WEB OF SCIENTIST: INTERNATIONAL SCIENTIFIC RESEARCH JOURNAL
ISSN: 2776-0979, Volume 3, Issue 2, Feb., 2022

TO BE USED IN WATER PREPARATION IN CITY BOILERS METHODS ANALYSIS

Mamedova Dilora Nusirovna
Karshi Engineering Economics Institute

Eshmamatov Arslonbek Khalil ugli
Karshi Engineering Economics Institute, Master

Annotation
Due to the presence of mineral salts in water (especially magnesium and calcium salts), the formation of hard and hard-to-remove sediments on the walls of heat exchange devices is a common problem in industrial and domestic life. As a result, the inside diameter of the pipes is reduced and heat exchange deteriorates, and over time, energy losses can reach up to 60%. In addition, the presence of sediments in the pipe walls can lead to spot corrosion. There are some problems with the use of IOMS in the heating system. based on chemical and physical (reagent-free) methods. In this case, the use of chemical methods is associated with high material costs. Magnetic, electromagnetic, ultrasonic water treatments are widely used in physical methods.

Basic Phrases: station, technical, technological, circulating, ejectors, steam boiler, block, condenser, filter, Carbonate hardness, Calcium and magnesium

Introduction

Thermal power plants mainly use river, river and lake water. However, due to the high content of various chemical and mechanical substances in these waters, complex treatment schemes and high-efficiency water treatment facilities will be required to treat them at thermal power plants. The choice of water treatment equipment used in these devices depends on the composition of the water used and the degree to which the water is treated. In water treatment facilities, the purification of natural waters from coarse-colloidal and ion-molecular particles is carried out in two ways.

1. By coagulation and sedimentation by adding chemical reagents to natural waters.
2. Preliminary treatment of water through ion exchange materials by ion exchange method. Ionites are substances that have the ability to significantly reduce the amount of ions in the water, which can be used to purify water to any required standard.

Turn off the water. The purity of water from suspended coarse particles is quenched by precipitation. During sedimentation, particles with a density less than the density of water rise to the surface, and particles with a density greater than the density of

water sink to the bottom. Water treatment without chemical reagents or by adding reagent to water in thermal power plants is especially used in natural and wastewater treatment. In water treatment techniques, water filtration and reagent addition are carried out in various special clarifiers or in large-scale pools. [A.1;, 2;].

The purpose of the dissertation is to study the water content of technical water supply systems and determine the modern water preparation and water content, temperature pressure, capacity of the device. The total hardness of water is divided into carbonate, non-carbonate, calcium and magnesium hardness and is measured in mg / l or mg-eq / l. Carbonate hardness is determined by the amount of compounds of calcium and magnesium cations in water SaSO 3 and MgCO 3 and bicarbonate Ca (HCO 3) 2 , Mg (HCO 3) 2 .

Carbon-free hardness is the presence of calcium and magnesium cations in water with sulfate CaSO 4 , MgSO 4 , chloride CaCl 2 , MgCl 2 , nitrate Ca (NO 3) 2 , Mg (NO 3) 2 and silicate Ca (HSiO 3) 2 , Mg (HSiO 3). 2 is determined by the amount of compounds. The hardness of calcium and magnesium is determined by the amount of uals in water. To show the amount of hardness in mg / kg in mg · eq / l, the amount in this mg / kg must be divided by the equivalent weight.

The total alkalinity of water is determined by the amount of ON - , NSO 3 - , SO 3 , N 2 RO 4 anions and weak acids.

The higher the content of NaHCO 3 , NaCO 3, KHCO 3 , NaHSiO 3 , NaHPO 4 compounds in water, the greater its total alkalinity. Depending on the type of anions in the total alkalinity of water, it is called ON in hydrated water , SO 3 in crabonate water , NSO 3 in bicarbonate , HSiO 3 in silicate , N 2 RO 4 in phosphate water , NRO 4 . Sodium or potassium compounds of these anions increase the alkalinity of water because they hydrolyze in water to form strong alkalis such as NaOH or KOH.

NaHCO 3 + H 2 O = NaOH + H 2 CO 3

NaSiO 3 + H 2 O = NaOH + H 2 SiO 3

KHCO 3 + H 2 O = KOH + H 2 CO 3

KSiO 3 + H 2 O = KOH + H 2 SiO 3

The unit of alkalinity is mg · eq / l or g · eq / l.

Oxidation of water is determined by the amount of inorganic substances in the water, such as organic and easily oxidized K 2 SO 4 , H 2 S and HNO 3 . Oxidation is a conditional expression of water, for the determination of which strong oxidizing agents, solutions of potassium permanganate (KMnO 4), potassium iodate (KJO 4) are used. Oxidation of natural waters is different, groundwater is around 1-4 mg / l O 2 , surface water oxidation is around 5-8 mg / l O 2 . Filtering materials AI- 2F, AN-18, AN-3T, (AV-7) and all types of filters justify the form of costs for the filter system

based on the capacity of thermal power plants. the chances of covering self-sufficiency are high. [A.2;, 3;, 4;].

Methods and discussion. In order to save fuel and energy resources and rational use of natural energy resources, as well as to extend the service life of heating pipelines and water heating boilers through the use of individual individual water heating boilers for heat supply and heating systems in our country there is an opportunity to produce cheap Prevention and treatment of sediments in the heating system and water heating boilers of IOMS (inhibitor of depletion of mineral soils) since 1994 in the boilers of the Karshi city heating system, currently 17% and 25% dry IOMS acid in the heating system used to extend the duration. [A.1;, 3;].

Test results. The concentration of IOMS-1 in the network water should be determined during the test and should not exceed 4 mgek / l. 4 mgek / l - the limit criterion of IOMS for open hot water supply. The optimal concentration of IOMS is selected depending on the quality of additional supply water, the condition of the heating surface, the temperature graphs of the heat supply system. in order to reduce the rate of crystallization, stabilize the water chemical regime of heat networks and inhibit salinization using IOMS based on organic phosphate.

The effectiveness of salinity inhibition depends on the concentration of the complexant and the carbonate hardness of the water. The dose of the complexant depends on the carbonate hardness of the initial water as follows: when the carbonate limit hardness of the water is 8 - 10 mg / l, the concentration of the complexant is 1 - 2.5 mg / l.

During the test period, the dose of IOMS is adjusted based on the optimal concentration (S, mg / l) required to stabilize the chemical regime of the water and to wash the sediments from the surfaces of the equipment that have not undergone acid washing.

Due to the presence of mineral salts (especially magnesium and calcium salts) in water, the formation of hard and hard-to-remove sediments on the walls of heat exchange devices is a common problem in industrial and domestic life. As a result, the inside diameter of the pipes is reduced and heat exchange deteriorates, and over time, energy losses can reach up to 60%. In addition, the presence of sediments in the pipe walls can lead to spot corrosion.

The solution to these problems is based on chemical and physical (reagent-free) methods. In this case, the use of chemical methods is associated with high material costs. Magnetic, electromagnetic, ultrasonic water treatments are widely used in physical methods. [A.1;, 4;].

Practical significance of the work .From the above discussion and cost, the method of magnetic treatment of water was first used in Belgium 50 years ago. Since then, this method has been used in a number of advanced countries . This includes Japan, the United States, Germany and others. The development of this direction in our country has been observed in the last 2-3 years. This is due to rising prices for chemical reagents that soften water and remove salts, and the creation of high-quality magnets with improved properties. The prepared body acts as a magnetic conductor and a magnetic element. [A.1 ;, 3;, 5;].

The magnetic element is a steel thin-walled pipe with a fixed magnet and polar elements located in a certain direction. At the ends of the pipe there are argon-arc welded conical legs with a grinding element. Shoes and spray elements are made of stainless steel. This structure of the magnetic element, ie the use of high-energy magnets, ensures that the magnetic properties of the elements are maintained indefinitely, while maintaining the heating standard (allowable temperature 120°C), and the service life can be up to 20 or more. The magnetic element is usually housed inside a cylindrical body. Due to the fact that its transverse surface is not smaller than the inlet and outlet surfaces of the pipe, the outlet pressure of water from the device does not change significantly.

Under the influence of a magnetic field, the physical properties of water change at the working volume, as it passes through the hydromagnetic system. The silicates, magnesium, and calcium salts it contains lose their ability to form dense rocks, become a easily extractable sludge, are removed by a stream of water, and accumulate in sludge collectors and clarifiers. In addition, the treated water removes the accumulated waste and prevents it from happening again. The velocity range of the flow is 0.5-4.0 m / s. [A. 4;, 5;].

Conclusion

Magnetic devices can be installed in industrial and domestic environments: on mains, boilers, water heaters, water and steam boilers, cooling systems of various technological equipment (compressor stations, power electric machines, thermal equipment), laundry and heating. spoon washing machine.

Hydromagnetic systems are used as follows:

To prevent the formation of waste, the heat exchanger is installed a few meters in front of the apparatus;

When water is drained, the rate of sedimentation increases by 3-4 times, which means that the volume of sediments is reduced by 3-4 times;

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In front of the filters in the way of chemical preparation of water - the filter cycle increases by 1.5-2 times (respectively, the consumption of reagents is significantly reduced);
Heat transfer in the purification of aggregates without chemical reagents.
So magnetic systems provide:
Reduces the occurrence of solid waste;
Disposal of existing waste;
Reduction of control and maintenance costs by 40-50%;
Decreased equipment downtime;
The service life of the equipment increases by 30-60%;
25% improvement in heat transfer;
Protection against spot corrosion;
Save up to 10% on detergent consumption;
Preservation of elements necessary for health.

cleaning method	RE, k Vt ch / m 3	P, m 3 / chas	reactive (material)	Water entry ,%	D3 , $ / m 3	Total , $ / m 3	Take it out throw
Ionic processing give	2	5	0.8 $ na1 m 3	90	0.036	0.84	+
Magnetic processing give	0.02	100	-	100	0.006	0.007	-

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