CLAIMS

1. A geothermal well system, comprising

an expansion spool assembly having a lower portion and an upper portion,

wherein the lower portion and upper portion form a permanently fixed unit,

wherein the upper portion comprises a flange configured to couple to a production valve; and

wherein the lower portion comprises a lip configured to couple to a surface casing of the geothermal well system.

2. The geothermal well system of claim 1, wherein the expansion spool assembly comprises at least one side port.

3. The geothermal well system of claim 1, wherein the at least one side port is permanently fixed to the upper portion and the lower portion.

4. The geothermal well system of claim 3, wherein the at least one side port is welded to the upper portion and the lower portion.

5. The geothermal well system of claim 1, wherein the upper and lower portions are cast together as a single unit.

6. The geothermal well system of claim 1, wherein the upper and lower portions are welded to one another.

7. The geothermal well system of claim 1, wherein the lower portion comprises a pressure testing port configured to receive a pressurized fluid flow to test a weld coupling the lip to the surface casing.

8. The geothermal well system of claim 7, wherein the lower portion comprises a pressure testing seal disposed on a side of the pressure testing port axially opposite the lip.

9. The geothermal well system of claim 1, wherein the upper portion comprises a first bore, the lower portion comprises a second bore, and the first and second bores are fluidly coupled to one another and are configured to pass a tool.

10. A system, comprising:

a geothermal expansion spool assembly, comprising:

an upper portion adapted to directly couple to a production valve; and

a lower portion adapted to surround and engage with a surface casing of a geothermal well, wherein the upper and lower portion are a single piece.

11. The system of claim 10, wherein the upper portion and the lower portion are welded to one another.

12. The system of claim 10, wherein the upper portion comprises a first bore, the lower portion comprises a second bore, the first and second bores are fluidly coupled to one another, and the first and second bores are configured to flow a fluid between the geothermal well and the production valve.

13. The system of claim 12, wherein the geothermal expansion spool assembly comprises a side port in fluid communication with the first bore and the second bore.

14. The system of claim 13, wherein the side port comprises a valve configured to regulate fluid flow through the side port.

15. The system of claim 10, wherein the upper portion comprises a flange mechanically coupled to the production valve.

16. The system of claim 10, wherein the lower portion comprises an axial end welded to the surface casing.

17. A method, comprising:

landing a surface casing of a geothermal well system in a surface of the earth;

coupling a one-piece geothermal expansion spool directly to the surface casing; and

coupling a production valve directly to the one-piece geothermal expansion spool.

18. The method of claim 17, wherein coupling the one-piece expansion spool directly to the surface casing comprises welding an axial lip of the geothermal expansion spool to an outer surface of the surface casing.

19. The method of claim 18, comprising testing a seal of a weld between the axial lip of the geothermal expansion spool and the outer surface of the surface casing by pressurizing a cavity between the weld, the outer surface of the surface casing, the geothermal expansion spool, and a pressure testing seal of the geothermal expansion spool.

20. The method of claim 17, wherein coupling the production valve directly to the one-piece geothermal expansion spool comprises bolting the production valve to a flange of the geothermal expansion spool.

CLAIMS

1. A geothermal well system, comprising

an expansion spool assembly having a lower portion and an upper portion, wherein the lower portion and upper portion form a permanently fixed unit,

wherein the upper portion comprises a flange configured to couple to a production valve;

wherein the lower portion comprises a lip configured to couple to a surface casing of the geothermal well system; and

wherein the lower portion comprises a pressure testing port configured to receive a pressurized fluid flow to test a weld coupling the lip to the surface casing.

2. The geothermal well system of claim 1, wherein the expansion spool assembly comprises at least one side port.

3. The geothermal well system of claim 2, wherein the at least one side port is permanently fixed to the upper portion and the lower portion.

4. The geothermal well system of claim 3, wherein the at least one side port is welded to the upper portion and the lower portion.

5. The geothermal well system of claim 1, wherein the upper and lower portions are cast together as a single unit.

6. The geothermal well system of claim 1, wherein the upper and lower portions are welded to one another.

7. The geothermal well system of claim 1, wherein the lower portion comprises a pressure testing seal disposed on a side of the pressure testing port axially opposite the lip.

8. The geothermal well system of claim 1, wherein the upper portion comprises a first bore, the lower portion comprises a second bore, and the first and second bores are fluidly coupled to one another and are configured to pass a tool.

9. A system, comprising:

a geothermal expansion spool assembly, comprising:

an upper portion adapted to couple to a production valve; and

a lower portion adapted to surround and directly engage with a surface casing of a geothermal well, wherein the upper and lower portion are a single piece; and

wherein the lower portion comprises an axial end welded to the surface casing.

10. The system of claim 9, wherein the upper portion and the lower portion are welded to one another.

11. The system of claim 9, wherein the upper portion comprises a first bore, the lower portion comprises a second bore, the first and second bores are fluidly coupled to one another, and the first and second bores are configured to flow a fluid between the geothermal well and the production valve.

12. The system of claim 11, wherein the geothermal expansion spool assembly comprises a side port in fluid communication with the first bore and the second bore.

13. The system of claim 12, wherein the side port comprises a valve configured to regulate fluid flow through the side port.

14. The system of claim 9, wherein the upper portion comprises a flange mechanically coupled to the production valve.

15. A method, comprising: landing a surface casing of a geothermal well system in a surface of the earth; coupling a one-piece geothermal expansion spool directly to the surface casing; and

coupling a production valve directly to the one-piece geothermal expansion spool; and

wherein coupling the one-piece expansion spool directly to the surface casing comprises welding an axial lip of the geothermal expansion spool to an outer surface of the surface casing.

16. The method of claim 15, comprising testing a seal of a weld between the axial lip of the geothermal expansion spool and the outer surface of the surface casing by pressurizing a cavity between the weld, the outer surface of the surface casing, the geothermal expansion spool, and a pressure testing seal of the geothermal expansion spool.

17. The method of claim 15, wherein coupling the production valve directly to the one-piece geothermal expansion spool comprises bolting the production valve to a flange of the geothermal expansion spool.