WHAT IS CLAIMED IS:

1. An insertion apparatus for use with a rotary machine, the rotary machine defining an annular cavity extending along a circumference, said insertion apparatus comprising:

an insertion end positionable within the annular cavity and configured to travel through the annular cavity;

a steering end opposite said insertion end;

a body extending from said insertion end to said steering end and sized to fit within the annular cavity, wherein said body has a first material having a first stiffness and is flexible such that the body curves along the circumference as said insertion end travels through the annular cavity;

a stiffener coupled to said body and extending from said steering end to said insertion end, wherein said stiffener has a second material having a second stiffness greater than the first stiffness and is configured to resist bending of said body while permitting the body to flex along the annular cavity;

at least one maintenance device coupled to said insertion end of said insertion apparatus; and

a displacement mechanism configured to adjust a position of said at least one maintenance device relative to said body.

2. The insertion apparatus in accordance with Claim 1, wherein said body comprises a first surface and a second surface opposite said first surface, said first surface and said second surface extending from said steering end to said insertion end, said body having a thickness defined between said first surface and said second surface, wherein the thickness is less than a width of said first surface and said second surface, and wherein said body is configured to curve in a direction perpendicular to said first surface and said second surface.

3. The insertion apparatus in accordance with Claim 2, wherein the thickness of said body is less than 0.02 inches.

4. The insertion apparatus in accordance with Claim 1, wherein said

stiffener comprises at least one of a cable and a hollow tube.

5. The insertion apparatus in accordance with Claim 1, wherein said displacement mechanism includes an inflatable bladder and a flexible tube configured to deliver a fluid to said inflatable bladder, wherein said inflatable bladder is configured to switch between a deflated position and an at least partially inflated position to adjust the position of said at least one maintenance device relative to said body.

6. The insertion apparatus in accordance with Claim 1, wherein said at least one maintenance device is pivotably coupled to said insertion end, and wherein said displacement mechanism configured to pivot said at least one maintenance device about said insertion end.

7. The insertion apparatus in accordance with Claim 1, wherein said body is configured to convey power and communication signals for said at least one maintenance device.

8. The insertion apparatus in accordance with Claim 1, wherein said at least one maintenance device comprises at least one of the following: an optical sensor, a mechanical sensor, a thermal sensor, a magnetic sensor, an acoustic sensor, and an electromagnetic sensor.

9. A system for use with a rotary machine, the rotary machine defining an annular cavity extending along a circumference, said system comprising:

an insertion apparatus in accordance with any one of Claim 1 to Claim 8; and

a guide tube positionable in a port of the rotary machine and configured to define a path for said insertion apparatus into the annular cavity, wherein said guide tube is curved to form an at least partially helical path around objects and is sized to extend adjacent an opening into the annular cavity.

10. The system in accordance with Claim 9, wherein said guide tube includes a substantially rigid body having a first stiffness and a pliable tip having a second stiffness less than the first stiffness.

11. The system in accordance with Claim 9, wherein said guide tube defines an interior cavity sized to receive said insertion apparatus.

12. The system in accordance with Claim 9, wherein said guide tube is coupled to the port and is sized and shaped to extend from the port to the annular cavity, said guide tube configured to guide said insertion apparatus through the port and into the annular cavity.

13. The system in accordance with Claim 9, wherein said guide tube includes a plurality of positionable segments.

14. A method of inspecting a rotary machine, the rotary machine defining an annular cavity extending along a circumference, said method comprising:

positioning a guide tube in a port of the rotary machine to define a path for an insertion apparatus into the annular cavity, wherein the guide tube is curved to form an at least partially helical shape;

positioning an insertion apparatus in accordance with any one of the Claim 1 to Claim 8 along the path and into the annular cavity,;

directing an insertion end of the insertion apparatus through the annular cavity; and

positioning at least one maintenance device of the insertion apparatus adjacent a portion of the rotary machine using a displacement mechanism of the insertion apparatus.

15. The method in accordance with Claim 14 further comprising detecting a characteristic of an interior portion of the rotary machine using the at least one maintenance device.

16. The method in accordance with Claim 14, wherein said guide tube includes a substantially rigid body having a first stiffness and a pliable tip having a second stiffness less than the first stiffness, said method further comprising deforming the pliable tip to guide the insertion apparatus into the annular cavity.

17. The method in accordance with Claim 14, wherein positioning the at least one maintenance device of the insertion apparatus adjacent a portion of the rotary machine using the displacement mechanism comprises pivoting the at least one maintenance device about the insertion end of the insertion apparatus.

18. The method in accordance with Claim 14, wherein positioning the at least one maintenance device of the insertion apparatus adjacent a portion of the rotary machine using the displacement mechanism comprises inflating a bladder coupled to the at least one maintenance device.