Round, on 15 April 1994 at Marrakech, Morocco. On 1 January 1995 GATT was replaced by the World Trade Organisation.

Today, the WTO has more than 132 Member State. The WTO fulfils essential tasks:

Administration of the new multilateral trade agreements.

Provision of a forum for fresh negotiations.

Settlement of disputes.

Surveillance of national trade policies.

Cooperation with other international bodies in drawing up of economic policies at the global level.

As a result the signature of the WTO convention means adhering to all multilateral conventions (multilateral agreements on trade in goods, General Agreement on Trade in Services, and Agreement on Trade-Related Aspects of Intellectual Property Rights), whereas adhesion to the plurilateral conventions is optional (aeronautics and government procurement) [2].

In conclusion, it is important to mention the fact that most countries realize the advantages of world trade. International trade plays a significant role in the economy of each individual country. It allows to satisfy the needs of the population and stimulates the internal development of the country.

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FREE-COOLING IN SEASONAL COLD ACCUMULATOR

Свободное охлаждение в сезонном холодном аккумуляторе

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The issue of cold accumulation, relating to air conditioning systems, comprises both, preparation and storage as well. The installation of cold accumulation makes easy way to reduce the cost of cold production energy by using dual-rate electricity charges. In addition, the cold accumulation systems allow to use devices with lower power demand and improve the reliability of the cooling system. Cooling energy can be stored in the orm of sensible and latent.

In the case of a sensible energy storage (SES) we deal with an increase of material temperature used as a accumulator of heat or cold, but in the case of latent heat storage (LHS) phase change material are used (usually between the solid and liquid). The air-conditioning system uses two main types of cold storage systems. These include: tank with ice water and cooling energy storage in materials PCM (phase change material) [1].

Water is well suited for storage both heat and cold, due to high specific heat (4.19 kJ/kgK). In practice, its mixture are common as a substances that reduce the freezing point. It is mostly ethylene glycol and propylene glycol as well. Cooling capacity of ice water tanks depend on the amount of storedwater and the temperature difference (Δt) between supply and return water.

The temperature difference has a strong influence on the size of the accumulation reservoir. The values of the temperature difference of supply and return water flow through the accumulator are placed on level 7-9K. In the case of an increase of this difference to the value of 11-13K the volume of the reservoir will be reduced as close as to 50%. The minimum value of Δt at which the storage system is a cost-effective is assumed as 5K. Chilled water accumulators can be made ground, partially buried or underground. They can also be inte-grated into the structure of the building. Ground storage tanks are often made of steel, underground as concrete bunkers [2]. Because of the simplicity of opera-tion, reliability, efficiency and low investing cost the cold accumulation system are more and more common. Water has a melting heat of 335 kJ/kg, the high specific heat of 4.2 kJ/kgK, high density 1000 kg/m3, the material is safe and has a melting point at a level suitable for use in conventional air conditioning systems.

The melting point is very stable and is 0 °C at sea level. Under certain conditions, a slight supercooling of water close to 1 to 3 K is observed. After reaching the maximum supercooling point of water and freezing, it returns rapidly to 0°C.

The density of water is slightly reduced at temperatures below 4 °C while the volume increased by 9% during freezing. This feature is used as an indicator of the formation of ice crystals in cold production systems in the form of frozen ice crystals. If frozen ice floats on the surface of the water volume remains cons-tant until all of the water freeze or melt.

Below the freezing point of water ice slightly increases its density, but it does not matter accumulation cooling system because the majority of systems work close to of the phase changes of water. For ice capsules charging temperature decreases during freezing of water due to growth of the ice layer through which heat is conducted. Water has become a dominant factor in the energy storage in air conditioning systems.

However, someprocesses require medium temperature in the range that exceeds the capabilities of water systems. Therefore directed towards other substances that despite of freezing temperature above 0°C can produce refrigerant at satisfy temperature during the discharge process [2].

Design seasonal cold accumulator allows to conclude that this solution has a number of economic and ecological advantages. Due to the seasonal tank design the saves on chiller, which under normal circumstances would have been selected for the highest hourly energy demand, which means that the device should be several times larger than the device that was used in the project. By selecting a small chiller the environment from hazardous refrigerants is protected, which are chlorofluorocarbons, specifically in the case of refrigerant called R- 410A.

Another huge advantage of the project is to provide the majority of the demand for cooling by drycooler, thanks to its simple design makes use of Polish temperate climate where winter occurs. It allows to charge cold accumulator without additional costs for electricity. With its rechargeable accumulator with a dry- cooler and chiller a lot of savings during operation period of the system is achieved at the level of 30 %. It is without a doubt a very good result.

The disadvantage is that the size of the cold accumulator, and thus the cost of excavation and tank with a low coefficient of heat transfer. All of above make this investment expensive with the 15 years of operation of the system return. This fact force to seek other cold storage solutions or substance which are able to give higher specific heat ratio. This can be done for example by the use of phase change materials(PCM), with a heat capacity is in the range 18,0 kJ/kgK, which in comparison with the glycol-water mixture used in the project, 3,84 kJ/kgK makes possible to reduce accumulation container more than 4.5 times or up to 12 times in LHS system with ice as PCMmaterial. That container can be moved inside the building which result in lower costs for excavation works and the cost of the tank itself.

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