What Is Claimed Is:

1. A system to detect coking comprising:

at least one component of refinery equipment;

a fiber optic assembly including at least one optical fiber operably coupled with the component, the fiber optic assembly further including a light source to transmit light having a known light parameter through the optical fiber and a receiver to receive the light from the optical fiber;

a processor in communication with the fiber optic assembly to identify a shift in the light parameter received by the receiver, the shift corresponding to an operating characteristic of the component.

2. The system of Claim 1, wherein the light source and the receiver are disposed at opposite ends of the optical fiber.

3. The system of Claim 1, wherein the light source and the receiver are located at a similar end of the optical fiber.

4. The system of Claim 1, wherein at least a portion of the optical fiber is disposed within the component.

5. The system of Claim 1, wherein at least a portion of the optical fiber is disposed along a wall of the component.

6. The system according to anyone of the preceding claims, wherein the optical fiber extends continuously between the light source and the receiver.

7. The system according to anyone of the preceding claims, wherein the optical fiber has a gap defined therein between the light source and the receiver, the gap being disposed within a portion of the component.

8. The system of Claim 7, wherein the optical fiber includes a first optical fiber segment having a distal end and a second optical fiber segment having a proximal end, the distal end of the first optical fiber segment being aligned with and spaced from the proximal

~~end of the second optical fiber segment in a fixed spaced relationship to define the gap~~ therebetween.

9. The system according to anyone of the preceding claims, wherein said fiber optic assembly includes a plurality of optical fibers in communication with the light source and the receiver.

10. The system of Claim 9, wherein the plurality of optical fibers are operatively coupled with one of a plurality of portions of the component and a plurality of components of the refinery equipment.

11. The system according to anyone of the preceding claims, wherein the parameter includes a measure of one of wavelength, intensity, phase, and polarization.

12. The system of Claim 1, wherein the parameter is a measure of Raman backscattering.

13. The system of Claim 1, wherein the parameter is a measure of fluorescence backscattering.

14. The system of Claim 1, wherein the parameter is a measure of wavelength.

15. The system according to anyone of the preceding claims, wherein the operating characteristic includes a measure of at least one of temperature, opacity, density, composition and mechanical strain.

16. The system of Claim 15, wherein the parameter received by the receiver is wavelength and the operating characteristic is temperature.

17. The system of Claim 15, wherein the parameter received by the receiver is intensity and the operating characteristic is the opacity of the fluid within the component.

18. The system of Claim 15, wherein the parameter received by the receiver is intensity and the operating characteristic is density of particulate within the component.

19. The system according to anyone of the preceding claims, wherein the component includes at least one of a vacuum distillation tower, a vacuum distillation tower feed ~~furnace, an atmospheric distillation tower, an atmospheric distillation tower feed furnace, a~~

transfer line, a coker feed furnace, a wash bed, a bottom sump and bottoms liquid outlet of a vacuum distillation tower, and a layer of packing.

20. The system according to anyone of the preceding claims, further comprising a display coupled with the processor to display the operating characteristic of the component.

21. The system according to anyone of the preceding claims, further comprising a controller coupled with the processor to initiate an operation in response to the shift in the parameter received by the processor.

22. The system of Claim 21, wherein the operation includes rapid wash cycles.

23. The system of Claim 21, wherein the operation includes a reduction in operating temperature of the component.

24. The system of Claim 21, wherein the operation includes adjusting heat fluxes in the component.

25. The system of Claim 21, wherein the operation includes introducing coil injection steam pulsing in the component.

26. The system of claim 21, wherein the operation includes removing deposits with high pressure jets.

27. The system of claim 21, wherein the operation includes washing with a solvent, wherein the solvent is selected for enhanced solvency of deposited material.

28. The system of claim 21, wherein the operation includes changing spatial distribution of wash fluid.

29. A method of detecting coking utilizing the system according to anyone of the preceding claims comprising:

providing the fiber optic assembly including at least one optical fiber, the fiber optic assembly further including the light source to transmit light having a known parameter through the optical fiber and the receiver to receive the light from the optical fiber;

operably coupling the fiber optic assembly with the least one component of refinery equipment;

identifying a shift in the parameter received by the receiver; and

determining a corresponding operating characteristic of the component.

30. The method of Claim 29, further comprising:

providing the controller coupled with the processor;

initiating the operation in response to the shift in the parameter received by the processor.

What Is Claimed Is:

1. A method of detecting coking comprising:

providing a fiber optic assembly including at least one optical fiber, the fiber optic assembly further including a light source to transmit light having a known parameter through the optical fiber and a receiver to receive the light from the optical fiber;

operably coupling the fiber optic assembly with at least one component of refinery equipment;

identifying a shift in the parameter received by the receiver; determining a corresponding operating characteristic of the component;

providing a controller coupled with a processor; and

initiating an operation in response to the shift in the parameter received by the processor, wherein the operation includes introducing coil injection steam pulsing in the component.

2. The method of claim 1, wherein the operation includes rapid wash cycles.

3. The method of claim 1, wherein the operation includes a reduction in operating temperature of the component.

4. The method of claim 1, wherein the operation includes adjusting heat fluxes in the component.

5. The method of claim 1, wherein the operation includes removing deposits with high pressure jets.

6. The method of claim 1, wherein the operation includes washing with a solvent selected for enhanced solvency of deposited material.

7. The method of claim 1, wherein the operation includes changing distribution of wash fluid.

8. The method of claim 1, wherein the parameter includes a measure of one of wavelength, intensity, phase, and polarization.

9. The method of claim 1, wherein the parameter is a measure of Raman backscattering.

10. The method of claim 1, wherein the parameter is a measure of fluorescence backscattering.

11. The method of claim 1, wherein the parameter is a measure of wavelength.

12. The method of claim 1, wherein the operating characteristic includes a measure of at least one of temperature, opacity, density, composition and mechanical strain.

13. The method of claim 12, wherein the parameter received by the receiver is wavelength and the operating characteristic is temperature.

14. The method of claim 12, wherein the parameter received by the receiver is intensity and the operating characteristic is the opacity of the fluid within the component.

15. The method of claim 12, wherein the parameter received by the receiver is intensity and the operating characteristic is density of particulate within the component.

16. The method of claim 1, wherein the component includes a vacuum distillation tower.

17. The method of claim 1, wherein the component includes a vacuum distillation tower feed furnace.

18. The method of claim 1, wherein the component includes an atmospheric distillation tower.

19. The method of claim 1, wherein the component includes an atmospheric distillation tower feed furnace.

20. The method of claim 1, wherein the component includes a transfer line.

21. The method of claim 1, wherein the component includes a coker feed furnace.

22. The method of claim 1, wherein the component includes a wash bed.

23. The method of claim 1, wherein the component includes a bottom sump and bottoms liquid outlet of a vacuum distillation tower.

24. The method of claim 1, wherein the component includes a layer of packing.