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Improving Compressor Cooling System Temperature Control

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Abstract. In the article, the achieved efficiency in automating the operation of compressor devices is based on reducing the human factor, safety, operational reliability, the ability to foresee accidents and reliable operation of hydraulic turbine devices

Key words: Power station, hydroelectric power station, renewable energy sources, diversification, electrohydraulic speed, power regulator, hydraulic turbines, automation systems

Tell the question reimbursable energy fast development supply, electricity energy work release sources diversification, electricity energy work in release natural from gas use reduction, as well as electricity energy into the network immediately foreign investments wide Attraction to do in order to Uzbekistan Republic According to the resolution President of the Republic of Uzbekistan No. PQ - 2947 dated May 2, 2017 " On the program of measures for the further development of hydropower for 2017-2021" in July 2017 by the unitary enterprise "TO PALANG GPD" CONSTRUCTION" based on the decision " On measures for the implementation of the cascade investment project small hydroelectric power stations with a capacity of 12 MW with the supply of equipment from the People's Republic of China "The first stone was laid for the construction of the "Cascade of small hydroelectric power stations on the Great Fergana Canal" and construction work began on PC-14 km of the "Great Fergana Canal".

The President signed a decree on the development of hydropower until 2030. The capacity of the republic's hydroelectric power plants will reach 3,416 megawatts by 2030.

It was reported that the program of measures for the further development of hydropower for 2017-2021 was approved by a presidential decision on May 2, 2017. This program includes 65 projects totaling $3 billion 400 million, of which 34 are aimed at creating new capacities and 31 at modernizing existing ones.

Accordingly, an analysis of the reduction of household and technological waste achieved through full automation of operating modes of compressor devices and increasing the efficiency of the control system in ensuring stable operation of the main and auxiliary devices of small hydroelectric power plants in Uzbekistan has been studied. .

Motor on the shaft of the ventilator in the compressor air flow rotation work releases Screwed governor block rotation speed Skiffs by size depend no-load systems minimum operating pressure

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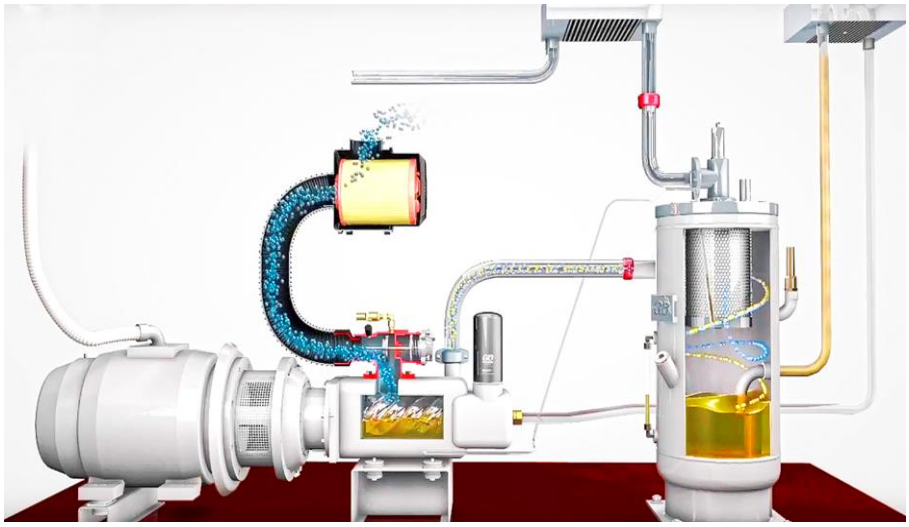
valve with provided . When it is stopped, this is the highway pressure valve and the compressor is separate. The screwed-in compressor of the machine is liquid, air, more oil system with cooled. Cooled air with oil mixtures The device can burn the incoming That is why for a small job, release the screw of the device using air , water with cooling, receiver dryer with together more used agree [11].



Picture 1 . Receiver compressor.

Hydroelectric power station efficient performance for compressed air accumulation is needed for the compressor acceptance of the operator stationary units with a volume of 500–1000 liters the dish is used. Taking the doer the following function does:

- Compressed air accumulation .
- This addition to the system reduces vibration, load, and noise;
- Work on site pressure equalization;
- High pressure as a result of the harvest was from condensate air cleaning.

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Acceptance of the figure of construction is known to be one in a sealed volume, this is a vessel (tank).

Figure 2. Recipient device

The air screwed into the compressor is compressed and in the process its ambient temperature rises to a temperature of 20-30 ^{o} C. At the outlet, the compressed air from the ventilator passes through the cooled radiator . And the ventilator's performance for the individual engine or to control the governor's engine rotation can compress air such as gases or vapors compression for intended. Here their name comes, but strictly in other words, the compressor itself is the entire block, only one part compressors are cooling because it is necessary to compress during the pressure to increase the gas for heating will come. That's why, right ventilation and without cooling, the compressor temperature also rises. Such without compressors only of course limited temperature optimal performance in the interval can this from the range outside the temperature too except to heat up and to the compressor harm to deliver the risk gives birth Full service do not show and incorrect from placement except compressors from work exit and damage the main reason one ventilation absence is considered additional to the costs of taking incoming malfunctions and belongs to repair work preventive maintenance to receive for the compressor work area ventilation system with equipped be needed This system is absolutely reliable operation, it is possible while less noise work is released and installation to the conditions in accordance with all the necessary licenses and certificates to have be need Fans and their processes are also energy efficiency in accordance with strict requirements to meet the needs of Environment and climate protection ventilation systems for increasingly important factors. Small and in medium-sized hydroelectric power stations the compressor is located next door most of the time the small volume has In from and all for a reason, the device is correctly placed and the air path is carefully thought out installing separately important to have because air cooling compressors safe performance only excess heat energy reliable

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neutralization for sufficient cooling the air is when the rooms can be built and up to the size you are looking at ventilation three method one your application can:

1. Natural ventilation: without air flows from a ventilator without the help of a wall or ceiling to supply and the exit from the holes passes. This concept is only for small compressors to answer ladies.

2. Artificial ventilation: This is a method where you use air to rotate a wall or ceiling fan to support it. For example, this is on the ground high under pressure longitudinally wall fans suitable will come. The air sucking recipient of the ventilator as they have one time in themselves is true air flow to provide for sufficiently negative pressure the crop does.

3. Channel ventilation: air channel fans using supply and suck removable air passes through.

Large compressors for again one problem in heating the spread is enough that this is not the case, these are large compressors usually around the noise level unnecessary accordingly by increasing do not send for a sound impenetrable cover with the equipment due This sound-proof coating, as well as compression in the process of heating the crop, will be taken . As a result, the temperature inside the body rises. This is a dangerous and undesirable case, so for this stage the hot

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air is thrown and the same compressor is pulled, compressed and emits clean air delivered by providing fans T to require will be done.

Figure 3. Zaplus ventilator

Zaplus - flexible, optimized complete transition from the slope to organize the found comfortable and environmentally friendly ventilation system, air flow wheel alignment, engine work in release safety and other amenities to have

Characteristics and special functions :

- Smart operation guarantee with ventilation system;
- Optimized aerodynamic in the form of plus hair and attachments bionic construction due to minimal noise level of optimal efficiency due to longitudinal ventilator operating costs reduced
- Full volumetric flow customization ability due to high flexibility;
- High Good quality composite materials corrosion resistant nozzle due to corrosion against high level of protection ;
- Two level dynamic balance due to flat walking and endurance;
- Additional high technology thanks to the diffuser (Zaplus +) . in the air rotate efficiency increase it similar to the convenience of having

intended to cool parts of the compressor that become hot as a result of its operation. In modern compressors, the cooling system, in addition to the main one, performs a number of other functions, including:

- Ventilation and air conditioning in a heated air-cooling system;
- Lubrication in the oil cooling system;
- The radiator is heating up . to uler air flow with cooling for intended.
- To heat up the transmission of infection, there is a special tubular device in the radiator.

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Figure 4 . Aluminum radiator

The radiators are placed vertically in the middle of the engine and the compressor electric motor, and cold water is supplied from the service water supply section to cool them. The top fan is then secured to the compressor shaft using an additional pulley. To determine the temperature of the air entering and leaving the radiator , it is equipped with the following sensors . The coolant temperature sensor records the value of the monitored parameter and converts it into an electrical signal. To expand the functions of the cooling system, an additional coolant temperature sensor is installed at the radiator outlet. Signals from the sensor are received by the electronic control unit. and manage the equipment sends Usually the current software is installed, the compressor control block is used . Control system at work the following equipment can be used : thermostat, heater, additional. cooling pump relay, radiator fan control block with yes. This is a cooling system equipped with compressors simple cooling in the system from compressors many efficient work work times less and less work efficiency more reliable accident free performance expected.

The system in improving the efficiency of the economic analysis done increased. This is why ABT is good to return and the efficiency of the presence because of this done to him to increase the useful and reasonable that showed. To this, based on the control system, the current compressor of the device achieves an acceptable operating mode due to the hydraulic turbine of the complex, the efficiency increases, it can be said work to release in the process person factor effect to reduce and that's all with together work to release culture upgrade, equipment efficiency to increase and technological process to manage efficiency to increase, energy costs to reduce, as well as accident to reduce and equipment life to increase to enable ladies

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