

CLAIMS:

1. A testing system comprising:
 - a rotary valve comprising a plurality of valve positions;
 - a process stream having a sample collection apparatus therein, the sample collection apparatus being located at a first position in the plurality of valve positions;
 - a measurement cell, the measurement cell being located at a second position in the plurality of valve positions;
 - a motor, for rotating the rotary valve between the plurality of positions;
 - a piston, for directing material through the rotary valve;
 - a sensor, for performing a measurement on a sample in the measurement cell.
2. The testing system of claim 1 wherein the motor comprises a stepper motor.
3. The testing system of claim 1 wherein the sensor comprises a photometer and associated light source.
4. The testing system of claim 1 further comprising reagent in a reagent bottle connected to a third position in the plurality of valve positions.
5. The testing system of claim 4 wherein the piston obtains the sample from the sample collection apparatus and then obtains the reagent from the reagent bottle before providing both the reagent and the sample to the measurement cell.
6. The testing system of claim 5 wherein providing the reagent and the sample to the measurement cell mixes the reagent with the sample to form a mixture.
7. The testing system of claim 6 wherein after the sensor performs the measurement on the mixture, the piston obtains the mixture from the measurement cell.

8. The testing system of claim 7 wherein the piston exhausts the mixture to a waste collection vessel attached to a fourth position in the plurality of valve positions.
9. The testing system of claim 1 further comprising a port for attaching a sample container at a third position in the plurality of positions.
10. The testing system of claim 1 further comprising calibration fluid in a calibration fluid bottle at a third position in the plurality of positions.
11. The testing system of claim 1 further comprising a cleaning fluid in a cleaning fluid bottle at a third position in the plurality of positions.
12. The testing system of claim 1 further comprising multiple reagents, each of the reagents being in a separate reagent bottle connected to a separate position in the plurality of positions.
13. The testing system of claim 1 further comprising a homing sensor for detecting when the rotary valve is at a specific position in the plurality of positions.
14. The testing system of claim 13 wherein the specific position is the first position.
15. A method of performing automated testing, the method comprising:
 - providing a testing system comprising:
 - a rotary valve comprising a plurality of valve positions;
 - a process stream having a sample collection apparatus therein, the sample collection apparatus being located at a first position in the plurality of valve positions;
 - a measurement cell including an associated sensor, the measurement cell being located at a second position in the plurality of valve positions;
 - and
 - a reagent located at a third position in the plurality of valve positions;

automatically rotating the rotary valve to the first position and obtaining a sample;

automatically rotating the rotary valve to the third position and obtaining a reagent that is mixed with the sample to form a mixture;

automatically rotating the rotary valve to the second position and exhausting the mixture to the measurement cell;

using the sensor to perform a measurement on the mixture;

returning the mixture from the measurement cell; and

automatically rotating the rotary valve to a fourth position and disposing of the mixture.

16. The method of claim 15 wherein the sensor comprises a photometer and associated light source.

17. The method claim 15 wherein the reagent and the sample are mixed via shear of drawing the reagent into the sample.

18. The method of claim 17 wherein the mixture if further mixed by shear of exhausting the mixture to the measurement cell.