What Is Claimed Is:

1. A water quality monitoring system evaluating the quality of steam used in a steam turbine system including steam turbines that produce mechanical energy from steam generated by a steam generation source, comprising:

a sampling pipe configured to acquire steam that passes a bleed pipe that bleeds steam from a low pressure turbine to which steam of low pressure is supplied from among the steam turbines;

a steam inlet tank into which the steam acquired by the sampling pipe flows;

a water quality measurement apparatus configured to measure a water quality of condensed water condensed from the steam flowed in the steam inlet tank;

a water quality diagnosis apparatus configured to diagnose the water quality of the condensed water using a result of the measurement of the water quality measurement apparatus; and

an introduction section configured to introduce a test piece to be exposed to the steam to be flowed in the steam inlet tank; wherein

the steam inlet tank is installed at a location higher in height where the condensed water is boosted to atmospheric pressure due to the head difference with respect to the water quality measurement apparatus such that the water quality measurement apparatus measures the water quality of the condensed water boosted to an atmospheric

pressure utilizing a head difference.

2. The water quality monitoring system according to claim 1, further comprising:

a condensing apparatus having a cooling section for condensing the steam having flowed into the steam inlet tank.

3. The water quality monitoring system according to claim 1, wherein

the introduction section is installed in a branch pipe branched from the sampling pipe and having a valve and is disposed in parallel to the steam inlet tank.

4. The water quality monitoring system according to claim 1, further comprising:

a U-shape pipe provided between the steam inlet tank and the water quality measurement apparatus.

5. The water quality monitoring system according to claim 1, further comprising:

a pump provided between the steam inlet tank and the water quality measurement apparatus and configured to boost the condensed water.

6. The water quality monitoring system according to claim 1, wherein

the sampling pipe is connected to a feed water heater.

7. The water quality monitoring system according to claim 1, wherein

the sampling pipe is connected to the bleed pipe.

8. The water quality monitoring system according to claim 1, wherein

the water quality diagnosis apparatus includes a display section that issues a warning notification when it is diagnosed that the water quality of the condensed water is deteriorated from a predetermined value.

9. The water quality monitoring system according to claim 1, wherein

the water quality diagnosis apparatus includes a data collection section that stores a result of the measurement of the water quality measurement apparatus and water quality data of the condensed water.

10. The water quality monitoring system according to claim 1, further comprising:

a turbine operation controlling section configured to adjust operation of the steam turbines based on a result of the water quality diagnosis by the water quality diagnosis apparatus.

11. The water quality monitoring system according to claim 1, wherein

the water quality diagnosis apparatus includes a working stress evaluation section configured to evaluate working stress applied to the steam turbines.

12. The water quality monitoring system according to claim 1, wherein

the water quality measurement apparatus measures one or more of pH, a dissolved oxygen amount, a temperature, electric conductivity, a cation concentration, a corrosion potential and an oxidation-reduction potential of the condensed water.

13. A steam turbine system, comprising:

the water quality monitoring system according to any one of claims 1 to 12.

14. A water quality monitoring method evaluating a quality of steam to be used in a steam turbine system including steam turbines that produce mechanical energy from steam generated by a steam generation source, comprising:

an acquisition step of acquiring steam that passes a bleed pipe that bleeds steam from a low pressure turbine to which steam of low pressure is supplied from among the steam turbines;

a generation step of causing the steam acquired at the acquisition step to flow into a steam inlet tank and then condensing the steam to generate condensed water;

a water quality measurement step of measuring the water quality of the condensed water generated by the generation step;

a water quality diagnosis step of diagnosing the water quality of the condensed water using a result of the measurement by the water quality measurement step;and

an exposure step exposing a test piece to the steam acquired by the acquisition step, wherein

at the generation step, the condensed water is generated at a location higher in height where the condensed water is boosted to atmospheric pressure due to a head difference with respect to a water quality measurement apparatus configured to measure the water quality of the condensed water such that the water quality measurement

apparatus measures the water quality of the condensed water boosted to an atmospheric pressure utilizing the head difference.

15. The water quality monitoring method according to claim 14, wherein,

the generation step generates the condensed water by cooling the steam using a cooling section.

16. The water quality monitoring method according to claim 14, wherein

the exposure step places the test piece into a branch pipe branched from a pipe for generating the steam at the generation step and including a valve.

17. The water quality monitoring method according to claim 14, further comprising:

an evaluation step of evaluating one or more of a crack growth characteristic, a crevice corrosion characteristic and stress corrosion cracking using the test piece generated at the exposure step.

18. The water quality monitoring method according to claim 14, wherein

for the test piece to be used at the exposure step, a material sensitized more than a used material that is used in the steam turbines is used.

19. The water quality monitoring method according to claim 14, wherein

the water quality measurement step measures one or more of the pH, dissolved oxygen amount, temperature,

electric conductivity, cation concentration, corrosion potential and oxidation-reduction potential of the condensed water.

20. The water quality monitoring method according to claim 14, further comprising:

a displaying step of issuing a warning notification when it is diagnosed by the water quality diagnosis step that the water quality of the condensed water is deteriorated with respect to a predetermined value.