S14 of rotor blades 44 may include a unique stagger angle distribution, such that the collective utilization of the stages S1-S14 of rotor blades 44 will yield a highly efficient compressor section 14. For example, each of the airfoils 100 of the rotor blades 44 within the first stage S1 may have a first stagger angle distribution, each of the airfoils 100 of the rotor blades 44 within the second stage S2 may have a second stagger angle distribution, and so on for each stage (S1-S14) of the compressor section 14.

[0070] Similarly, each stage S1-S14 of stator vanes 50 may include a unique stagger angle distribution, such that the collective utilization of the stages S1-S14 of stator vanes 50 will yield a highly efficient compressor section 14. For example, each of the airfoils 100 of the stator vanes 50 within the first stage S1 may have a first stagger angle distribution, each of the airfoils 100 of the stator vanes 50 within the second stage S2 may have a second stagger angle distribution, and so on for each stage (S1-S14) of the compressor section 14.

[0071] In accordance with embodiments of the present disclosure, FIGS. 5 through 12 each illustrate a graph of a stagger angle distribution, which may belong to one or more airfoils 100 within a specified stage (e.g., S1-S14) of the compressor section 14. Each of the graphs may be in non-dimensional units. Specifically, the y-axis may be a percentage along the span-wise direction 118 (e.g., with 0% span representing the inner diameter and 100% span representing the outer diameter). For example, with a rotor blade 44, 0% span may represent the base of the airfoil 100, and 100% span may represent the tip of the airfoil 100. As for a stator vane 50, 0% span may represent the tip of the airfoil 100, and 100% span may represent the base of the airfoil 100. The x-axis may be a ratio between the stagger angle at a specified span-wise location and the mid-span stagger angle (e.g., at about 50% span).

[0072] Each of the stagger angle distributions is plotted between 15% span and 85% span of the respective airfoil 100 to which it belongs (e.g., 0%-15% span and 85%-100% span points are omitted). Each stagger angle distribution, when implemented in an airfoil 100 on a rotor blade 44 and/or a stator vane 50 within the compressor section 14, advantageously increase the aerodynamic efficiency of the airfoil 100 (as well as the entire compressor section 14) when compared to prior designs.

[0073] In particular, FIG. 5 is a graph of a stagger angle distribution, plotted from 15% to 85% span of an airfoil 100 belonging to a stator vane 50 within the fourth stage S4 (i.e., a fourth stage stator vane). In some embodiments, all of the stator vanes 50 within the fourth stage S4 of the compressor section 14 may include an airfoil 100 having the stagger distribution according to FIG. 5. The stagger angle distribution shown in FIG. 5 is plotted according to the points in TABLE IX below.

TABLE IX

Stage Four Stator Vane Airfoi	
(%)	**-**
Span	Stagger/Midspan stagger
85.00%	1.016
78.42%	1.008
69.50%	1.004
60.37%	1.001
51.03%	1.000
41.58%	1.000
32.12%	1.004
22.76%	1.015
15.00%	1.046

[0074] FIG. 6 is a graph of a stagger angle distribution, plotted from 15% to 85% span of an airfoil 100 belonging to a stator vane 50 within the fifth stage S5 (i.e., a fifth stage stator vane). In some embodiments, all of the stator vanes 50 within the fifth stage S5 of the compressor section 14 may include an airfoil 100 having the stagger distribution according to FIG. 6. The stagger angle distribution shown in FIG. 6 is plotted according to the points in TABLE X below.

TABLE X

Stage Five Stator Vane Airfoil	
(%)	**-**
Span	**Stagger/Midspan stagger**
85.00%	1.032
78.93%	1.014
70.07%	1.002
60.86%	0.997
51.35%	0.999
41.68%	1.008
32.08%	1.022
22.69%	1.040
15.00%	1.062

[0075] FIG. 7 is a graph of a stagger angle distribution, plotted from 15% to 85% span of an airfoil 100 belonging to a stator vane 50 within the sixth stage S6 (i.e., a sixth stage stator vane). In some embodiments, all of the stator vanes 50 within the sixth stage S6 of the compressor section 14 may include an airfoil 100 having the stagger distribution according to FIG. 7. The stagger angle distribution shown in FIG. 7 is plotted according to the points in TABLE XI below.

TABLE XI

Stage Six Stator Vane Airfoil	
(%)	**-**
Span	**Stagger/Midspan stagger**
85.00%	0.984
78.06%	0.973

(continued)

Stage Six Stator Vane Airfoil	
(%)	-
Span	Stagger/Midspan stagger
68.98%	0.975
59.62%	0.985
50.02%	1.000
40.38%	1.013
30.87%	1.022
21.70%	1.025
15.00%	1.037

[0076] FIG. 8 is a graph of a stagger angle distribution, plotted from 15% to 85% span of an airfoil 100 belonging to a stator vane 50 within the seventh stage S7 (i.e., a seventh stage stator vane). In some embodiments, all of the stator vanes 50 within the seventh stage S7 of the compressor section 14 may include an airfoil 100 having the stagger distribution according to FIG. 8. The stagger angle distribution shown in FIG. 8 is plotted according to the points in TABLE XII below.

TABLE XII

Stage Seven Stator Vane Airfoil	
(%)	-
Span	Stagger/Midspan stagger
85.00%	1.015
78.32%	0.991
69.49%	0.991
60.30%	0.995
50.81%	1.000
41.19%	1.003
31.61%	1.004
22.28%	1.004
15.00%	1.012

[0077] FIG. 9 is a graph of a stagger angle distribution, plotted from 15% to 85% span of an airfoil 100 belonging to a stator vane 50 within the eighth stage S8 (i.e., an eighth stage stator vane). In some embodiments, all of the stator vanes 50 within the eighth stage S8 of the compressor section 14 may include an airfoil 100 having the stagger distribution according to FIG. 9. The stagger angle distribution shown in FIG. 9 is plotted according to the points in TABLE XIII below.

TABLE XIII

Stage Eight Stator Vane Airfoil	
(%)	-
Span	Stagger/Midspan stagger
85.00%	1.025
78.32%	0.997
69.49%	0.981

(continued)

Stage Eight Stator Vane Airfoil	
(%)	-
Span	Stagger/Midspan stagger
60.30%	0.986
50.81%	0.998
41.19%	1.007
31.61%	1.013
22.28%	1.021
15.00%	1.046

[0078] FIG. 10 is a graph of a stagger angle distribution, plotted from 15% to 85% span of an airfoil 100 belonging to a stator vane 50 within the ninth stage S9 (i.e., a ninth stage stator vane). In some embodiments, all of the stator vanes 50 within the ninth stage S9 of the compressor section 14 may include an airfoil 100 having the stagger distribution according to FIG. 10. The stagger angle distribution shown in FIG. 10 is plotted according to the points in TABLE XIV below.

TABLE XIV

Stage Nine Stator Vane Airfoil	
(%)	-
Span	Stagger/Midspan stagger
85.00%	1.051
78.83%	1.014
69.95%	0.988
60.72%	0.985
51.14%	0.998
41.35%	1.017
31.52%	1.030
22.04%	1.032
15.00%	1.036

[0079] FIG. 11 is a graph of a stagger angle distribution, plotted from 15% to 85% span of an airfoil 100 belonging to a stator vane 50 within the eleventh stage S11 (i.e., an eleventh stage stator vane). In some embodiments, all of the stator vanes 50 within the eleventh stage S11 of the compressor section 14 may include an airfoil 100 having the stagger distribution according to FIG. 11. The stagger angle distribution shown in FIG. 11 is plotted according to the points in TABLE XV below.

TABLE XV

Stage Eleven Stator Vane Airfoil	
(%)	-
Span	Stagger/Midspan stagger
85.00%	1.026
80.40%	0.987
71.55%	0.978
61.94%	0.985

(continued)

Stage Eleven Stator Vane Airfoil	
(%)	-
Span	Stagger/Midspan stagger
51.63%	0.999
40.98%	1.006
30.52%	1.007
20.67%	1.007
15.00%	1.014

[0080] FIG. 12 is a graph of a stagger angle distribution, plotted from 15% to 85% span of an airfoil 100 belonging to a stator vane 50 within the thirteenth stage S13 (i.e., a thirteenth stage stator vane). In some embodiments, all of the stator vanes 50 within the thirteenth stage S13 of the compressor section 14 may include an airfoil 100 having the stagger distribution according to FIG. 12. The stagger angle distribution shown in FIG. 12 is plotted according to the points in TABLE XVI below.

TABLE XVI

Stage Thirteen Stator Vane Airfoil	
(%)	-
Span	Stagger/Midspan stagger
85.00%	1.070
80.40%	1.028
71.17%	0.993
61.45%	0.987
51.46%	0.998
41.41%	1.014
31.46%	1.035
21.74%	1.069
15.00%	1.105

[0081] The disclosed airfoil shape optimizes and is specific to the machine conditions and specifications. It provides a unique profile to achieve 1) interaction between other stages in the compressor section 14; 2) aerodynamic efficiency; and 3) normalized aerodynamic and mechanical blade loadings. The disclosed loci of points defined in any one of TABLES I through VIII allow the gas turbine 10 or any other suitable turbine to run in an efficient, safe and smooth manner. As also noted, the disclosed airfoil 100 may be adapted to any scale, as long as 1) interaction between other stages in the compressor section 14; 2) aerodynamic efficiency; and 3) normalized aerodynamic and mechanical blade loadings are maintained in the scaled turbine.

[0082] The airfoil 100 described herein thus improves overall gas turbine 10 efficiency. The airfoil 100 also meets all aeromechanical and stress requirements. For example, the airfoil 100 of the stator vane 50 thus is of a specific shape to meet aerodynamic, mechanical, and heat transfer requirements in an efficient and cost-effective manner.

[0083] This written description uses examples to disclose the invention, including the best mode, and also to enable any person skilled in the art to practice the invention, including making and using any devices or systems and performing any incorporated methods. The patentable scope of the invention is defined by the claims, and may include other examples that occur to those skilled in the art. Such other examples are intended to be within the scope of the claims if they include structural elements that do not differ from the literal language of the claims, or if they include equivalent structural elements with insubstantial differences from the literal language of the claims.

[0084] Further aspects of the invention are provided by the subject matter of the following clauses:

A stator vane comprising an airfoil having an airfoil shape, the airfoil shape having a nominal profile substantially in accordance with Cartesian coordinate values of X, Y and Z set forth in one of Table I, Table II, Table III, Table IV, Table V, Table VI, Table VII, or Table VIII, the Cartesian coordinate values of X, Y, and Z being defined relative to a point data origin at a base of the airfoil, wherein the Cartesian coordinate values of X, Y and Z are non-dimensional values from 0% to 100% convertible to dimensional distances expressed in a unit of distance by multiplying the Cartesian coordinate values of X, Y and Z by a scaling factor of the airfoil in the unit of distance; and wherein X and Y values, when connected by smooth continuing arcs, define airfoil profile sections at each Z value, the airfoil profile sections at Z values being joined smoothly with one another to form a complete airfoil shape.

[0085] The stator vane of one or more of these clauses, wherein the airfoil includes a stagger angle distribution in accordance with one of Table IX, Table X, Table XI, Table XII, Table XIII, Table XIV, Table XV, or Table XVI, each stagger angle in the stagger angle distribution being measured between a chord line of the airfoil and a rotary axis of the airfoil.

[0086] The stator vane of one or more of these clauses, wherein the stator vane forms part of a mid stage of a compressor section of a turbomachine.

[0087] The stator vane of one or more of these clauses, wherein the stator vane is disposed in one of an early stage of a compressor section of a turbomachine or a late stage of the compressor section of the turbomachine.

[0088] The stator vane of one or more of these clauses, wherein the stator vane is one of a fourth stage compressor stator vane, a fifth stage compressor stator vane, a sixth stage compressor stator vane, a seventh stage compressor stator vane, an eighth stage compressor stator vane, a ninth stage compressor stator vane, an eleventh stage compressor stator vane, or a thirteenth stage compressor stator vane.

[0089] The stator vane of one or more of these clauses, wherein the airfoil shape lies in an envelope within +/-5% of a chord length in a direction normal to any airfoil surface location.

[0090] The stator vane of one or more of these clauses, wherein the scaling factor is between about 0.01 inches and about 10 inches.

[0091] The stator vane of one or more of these clauses, wherein the X, Y and Z values are scalable as a function of the same constant or number to provide a scaled-up or scaled-down airfoil.

[0092] A stator vane comprising an airfoil having a nominal suction-side profile substantially in accordance with suction-side Cartesian coordinate values of X, Y and Z set forth in one of Table I, Table II, Table III, Table IV, Table V, Table VI, Table VII, or Table VIII, the Cartesian coordinate values of X, Y, and Z being defined relative to a point data origin at a base of the airfoil, wherein the Cartesian coordinate values of X, Y and Z are non-dimensional values from 0% to 100% convertible to dimensional distances expressed in a unit of distance by multiplying the Cartesian coordinate values of X, Y and Z by a scaling factor of the airfoil in the unit of distance; and wherein X and Y values, when connected by smooth continuing arcs, define suction-side profile sections at each Z value, the suction-side profile sections at the Z values being joined smoothly with one another to form a complete airfoil suction-side shape.

[0093] The stator vane of one or more of these clauses, wherein the airfoil includes a stagger angle distribution in accordance with one of Table IX, Table X, Table XI, Table XII, Table XIII, Table XIV, Table XV, or Table XVI, each stagger angle in the stagger angle distribution being measured between a chord line of the airfoil and a rotary axis of the airfoil.

[0094] The stator vane of one or more of these clauses, wherein the stator vane forms part of a mid stage of a compressor section of a turbomachine.

[0095] The stator vane of one or more of these clauses, wherein the stator vane is disposed in one of an early stage of a compressor section of a turbomachine or a late stage of the compressor section of the turbomachine.

[0096] The stator vane of one or more of these clauses, wherein the stator vane is one of a fourth stage compressor stator vane, a fifth stage compressor stator vane, a sixth stage compressor stator vane, a seventh stage compressor stator vane, an eighth stage compressor stator vane, a ninth stage compressor stator vane, an eleventh stage compressor stator vane, or a thirteenth stage compressor stator vane.

[0097] The stator vane of one or more of these clauses, wherein the nominal suction-side profile lies in an envelope within +/-5% of a chord length in a direction normal to any airfoil surface location.

[0098] The stator vane of one or more of these clauses, wherein the scaling factor is between about 0.01 inches and about 10 inches.

[0099] The stator vane of one or more of these clauses, wherein the X, Y and Z values are scalable as a function of the same constant or number to provide a scaled-up or scaled-down airfoil.

[0100] A turbomachine comprising a compressor section; a turbine section downstream from the compressor section; a combustion section downstream from the compressor section and upstream from the turbine section; and a stator vane disposed within one of the compressor section or the turbine section, the stator vane comprising an airfoil having an airfoil shape, the airfoil shape having a nominal profile substantially in accordance with Cartesian coordinate values of X, Y and Z set forth in one of Table I, Table II, Table III, Table IV, Table V, Table VI, Table VII, or Table VIII, the Cartesian coordinate values of X, Y, and Z being defined relative to a point data origin at a base of the airfoil, wherein the Cartesian coordinate values of X, Y and Z are non-dimensional values from 0% to 100% convertible to dimensional distances expressed in a unit of distance by multiplying the Cartesian coordinate values of X, Y and Z by a height of the airfoil in the unit of distance; and wherein X and Y values, when connected by smooth continuing arcs, define airfoil profile sections at each Z value, the airfoil profile sections at Z values being joined smoothly with one another to form a complete airfoil shape.

[0101] The turbomachine of one or more of these clauses, wherein the airfoil includes a stagger angle distribution in accordance with one of Table IX, Table X, Table XI, Table XII, Table XIII, Table XIV, Table XV, or Table XVI, each stagger angle in the stagger angle distribution being measured between a chord line of the airfoil and a rotary axis of the airfoil.

[0102] The turbomachine of one or more of these clauses, wherein the stator vane forms part of a mid stage of the compressor section.

[0103] The stator vane of one or more of these clauses, wherein the stator vane is disposed in one of an early stage of the compressor section or a late stage of the compressor section.

[0104] A stator vane comprising an airfoil having an airfoil shape, the airfoil shape having a nominal profile, wherein the airfoil includes a stagger angle distribution in accordance with one of Table IX, Table X, Table XI, Table XII, Table XIII, Table XIV, Table XV, or Table XVI, each stagger angle in the stagger angle distribution being measured between a chord line of the airfoil and a rotary axis of the airfoil.

[0105] The stator vane of one or more of these clauses, wherein the stator vane forms part of a mid stage of a compressor section of a turbomachine.

[0106] The stator vane of one or more of these clauses, wherein the stator vane is disposed in one of an early stage of a compressor section of a turbomachine or a late stage of the compressor section of the turbomachine.

[0107] The stator vane of one or more of these clauses, wherein the stator vane is one of a fourth stage compressor stator vane, a fifth stage compressor stator vane, a sixth stage compressor stator vane, a seventh stage compressor stator vane, an eighth stage compressor stator vane, a ninth stage compressor stator vane, an eleventh stage compressor stator vane, or a thirteenth stage compressor stator vane.

[0108] The stator vane of one or more of these clauses, wherein the airfoil shape lies in an envelope within +/-5% of a chord length in a direction normal to any airfoil surface location.

[0109] The stator vane of one or more of these clauses, wherein the scaling factor is between about 0.01 inches and about 10 inches.

Claims

1. A stator vane (50) comprising:
an airfoil (100) having a suction side (104) and a pressure side (102) and a cross-sectional airfoil shape (150) defined by the suction side (104) and the pressure side (102), the airfoil shape (150) having a nominal suction-side profile (104) and a nominal pressure-side profile (102) substantially in accordance with Cartesian coordinate values of X, Y and Z set forth in one of Table I, Table II, Table III, Table IV, Table V, Table VI, Table VII, or Table VIII, the Cartesian coordinate values of X, Y, and Z being defined relative to a point data origin (76) at a base (114) of the airfoil (100), wherein the Cartesian coordinate values of X, Y and Z are non-dimensional values from 0% to 100% convertible to dimensional distances expressed in a unit of distance by multiplying the Cartesian coordinate values of X, Y and Z by a scaling factor of the airfoil in the unit of distance; and wherein X and Y values, when connected by smooth continuing arcs, define nominal suction-side and/or pressure-side profile sections (104, 102) at each Z value, the nominal suction-side and/or pressure-side profile sections (104, 102) at Z values being joined smoothly with one another to form a complete suction side and/or a complete pressure side of the airfoil shape (150).

2. The stator vane (50) of claim 1, wherein the airfoil (100) includes a stagger angle distribution in accordance with one of Table IX, Table X, Table XI, Table XII, Table XIII, Table XIV, Table XV, or Table XVI, each stagger angle in the stagger angle distribution being measured between a chord line (110) of the airfoil (100) and a rotary axis of the airfoil (100).

3. The stator vane (50) of claim 1, wherein the airfoil (100) has the nominal suction-side profile (104) defined by the suction-side Cartesian coordinate values of X, Y, and Z set forth in one of Table I, Table II, Table III, Table IV, Table V, Table VI, Table VII, or Table VIII.

4. The stator vane (50) of claim 1, wherein the airfoil (100) has the nominal suction-side profile (104) and the nominal pressure-side profile (102) defined by the suction-side and pressure-side Cartesian coordinate values of X, Y, and Z set forth in one of Table I, Table II, Table III, Table IV, Table V, Table VI, Table VII, or Table VIII.

5. The stator vane (50) of claim 1, wherein the stator vane (50) forms part of a mid stage (62) of a compressor section (14) of a turbomachine (10).

6. The stator vane (50) of claim 1, wherein the stator vane (50) is disposed in one of an early stage (60) of a compressor section (14) of a turbomachine (10) or a late stage (64) of the compressor section (14) of the turbomachine (10).

7. The stator vane (50) of claim 1, wherein the stator vane (50) is one of a fourth stage compressor stator vane, a fifth stage compressor stator vane, a sixth stage compressor stator vane, a seventh stage compressor stator vane, an eighth stage compressor stator vane, a ninth stage compressor stator vane, an eleventh stage compressor stator vane, or a thirteenth stage compressor stator vane.

8. The stator vane (50) of claim 1, wherein the airfoil shape (150) lies in an envelope within +/-5% of a chord length (110) in a direction normal to any airfoil surface location.

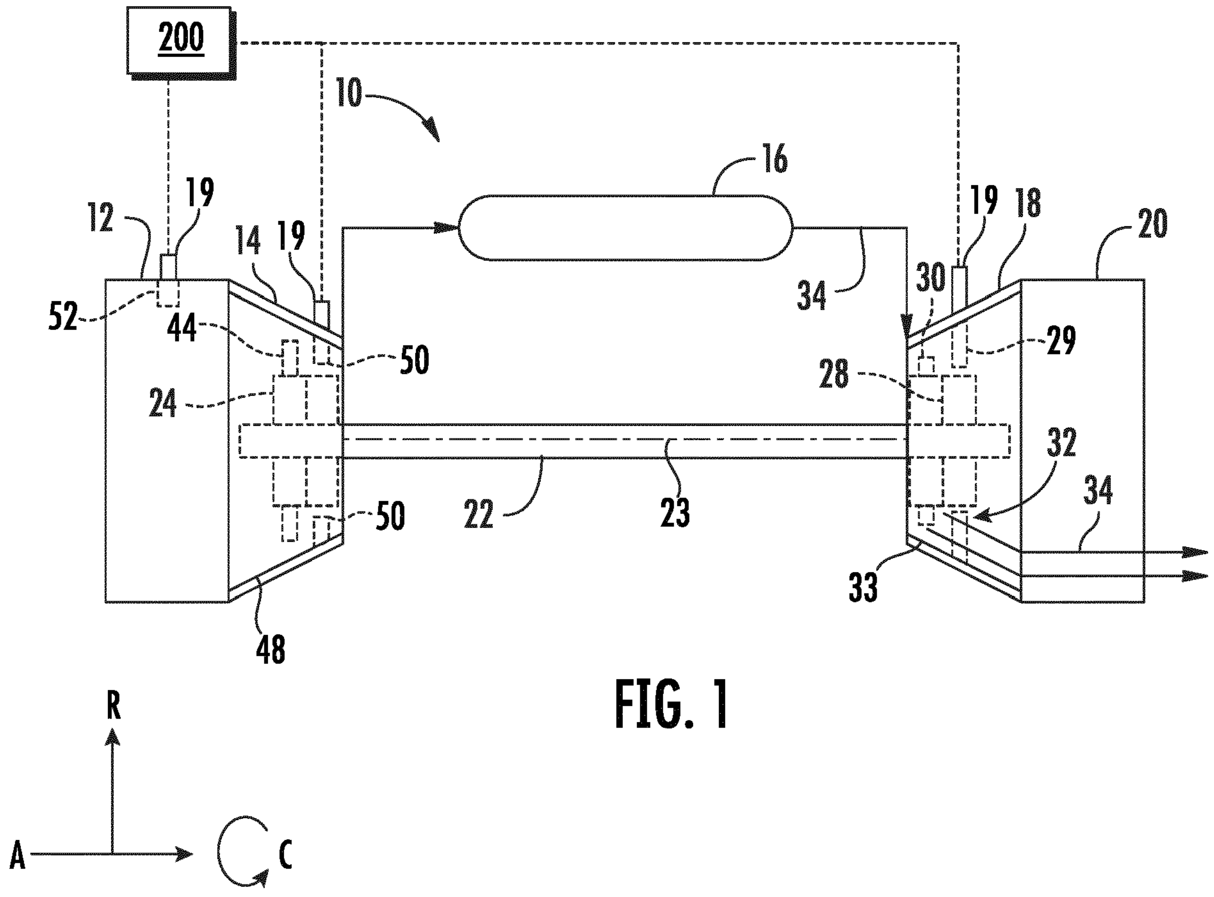
9. The stator vane (50) of claim 1, wherein the scaling factor is between about 0.01 inches and about 10 inches.

10. The stator vane (50) of claim 1, wherein the X, Y and Z values are scalable as a function of the same constant or number to provide a scaled-up or scaled-down airfoil.

11. A turbomachine (10) comprising:

a compressor section (14);
a turbine section (18) downstream from the compressor section (14);
a combustion section (16) downstream from the compressor section (14) and upstream from the turbine section (18); and
a stator vane (50) disposed within one of the compressor section (14) or the turbine section (18), the stator vane (50) being defined according to any of Claims 1 to 10.

12. The turbomachine (10) of claim 11, wherein the stator vane forms part of a stage of a compressor section.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12
19
14
19
52
44
50
24
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19
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30
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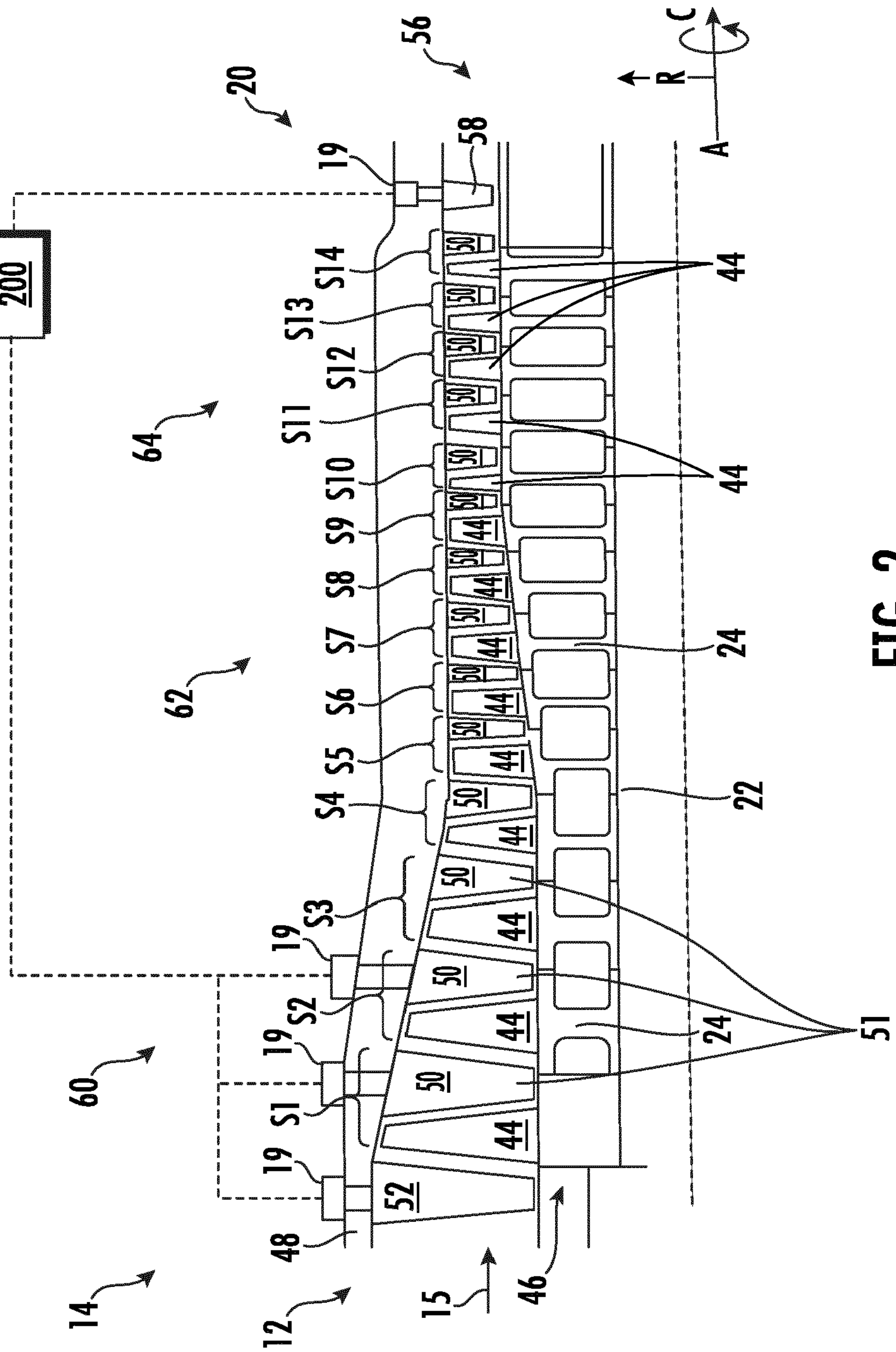
34
22
23
50
33
48
R
A
C

FIG. 1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S9
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S13
S14
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44
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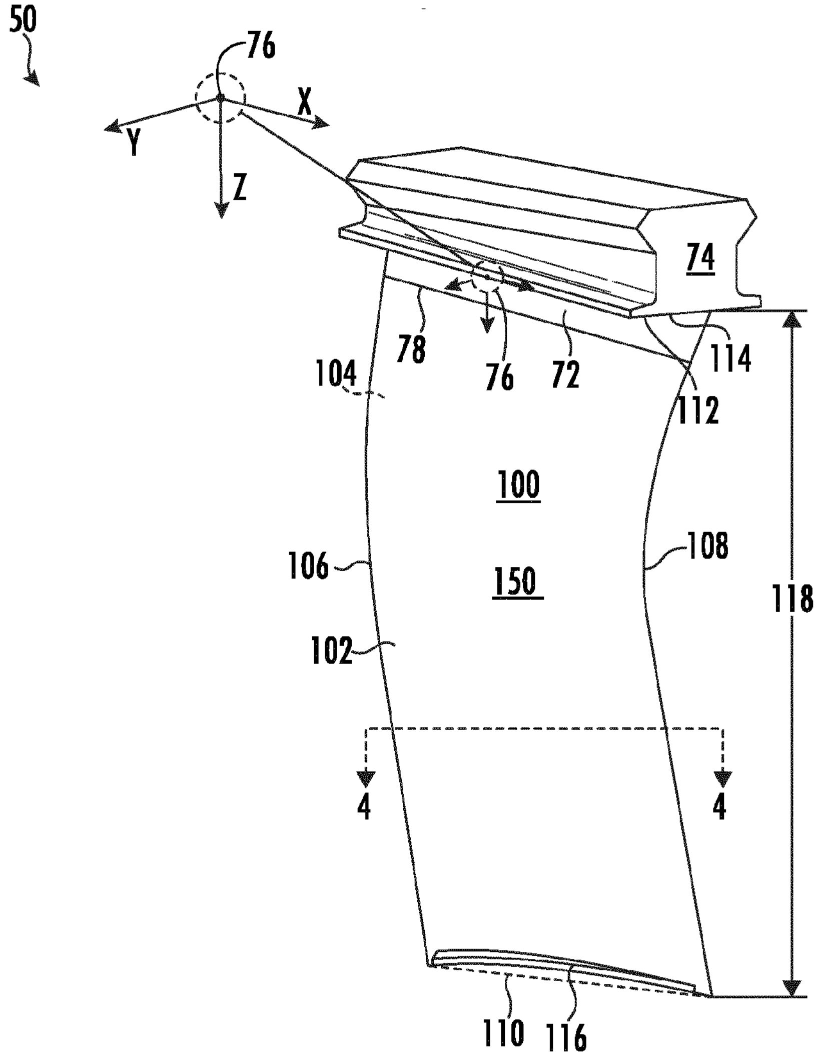
58
20
56
R
C
A

FIG. 2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76
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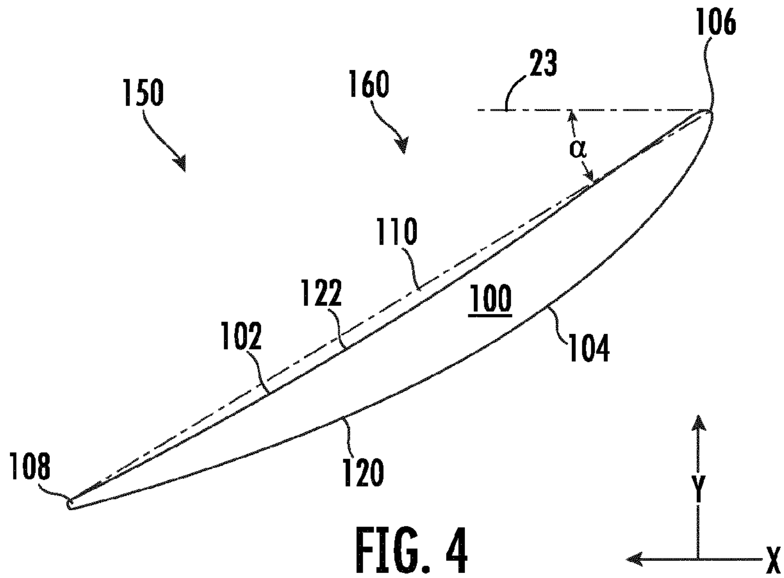
110
116

FIG. 3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X

FIG. 4

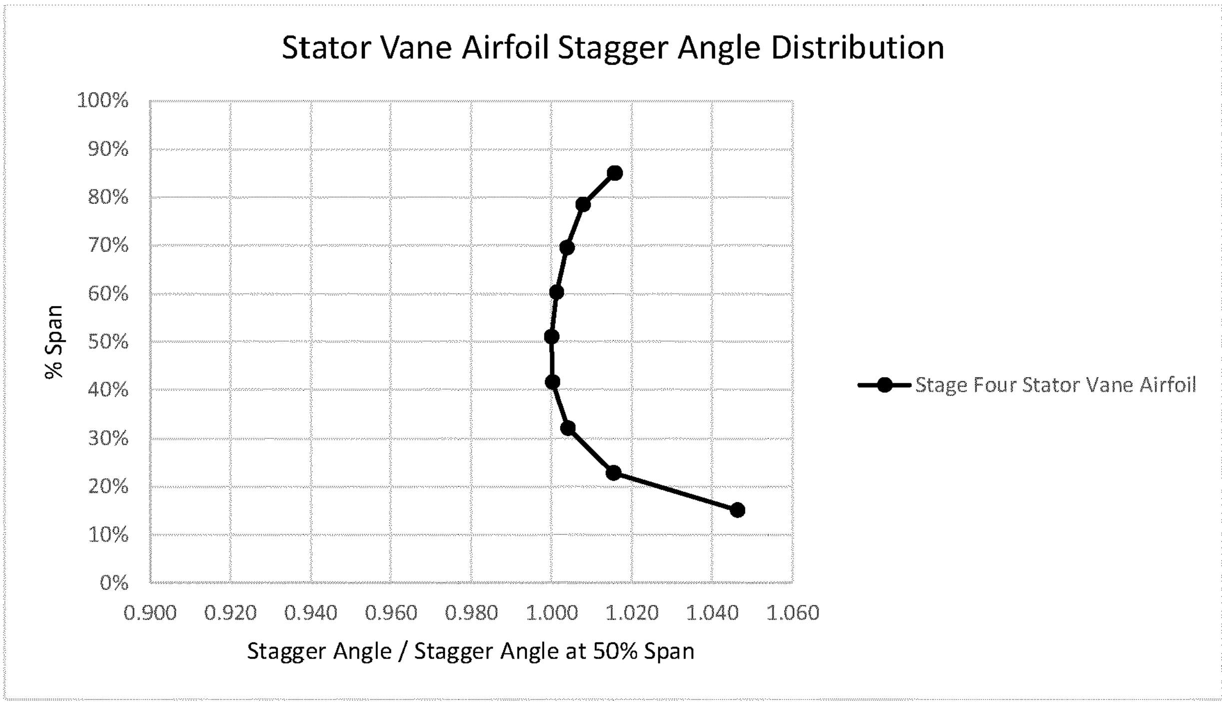

Stator Vane Airfoil Stagger Angle Distribution
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Span
0.900
0.920
0.940
0.960
0.980
1.000
1.020
1.040
1.060
Stagger Angle / Stagger Angle at 50% Span
Stage Four Stator Vane Airfoil

FIG. 5

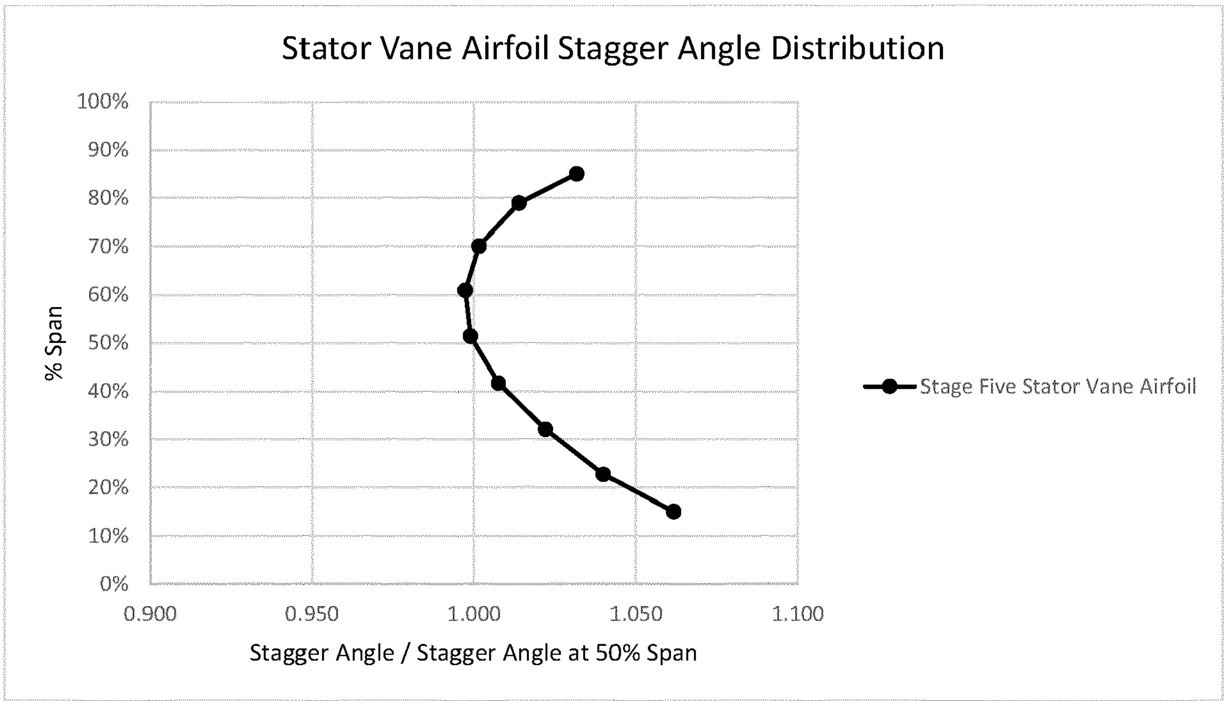
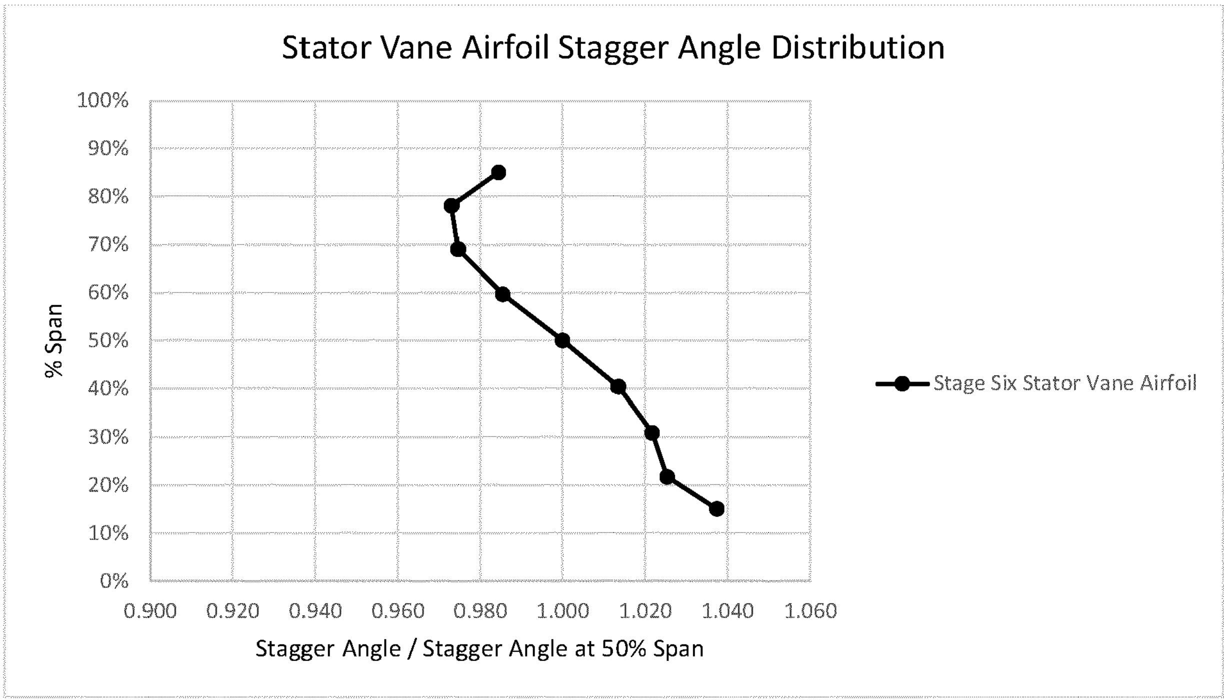
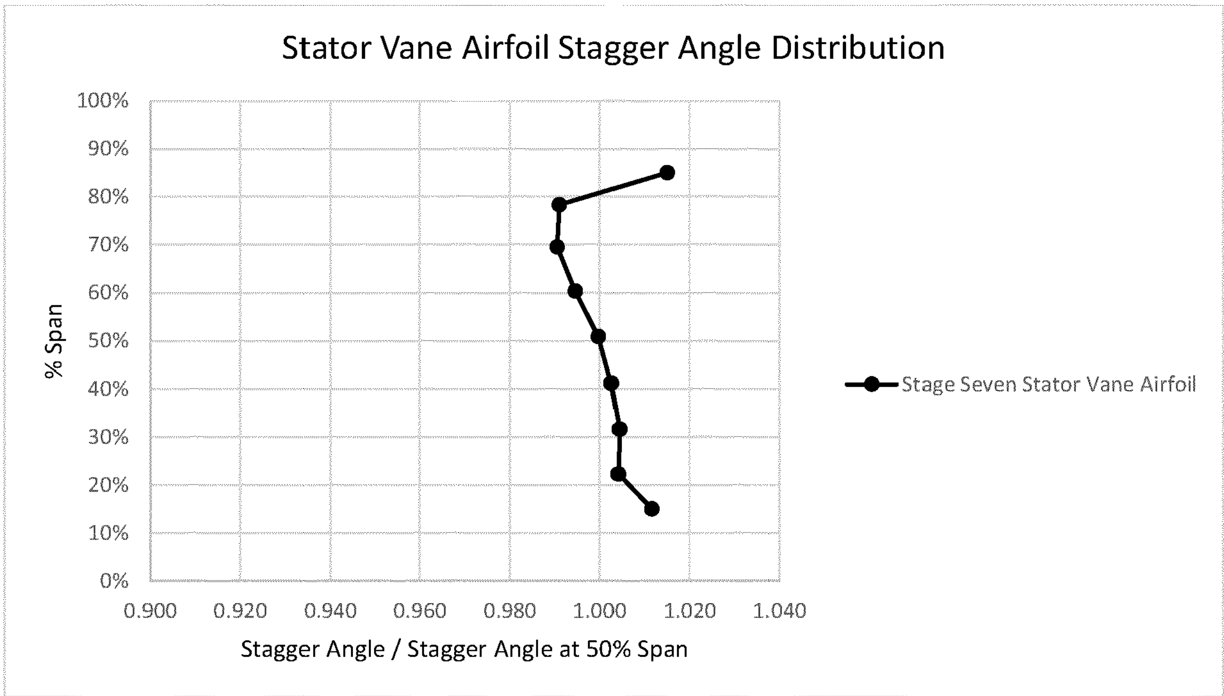

Stator Vane Airfoil Stagger Angle Distribution
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Span
0.900
0.950
1.000
1.050
1.100
Stagger Angle / Stagger Angle at 50% Span
Stage Five Stator Vane Airfoil

FIG. 6



Stator Vane Airfoil Stagger Angle Distribution
% Span
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
0.900
0.920
0.940
0.960
0.980
1.000
1.020
1.040
1.060
Stagger Angle / Stagger Angle at 50% Span
Stage Six Stator Vane Airfoil

FIG. 7



Stator Vane Airfoil Stagger Angle Distribution
% Span
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
0.900
0.920
0.940
0.960
0.980
1.000
1.020
1.040
Stagger Angle / Stagger Angle at 50% Span
Stage Seven Stator Vane Airfoil

FIG. 8

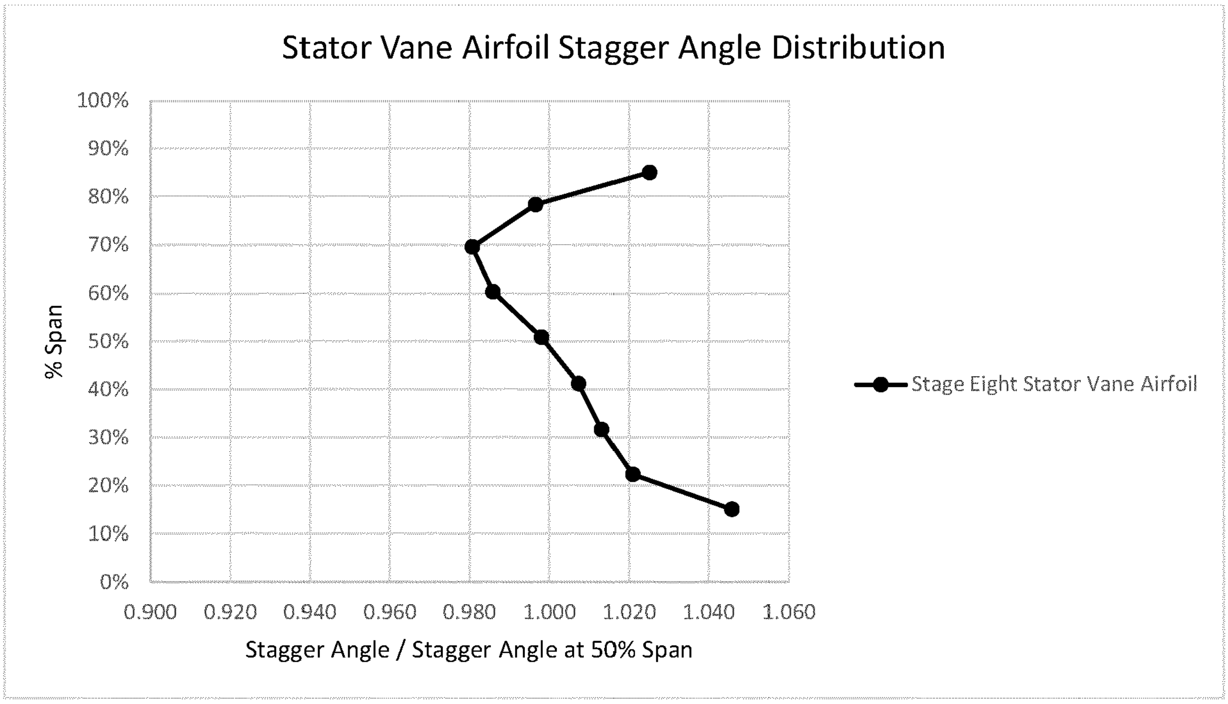

Stator Vane Airfoil Stagger Angle Distribution
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Span
0.900
0.920
0.940
0.960
0.980
1.000
1.020
1.040
1.060
Stagger Angle / Stagger Angle at 50% Span
Stage Eight Stator Vane Airfoil

FIG. 9

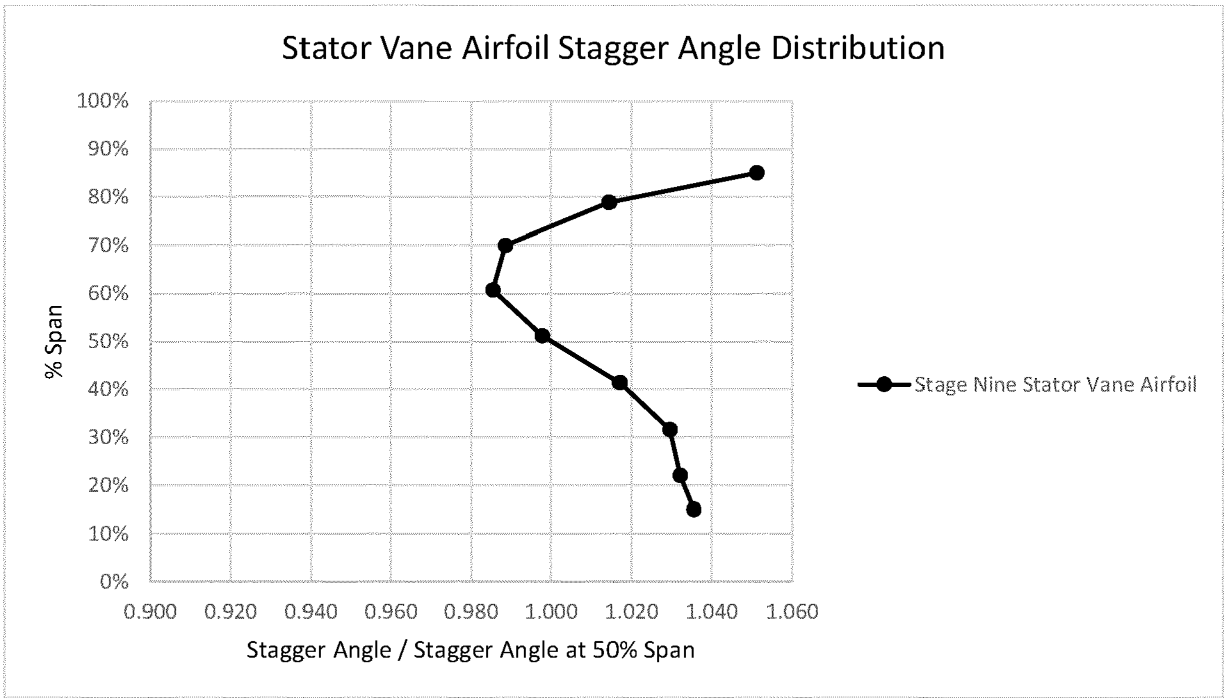

Stator Vane Airfoil Stagger Angle Distribution
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Span
0.900
0.920
0.940
0.960
0.980
1.000
1.020
1.040
1.060
Stagger Angle / Stagger Angle at 50% Span
Stage Nine Stator Vane Airfoil

FIG. 10

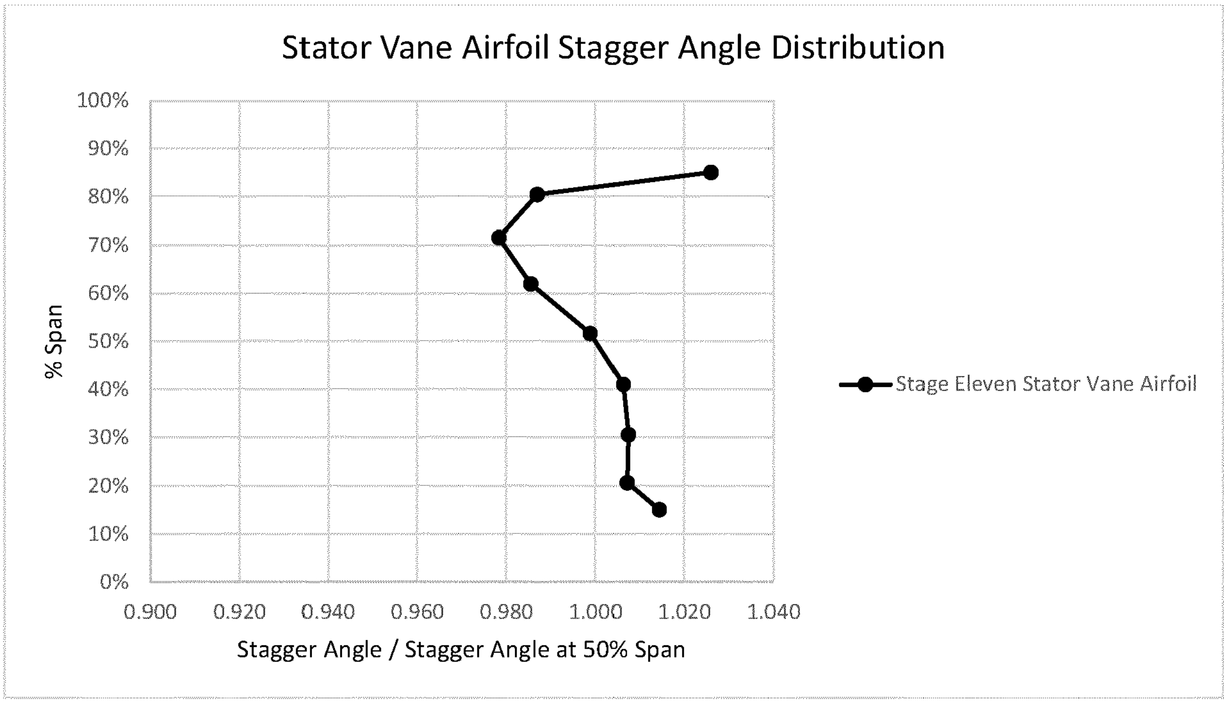

Stator Vane Airfoil Stagger Angle Distribution
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Span
0.900
0.920
0.940
0.960
0.980
1.000
1.020
1.040
Stagger Angle / Stagger Angle at 50% Span
Stage Eleven Stator Vane Airfoil

FIG. 11

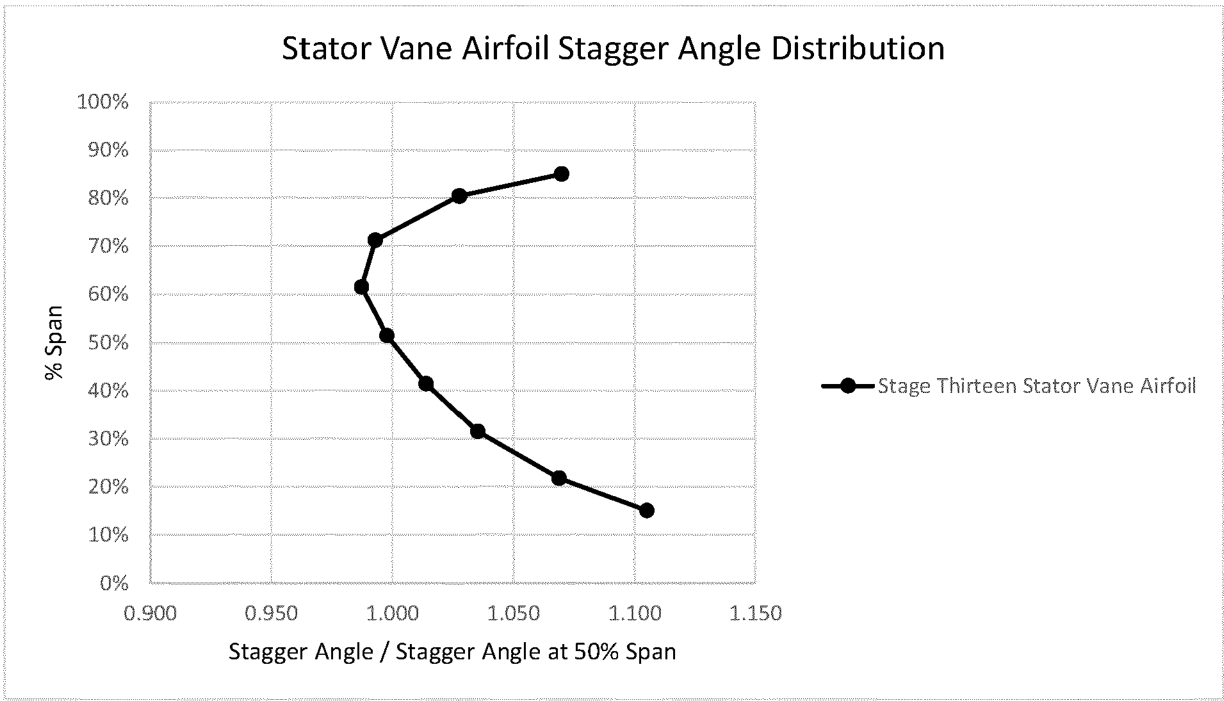

Stator Vane Airfoil Stagger Angle Distribution
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Span
0.900
0.950
1.000
1.050
1.100
1.150
Stagger Angle / Stagger Angle at 50% Span
Stage Thirteen Stator Vane Airfoil

FIG. 12

Europäisches Patentamt
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EUROPEAN SEARCH REPORT

Application Number
EP 22 16 8802

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X	EP 1 624 158 A2 (GEN ELECTRIC [US]) 8 February 2006 (2006-02-08)	1-12	
Y	* paragraphs [0015] - [0032]; figure 8; tables 1S-16S * -----	2	
Y	WO 2019/012102 A1 (SIEMENS AG [DE]) 17 January 2019 (2019-01-17) * page 1, paragraph 3 - page 3, paragraph 1; figures 4,5 * * page 10, paragraph 3 - page 13, paragraph 1 * -----	2	
X	US 2018/017076 A1 (DUTKA MICHAEL JAMES [US] ET AL) 18 January 2018 (2018-01-18) * paragraphs [0017] - [0023]; figures 2,3 * -----	1-12	TECHNICAL FIELDS SEARCHED (IPC)
Y	EP 1 508 669 A1 (SIEMENS AG [DE]) 23 February 2005 (2005-02-23) * paragraphs [0037] - [0043]; figures 1,4,5 * -----	2	F01D F04D
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Y	* paragraphs [0019] - [0024]; figure 8 * -----	2	
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The present search report has been drawn up for all claims

2

Place of search	Date of completion of the search	Examiner
Munich	8 August 2022	Teusch, Reinhold

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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08-08-2022

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- IN 202111019918 **[0001]**
- US 44521021 **[0001]**