configured to spray elastomeric materials, particularly at low pressure. For example, the particular configuration of the applicator body 210, the nozzle 212, the fluid passageway 236, the needle valve 214, and the air cap 216 as described above has been found to enable the applicator 200 to spray elastomeric materials at low pressures. In particular, the applicator 200 as described above has been found to spray elastomeric materials effectively when supplied to the fluid inlet 230 at a low pressure of less than about 250 psi, or more particularly a low pressure of less than about 60 psi, or more particularly still, a low pressure of less than about 30 psi. Accordingly, in some embodiments, the fluid inlet 230 may be adapted to receive a supply of elastomeric material at these low pressures.

[00179] The applicator 200 described above has been found to operate particularly well when spraying elastomeric materials. In particular, the applicator 200 has been found to spray silicone elastomeric materials with a transfer efficiency of up to about 95%, particularly when supplying the silicone elastomeric material at the low pressures described above, and when using the mobile coating system 10 described above.

[00180] The inventors believe that the increased transfer efficiency might be a result of enabling long chain polymers to untangle when ejecting the elastomeric material from the spray outlet at low pressures. In contrast, conventional spraying techniques have attempted to spray elastomeric materials at higher pressures, for example, based on the viscous nature of elastomeric materials.

[00181] The inventors believe that spraying at lower pressure might decrease particle velocity of the elastomeric materials, which might result in better adherence and better ability to shape the spray pattern so as to achieve higher transfer efficiencies and less wasted product. Lower pressure can also reduce shearing of the elastomeric material so as to provide sag resistance. In contrast, high pressures might shear the elastomeric material and cause the coating to sag or drip once applied to the insulator.

[00182] What has been described is merely illustrative of the application of the principles of the embodiments. Other arrangements and methods can be implemented by those skilled in the art without departing from the scope of the embodiments described herein.

8. The applicator of claim 7, wherein the fluid passageway has an annular section extending through the internal bore around the needle valve forwardly of the rod seal, and wherein the needle valve has a front portion aligned with the annular section, the front portion of the needle valve being of intermediate diameter compared to the tip portion and the middle portion of the needle valve.

9. The applicator of claim 8, wherein the nozzle has a nozzle bore for receiving the tip portion of the needle valve, the nozzle bore forming a portion of the annular section of the fluid passageway and being of reduced diameter compared to the middle section of the internal bore.

10. The applicator of claim 1, wherein the plurality of airflow outlets on the air cap include:

(a) a first set of fan control airflow outlets for directing a first portion of the fan control airflow along a first direction so as to meet at a first focus along the spray axis; and

(b) a second set of fan control airflow outlets for directing a second portion of the fan control airflow along a second direction so as to meet at a second focus along the spray axis.

11. The applicator of claim 10, wherein both the first focus and the second focus are located forwardly of the air cap.

12. The applicator of claim 11, wherein the air cap includes a base portion coupled to the front end of the applicator body and a set of horns projecting forwardly from the base portion, and wherein the first and second sets of fan control airflow outlets are located on the set of horns.

13. The applicator of claim 12, wherein the second set of fan control airflow outlets are located on the set of horns forwardly relative to the first set of fan control airflow outlets.

14. The applicator of claim 11, wherein the first focus and the second focus are conterminous.

15. The applicator of claim 1, wherein the at least one airflow inlet includes an atomizing airflow inlet for providing the atomizing airflow and a fan control airflow inlet for providing the fan control airflow.

16. The applicator of claim 1, further comprising a mounting plate for removably fastening the applicator body to a robot, the mounting plate having:

(a) an interior mounting surface configured to abut the applicator body; and

(b) a plurality of ports for receiving a plurality of supply lines, the supply lines including a fluid supply line for supplying the silicone elastomeric material to be sprayed and at least one air supply line for supplying the air for the atomizing airflow and the fan control airflow, wherein each port includes a embossment adjacent the interior mounting surface for receiving a barb of a corresponding supply conduit.

17. The applicator of claim 1, wherein at least one of the applicator body, the nozzle, the fluid passageway, the needle valve, and the air cap are configured to spray the silicone elastomeric material at a low pressure.

18. The applicator of claim 17, wherein the low pressure is less than about 250 psi.

19. The applicator of claim 17, wherein the low pressure is less than about 60 psi.

20. A method of applying a silicone elastomeric coating, the method comprising spraying a silicone elastomeric material onto an electrical insulator that is for use on high-voltage power transmission lines, the silicone elastomeric material being sprayed using an applicator comprising:

(a) an applicator body having a front end, a rear end, an internal bore, and a fluid inlet for receiving a supply of the silicone elastomeric material;

(b) a nozzle coupled to the front end of the applicator body, the nozzle having a discharge end with a spray outlet in fluid communication with the fluid inlet via a fluid passageway, the spray outlet being shaped to spray the silicone elastomeric material along a spray axis;

(c) a needle valve slidably mounted within the internal bore for movement along a longitudinal axis between a closed position for closing the fluid passageway and an open position for opening the fluid passageway so as to spray the silicone elastomeric material; and

(d) an air cap coupled to the front end of the applicator body adjacent the nozzle, the air cap having at least one airflow inlet for receiving a supply of air and a plurality of airflow outlets for providing:

(i) an atomizing airflow so as to atomize the silicone elastomeric material being sprayed; and

(ii) a fan control airflow so as to provide a selected spray pattern for the silicone elastomeric material being sprayed.

21. The method of claim 20, wherein the needle valve has a tip portion shaped to extend through the nozzle so as to be substantially flush with the discharge end of the nozzle when the needle valve is in the closed position.

22. The method of claim 20, further comprising supplying the silicone elastomeric material at a low pressure of less than about 250 psi.

38. The method of claim 20, wherein the applicator further comprises at least one supporting member for maintaining alignment of the needle valve within the internal bore.

39. The method of claim 20, wherein the applicator further comprises a mounting plate for removably fastening the applicator body to a robot, the mounting plate having:

(a) an interior mounting surface configured to abut the applicator body; and

(b) a plurality of ports for receiving a plurality of supply lines, the supply lines including a fluid supply line for supplying the silicone elastomeric material to be sprayed and at least one air supply line for supplying the air for the atomizing airflow and the fan control airflow, wherein each port includes a embossment adjacent the interior mounting surface for receiving a barb of a corresponding supply conduit.

configured to spray elastomeric materials, particularly at low pressure. For example, the particular configuration of the applicator body 210, the nozzle 212, the fluid passageway 236, the needle valve 214, and the air cap 216 as described above has been found to enable the applicator 200 to spray elastomeric materials at low pressures. In particular, the applicator 200 as described above has been found to spray elastomeric materials effectively when supplied to the fluid inlet 230 at a low pressure of less than about 250 psi, or more particularly a low pressure of less than about 60 psi, or more particularly still, a low pressure of less than about 30 psi. Accordingly, in some embodiments, the fluid inlet 230 may be adapted to receive a supply of elastomeric material at these low pressures.

[00179] The applicator 200 described above has been found to operate particularly well when spraying elastomeric materials. In particular, the applicator 200 has been found to spray silicone elastomeric materials with a transfer efficiency of up to about 95%, particularly when supplying the silicone elastomeric material at the low pressures described above, and when using the mobile coating system 10 described above.

[00180] The inventors believe that the increased transfer efficiency might be a result of enabling long chain polymers to untangle when ejecting the elastomeric material from the spray outlet at low pressures. In contrast, conventional spraying techniques have attempted to spray elastomeric materials at higher pressures, for example, based on the viscous nature of elastomeric materials.

[00181] The inventors believe that spraying at lower pressure might decrease particle velocity of the elastomeric materials, which might result in better adherence and better ability to shape the spray pattern so as to achieve higher transfer efficiencies and less wasted product. Lower pressure can also reduce shearing of the elastomeric material so as to provide sag resistance. In contrast, high pressures might shear the elastomeric material and cause the coating to sag or drip once applied to the insulator.

[00182] What has been described is merely illustrative of the application of the principles of the embodiments. Other arrangements and methods can be implemented by those skilled in the art without departing from the scope of the present invention, which is defined in the appended claims.

8. The applicator of claim 7, wherein the fluid passageway has an annular section extending through the internal bore around the needle valve forwardly of a rod seal, and wherein the needle valve has a front portion aligned with the annular section, the front portion of the needle valve being of intermediate diameter compared to the tip portion and the middle portion of the needle valve.

9. The applicator of claim 8, wherein the nozzle has a nozzle bore for receiving the tip portion of the needle valve, the nozzle bore forming a portion of the annular section of the fluid passageway and being of reduced diameter compared to the middle section of the internal bore.

10. The applicator of claim 1, wherein the plurality of airflow outlets on the air cap include:

(a) a first set of fan control airflow outlets for directing a first portion of the fan control airflow along a first direction so as to meet at a first focus along the spray axis; and

(b) a second set of fan control airflow outlets for directing a second portion of the fan control airflow along a second direction so as to meet at a second focus along the spray axis.

11. The applicator of claim 10, wherein both the first focus and the second focus are located forwardly of the air cap.

12. The applicator of claim 11, wherein the base portion of the air cap is coupled to the front end of the applicator body and the air cap includes a set of horns projecting forwardly from the base portion, and wherein the first and second sets of fan control airflow outlets are located on the set of horns.

13. The applicator of claim 12, wherein the second set of fan control airflow outlets are located on the set of horns forwardly relative to the first set of fan control airflow outlets.

14. The applicator of claim 11, wherein the first focus and the second focus are conterminous.

15. The applicator of claim 1, wherein the at least one airflow inlet includes an atomizing airflow inlet for providing the atomizing airflow and a fan control airflow inlet for providing the fan control airflow.

16. The applicator of claim 1, further comprising a mounting plate for removably fastening the applicator body to a robot, the mounting plate having:

(a) an interior mounting surface configured to abut the applicator body; and

(b) a plurality of ports for receiving a plurality of supply lines, the supply lines including a fluid supply line for supplying the silicone elastomeric material to be sprayed and at least one air supply line for supplying the air for the atomizing airflow and the fan control airflow, wherein each port includes an embossment adjacent the interior mounting surface for receiving a barb of a corresponding supply conduit.

17. The applicator of claim 1, wherein at least one of the applicator body, the nozzle, the fluid passageway, the needle valve, and the air cap are configured to spray the silicone elastomeric material at a low pressure.

18. The applicator of claim 17, wherein the low pressure is less than about 250 psi.

19. The applicator of claim 17, wherein the low pressure is less than about 60 psi.

20. A method of applying a silicone elastomeric coating, the method comprising spraying the silicone elastomeric material onto an electrical insulator that is for use on high-voltage power transmission lines, the silicone elastomeric material being sprayed using an applicator comprising:

(a) an applicator body having a front end, a rear end, an internal bore, and a fluid inlet for receiving a supply of the silicone elastomeric material;

(b) a nozzle coupled to the front end of the applicator body, the nozzle having a discharge end with a spray outlet in fluid communication with the fluid inlet via a fluid passageway, the spray outlet being shaped to spray the silicone elastomeric material along a spray axis;

(c) a needle valve slidably mounted within the internal bore for movement along a longitudinal axis between a closed position for closing the fluid passageway and an open position for opening the fluid passageway so as to spray the silicone elastomeric material; and

(d) an air cap coupled to the front end of the applicator body adjacent the nozzle, the air cap having at least one airflow inlet for receiving a supply of air and a plurality of airflow outlets for providing:

(i) an atomizing airflow so as to atomize the silicone elastomeric material being sprayed; and

(ii) a fan control airflow so as to provide a selected spray pattern for the silicone elastomeric material being sprayed.

21. The method of claim 20, wherein the needle valve has a tip portion shaped to extend through the nozzle so as to be substantially flush with the discharge end of the nozzle when the needle valve is in the closed position.

22. The method of claim 20, further comprising supplying the silicone elastomeric material at a low pressure of less than about 250 psi.

38. The method of claim 20, wherein the applicator further comprises at least one supporting member for maintaining alignment of the needle valve within the internal bore.

39. The method of claim 20, wherein the applicator further comprises a mounting plate for removably fastening the applicator body to a robot, the mounting plate having:

(a) an interior mounting surface configured to abut the applicator body; and

(b) a plurality of ports for receiving a plurality of supply lines, the supply lines including a fluid supply line for supplying the silicone elastomeric material to be sprayed and at least one air supply line for supplying the air for the atomizing airflow and the fan control airflow, wherein each port includes an embossment adjacent the interior mounting surface for receiving a barb of a corresponding supply conduit.