WHAT IS CLAIMED IS:

1. An apparatus for recycling sulfuric acid- hydrogen peroxide solution, comprising:

a recycle heater having a closed tank body and at least one set of heat exchange tubes provided inside of the recycle heater, the closed tank body connected to a first transfer tube for receiving the sulfuric acid- hydrogen peroxide solution, the solution in the first transfer tube preheated through the heat exchange tube and further flowing into a second transfer tube for discharging;

a reaction tank connected to the second transfer tube, at least one reacting agent supply tube, a gas discharge tube and a third transfer tube, the solution flowing into the reaction tank through the second transfer tube and reacting with an reacting agent from the reacting agent supply tube, a reaction product generated and heated after reaction in the reaction tank configured to be discharged through the third transfer tube;

a heat storage tank connected to the third transfer tube, a fourth transfer tube and a hydraulic pump, the reaction product flowing into the heat storage tank from the third transfer tube, the reaction product in the heat storage tank being pumped by the hydraulic pump to the heat exchange tube of the recycle heater; and

a liquid storage tank connected to a fifth transfer tube and a discharge tube, the fifth transfer tube connected to an outlet of the heat exchange tube for performing heat exchange to cool down the reaction product flowing into the storage tank, the cooled down reaction product being collected and then discharged through the discharge tube, wherein the reaction product in the liquid storage tank is not continuously but intermittently supplied to the storage tank.

2. The apparatus as claimed in claim 1, wherein the reaction tank comprises at least one set of heat exchange tubes internally configured, the storage tank is connected to a sixth transfer tube and a seventh transfer tube, the sixth transfer

tube is connected to an inlet of the heat exchange tube of the reaction tank, and the seventh transfer tube is connected to an outlet of the heat exchange tube of the reaction tank.

3. The apparatus as claimed in claim 1 or 2, wherein the tank body of the recycle heater comprises a plurality of partition plates internally configured for forming a plurality of separate regions, the separate regions are intercommunicated and form an extended heating channel to prolong a flowing path, and the heat exchange tube is provided in the extended heating channel.

4. The apparatus as claimed in claim 1 or 2, wherein the reaction tank has a shape of long closed column, and a ratio of gas to liquid in the reaction tank is larger than 1.5.

WHAT IS CLAIMED IS:

1. An apparatus for recycling sulfuric acid- hydrogen peroxide solution, comprising:

a recycle heater having a closed tank body and at least one set of heat exchange tubes provided inside of the recycle heater, the closed tank body connected to a first transfer tube for receiving the sulfuric acid- hydrogen peroxide solution, the solution in the first transfer tube preheated through the heat exchange tube and further flowing into a second transfer tube for discharging;

a reaction tank connected to the second transfer tube, at least one reacting agent supply tube, a gas discharge tube and a third transfer tube, the solution flowing into the reaction tank through the second transfer tube and reacting with an reacting agent from the reacting agent supply tube, a reaction product generated and heated after reaction in the reaction tank configured to be discharged through the third transfer tube;

a heat storage tank connected to the third transfer tube, a fourth transfer tube and a hydraulic pump, the reaction product flowing into the heat storage tank from the third transfer tube, the reaction product in the heat storage tank being pumped by the hydraulic pump to the heat exchange tube of the recycle heater; and

a liquid storage tank connected to a fifth transfer tube and a discharge tube, the fifth transfer tube connected to an outlet of the heat exchange tube for performing heat exchange to cool down the reaction product flowing into the storage tank, the cooled down reaction product being collected and then discharged through the discharge tube, wherein the reaction product in the liquid storage tank is not continuously but intermittently supplied to the storage tank.

2. The apparatus as claimed in claim 1, wherein the reaction tank comprises at least one set of heat exchange tubes internally configured, the storage tank is connected to a sixth transfer tube and a seventh transfer tube, the sixth transfer

tube is connected to an inlet of the heat exchange tube of the reaction tank, and the seventh transfer tube is connected to an outlet of the heat exchange tube of the reaction tank.

3. The apparatus as claimed in claim 1 or 2, wherein the tank body of the recycle heater comprises a plurality of partition plates internally configured for forming a plurality of separate regions, the separate regions are intercommunicated and form an extended heating channel to prolong a flowing path, and the heat exchange tube is provided in the extended heating channel.

4. The apparatus as claimed in claim 1 or 2, wherein the reaction tank has a shape of long closed column, and a ratio of gas to liquid in the reaction tank is larger than 1.5.