Claims

What is claimed is:

1. A method of treating a valve seat having a bore, a seat face, and a chamfered edge joining the bore and seat face, the method comprising:

a. forming a counter bore from the seat face into the bore that defines a recess; and

b. directing a metal coating spray stream at chamfered edge, so that a metal coating is applied on the chamfered edge, the seat face, and into the recess.

2. The method of claim 1, further comprising moving the stream between an outer rim of the valve seat to the bore to apply the metal coating to the seat face.

3. The method of claim 1, further comprising directing the metal coating spray stream at about the chamfered edge midpoint so that a portion of the coating deposited by the spray stream flows from the midpoint into the recess and another portion of the coating deposited by the spray stream flows from the midpoint to the seat face.

4. The method of claim 3, further comprising coating along a region extending past the chamfered edge.

5. The method of claim 1, wherein the metal coating spray stream comprises a thermal spray process.

6. The method of claim 1, further comprising forming the metal coating spray stream in a metal spray gun and orienting the spray gun with a robotic system.

7. The method of claim 1, further comprising angling the metal coating spray stream oblique to a planar surface to apply a coating to the planar surface.

8. The method of claim 1, further comprising applying the metal coating spray stream to a valve gate, providing the valve gate and valve seat into a valve, disposing the valve within a production tree, and actuating the valve gate to shear a wireline between the valve gate and valve seat.

9. A method of treating a valve comprising:

directing a metal coating spray stream along a line substantially normal to a first location on a curved surface of the valve; and

contacting the first location on the curved surface of the valve with the metal coating spray stream, so that a metal coating is deposited on the valve.

10. A valve comprising:

a valve body;

an axial passage formed through the body;

a valve gate having an aperture selectively registerable with the passage;

an annular valve seat having a lateral side in contact with the valve gate and a bore registered with the passage;

a chamfered edge on the valve seat spanning from a seat face into the bore; and

a metal coating on the seat side, the chamfered surface, and along the bore wall past the chamfered edge.

11. The valve of claim 10 further comprising a counter bore extending from the seat face coaxially into the bore to define a recess.

12. The valve of claim 11, further comprising coating provided in the recess.

13. The valve of claim 10, wherein the coating is substantially uniform in thickness along the seat face, over the chamfered edge, and in the bore.

14. The valve of claim 10, wherein the valve member is selected from the list consisting of a gate, a ball, a globe, and a needle.

CLAIMS

1. A method of treating a valve seat having a bore, a seat face, and a chamfered edge connecting the bore and seat face, the method comprising:

a forming a counter bore from the seat face into the bore to define a recess in the chamfered edge; and

b directing a metal coating spray stream at the chamfered edge, so that a metal coating is applied on the chamfered edge, the seat face, and into the recess.

2. A method as claimed in claim 1, further comprising moving the stream between an outer rim of the valve seat to the bore to apply the metal coating to the seat face.

3. A method as claimed in claim 1 or 2, further comprising directing the metal coating spray stream at about the chamfered edge midpoint so that a portion of the coating deposited by the spray stream flows from the midpoint into the recess and another portion of the coating deposited by the spray stream flows from the midpoint to the seat face.

4. A method as claimed in claim 3, further comprising coating along a region extending past the chamfered edge.

5. A method as claimed in any one of the proceeding claims, wherein the metal coating spray stream comprises a thermal spray process.

6. A method as claimed in any one of the proceeding claims, further comprising forming the metal coating spray stream in a metal spray gun and orienting the spray gun with a robotic system.

7. A method as claimed in any one of the proceeding claims, further comprising angling the metal coating spray stream oblique to a planar surface to apply a coating to the planar surface.

8. A method as claimed in any one of the proceeding claims, further comprising applying the metal coating spray stream to a valve gate, inserting the valve gate and valve seat into a valve, disposing the valve within a production tree, and actuating the valve gate to shear a wireline between the valve gate and valve seat.

9. A method of treating a valve comprising:

directing a metal coating spray stream along a line substantially normal to a first location on a curved chamfered surface of the valve; and

contacting the first location on the curved surface of the valve with the metal coating spray stream, so that a metal coating is deposited on the valve.

10. A valve comprising:

a valve body;

an axial passage formed through the body;

a valve gate having an aperture selectively registerable with the passage;

an annular valve seat having a lateral side in contact with the valve gate and a bore registered with the passage;

a chamfered edge on the valve seat spanning from a seat face into the bore;

a counter bore from the seat face into the bore defining a recess in the chamfered edge and

a metal coating on the seat side, the chamfered edge, the recess, and along the bore wall past the chamfered edge.

11. A valve as claimed in claim 10, wherein the coating is substantially uniform in thickness along the seat face, over the chamfered edge, and in the bore.

12. A method substantially as hereinbefore described herein with reference to and as illustrated in any one of Figures 7 to 9 of the drawings.

13 A valve substantially as hereinbefore described herein with reference to and as illustrated in any one of Figures 7 to 9 of the drawings.