The design of the pipeline exhaust at high temperature of water heater pipeline flow channel system

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Abstract— *This study is based on the experimental method to investigate the gas water heater cycling is connected to a short pipeline, new design piping system, The design of the pipeline exhaust at high temperature of water heater pipeline flow channel system, When the fluid passes through the shape changed flow field, under the effect of pressure distribution and geometric shape change of the flow field, The experimental results show that The design of the pipeline exhaust at high temperature can remove the water vapor pressure inside the thermal circulation pipeline, clear the flow path, and is corrosion resistant.*

Keywords— Water Heater, pipeline flow channel system, Fluid, Pipeline exhaust.

I. INTRODUCTION

In recent years, with the sharp rise of crude oil prices, the occurrence of the financial crisis, global warming, and climatic anomalies, various countries push energy saving and carbon reduction, and the importance of earth's water resources is relatively enhanced. As living standards are greatly improved, the water heater has become a requisite for life. A water heater is comprised of a burner, igniter, heat exchanger, valve body, and safety device. The heat is transmitted by heating cold water through the heat exchanger, in order to export hot water. The heating and cooling water circulation system of a water heater usually has the following problems; 1. Scale deposits: an inorganic salt deposit is formed when the soluble salt in the cooling water exceeds the saturation concentration (known as scale), thus, greatly reducing heat exchange efficiency.

At present, the early design of water heaters on the market is calculated according to specific gas, composition, pressure, and flow. Therefore, each water heater is applicable to only one specific fuel gas. The existing water heaters are actually a type of energy conversion device, which converts electric energy, the chemical energy of fuel, or solar energy into heat energy, and uses the high heat capacity of water to contact the heat source indirectly to carry the heat away. In addition, this type of heat absorber (sink) requires an additional container for storing water by the host, the contour design of this container shall have sufficient heat absorption (sinking) capability to increase or reduce the water temperature, and this design using medium with high heat capacity to absorb (eliminate) heat usually causes heat flow fouling on the contact surface of any two objects. This contact thermal resistance has been discussed in depth in literature. For example, Kenneth W. B. et al. [1] [2], R. L. D. Caneet al. and [3]. Li et al. [4] collected 679 water quality samples, and analyzed the LSI value to judge the trend of scale or corrosion.

This study discusses the causes of corrosion in the Research The design water heater circulation system, the factors influencing pitting corrosion, are evaluated and analyzed.

II. EXPERIMENTAL DESIGN AND METHOD

The counter measures against pipeline system corrosion are analyzed according to the pipeline design of the pipeline exhaust at high temperature.

III. EXPERIMENTAL RESULTS AND DISCUSSION

The design of the pipeline exhaust at high temperature is as shown in Figure 1. The 90degreeside bend of the water heater exhaust pipe is connected to a short pipeline, (31) upward connected to the upper (32) pipeline, and the inner wall of the inner tube at the curved tube is coated with a layer of anticorrosive, in order to remove the vapor pressure inside the heated

circulating pipe and clear the flow path, and to design the high pressure high temperature exhaust of the corrosion resistant pipeline of the corrosion resistant water heater.

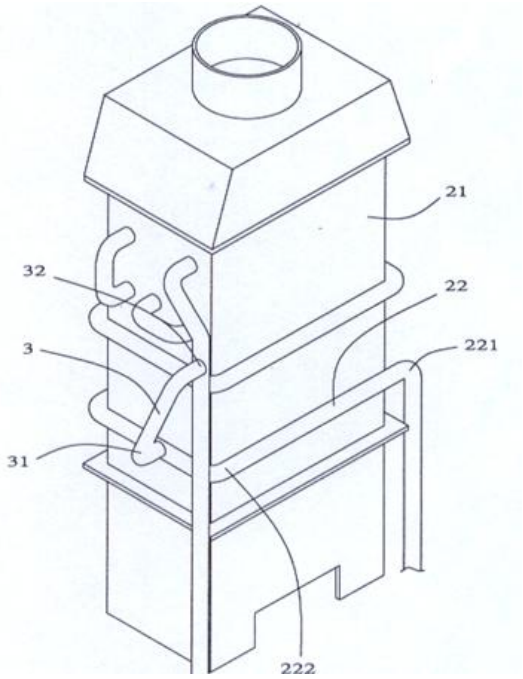

FIGURE 1.WATER HEATER HIGH TEMPERATURE EXHAUST DESIGN

IV. CONCLUSION

The major structure of a water heater is not changed, and provided design of the pipeline exhaust at high temperature structure is changed, scale will not form again after loosening, and the concentration ratio of the circulating water can be increased without changing water in large quantities. The heat exchanger does not scale, which enhances the refrigeration capacity of water heater thermal efficiency.

1. The design of the pipeline exhaust at high temperature can remove the water vapor pressure inside the thermal circulation pipeline, clear the flow path, and is corrosion resistant.
2. As the medium is in static state when the flow rate decreases, the pitting corrosion rate is higher than that in a high flow rate medium, thus, the high flow rate can reduce the probability of pitting corrosion.

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