

## Water Saving In Industry

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**Abstract:** The process of increasing shortage of fresh water resources is happening everywhere, affecting all types of needs of society and nature. One of the important aspects of water conservation and ways to reduce the volume of fresh water consumption in an enterprise and the amount of wastewater discharged in industry is the method of reuse or recycling of wastewater, which consists in returning purified wastewater to the technological process and cooling system in industrial refrigeration units. The article discusses aspects of improving the water supply of industrial enterprises that are relevant for industrial complexes of Uzbekistan by introducing methods for reusing industrial wastewater.

**Key words:** water issues, industrial wastewater, production, water supply, recycled water supply, return of treated wastewater, cooling system, industrial refrigeration units, ecology, environmental engineering direction

Global climate change, population increase population, the development of industries and a sharp increase water resource needs reveals one pressing problem of today. - economical use of water According to according to the calculations of industry experts, "under the influence of negative changes, observed on our planet, water shortages could increase by 20% and worsen the lives of 2-5 billion people living in more than 45 countries of the world."

The process of increasing shortage of fresh water resources occurs everywhere, affecting all types of needs of society and nature. There are also certain regions where the shortage of fresh water is much more intense, one of which is Central Asia.

Water supply is an important aspect of any industrial activity. At the same time, the growing demand for water resources and the problem of access to clean water create serious challenges for industrial enterprises. Over time, standard methods of using and disposing of water have become ineffective and unprofitable. In this regard, industrial companies and organizations are looking for new approaches and innovations that can ensure the efficient use of water resources and reduce their consumption.

One of the best practices that allows you to achieve significant results in the field of water conservation is the implementation of a water management system. This includes installing modern equipment and monitoring systems that allow companies to monitor and control water use throughout the facility. For example, installing automatic accounting and control systems for water consumption allows you to determine the location of losses and take timely measures to eliminate leaks.

Another important aspect of water conservation in industry is the method of reusing or recycling wastewater. Industrial companies are increasingly using wastewater treatment technologies for reuse for production purposes. This allows you to

significantly reduce fresh water consumption, reduce the negative impact on the environment and reduce water supply costs.

Let's look at methods for reusing industrial wastewater.

One of the methods for economical use of water is the introduction of recycling water supply at industrial enterprises.

The recycling water supply system at industrial enterprises is becoming more and more in demand every year.

The technological solution is applicable at industrial enterprises where cooling is carried out with process water using a direct-flow scheme with its subsequent discharge without reuse. This action is advisable when the cooling water flow rate is high.

Most modern enterprises are active consumers of water resources. To save clean water, business owners often prefer a progressive method of recycling water supply, which involves the repeated use of this resource. Depending on the nature of the technological process, the water is purified and then heated or cooled to be reused. In some cases, no cleaning is required; in others, the water becomes contaminated after the first use. But the level of purification in modern systems is so high that even wastewater can be used after its preliminary biological treatment and filtration. Such a water supply system is completely closed or drainless - the discharge of contaminated water into natural sources is completely excluded. The overall system includes sewage drains and a pipeline through which purified water is supplied, as well as automatic control units and treatment elements. Cleaning is carried out according to the principle of reverse osmosis, which ensures disinfection and filtration of the circulating liquid.

The configuration of the system is largely determined by the type of production process.

The system can also be combined with conventional water supply. Then equipment that uses both clean and waste water is connected to the system. For contaminated water, a storage tank with filters (mechanical, biological or reverse)

osmosis - depending on the needs of the enterprise) and a pump for transfer. In this case, the overall system is divided into several sections, including:

- pipeline for transporting dirty water to the storage tank;
- pipeline for delivering purified water to the equipment;
- a pipeline for discharging excess water and the drain itself, discharging used water into the sewer system (the latter is closed with a water purification and re-supply system).

Another example of the economical use of water resources is the cooling system in industrial refrigeration units. The water heated in the condensers is pumped out by pumps into the cooling basins, where it cools down, and then again supplied to the condensers

Any circulating system is a fairly large design, including several types of pipelines, pumps, filters, automatic control units and other equipment necessary for operation.

Recirculating water supply is most beneficial when the enterprise is located at a significant distance from natural bodies of water or is located on a hill (with such terrain features, pumping water requires powerful pumps that increase energy consumption). It is also economically justified to install a recirculating system with a small capacity of a natural reservoir located nearby.

Isolated water reuse complexes provide repeated use of waste water, previously purified in special facilities. Discharge of waste industrial water is excluded. This

solution will eliminate the problem of environmental pollution and reduce economic costs. The following tasks will be solved: reducing water consumption by the enterprise by 85-95%, reducing the consumption of components that enter the water when used in the technological process, and reducing cases of exceeding their concentration in the environment.

Innovative approaches also play an important role in water conservation in industry. The development of new technologies and techniques helps reduce water consumption while increasing productivity. For example, the use of sensors and automated systems makes it possible to optimize water consumption processes, manage temperature conditions and minimize losses.

Another example of an innovative approach to water conservation is the use of closed-loop cooling systems. Instead of using fresh water to cool industrial equipment, these systems use water from recuperators or industrial wastewater, reducing fresh water consumption in production.

In general, water conservation in industry requires an integrated approach and the use of various techniques and innovations. However, modern technologies and practices prove that this is possible. The end result of such efforts is a sustainable and responsible industry that can stay ahead of the curve and support the sustainable development of the planet.

One example of successful implementation of water-saving practices in industry is the Coca-Cola company. The company is actively working to reduce water consumption in its production processes and is trying to move to a closed water cycle. As part of its Water+ program, Coca-Cola has introduced innovative wastewater treatment and recycling systems, as well as the use of rainwater for site irrigation and production needs. The results of these measures allowed the company to reduce overall water consumption by 20% and significantly reduce the negative impact on the environment.

Another example of water conservation in industry is Nestlé Waters. In the process of producing bottled water, this company actively uses systems for recycling wastewater and reusing water used in the process of cooling equipment. In addition, the company also regularly trains employees on water conservation and efficient use of water resources. These efforts allow Nestlé Waters to not only reduce its freshwater consumption, but also significantly reduce its negative environmental footprint.

Thus, there are many successful examples of the implementation of water-saving practices in industry. An important aspect is the awareness and acceptance of the need to act, as well as the willingness to invest in new technologies and systems that can ensure the efficient use of water resources.

Industrial enterprises can become leaders in the development and implementation of new technologies that can optimize water consumption and management processes.

Water conservation in industry is not only an important economic issue, but also a matter of long-term environmental sustainability.

The pursuit of rational use of water resources and the application of advanced water-saving practices will not only help reduce water supply costs and improve the environmental situation, but will also contribute to the sustainable development and conservation of water resources for future generations.

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