



Fig. 1. Heat transfer coefficients  $C_h(\alpha)$  for “Clipper” (blue) and “Falcon HTV-2” (red) [2]

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### THE DEVELOPMENT WATER – SUPPLY WELLS CLEANING BY THE MECHANICAL, HYDRAULIC AND ELECTROCONTACT METHODS

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The mechanical methods of the decolmatation, which are widely used in the water – supply wells construction and exploitation practice, are very simple in the presence of the appropriate adaptations, and, moreover, they are easily to be carried out.

For the filters decolmatation of the development wells, and the various metal scrapers, grabs and spears are mainly used, which are mixed along the filter or are rotated in it, and they are allowed to be removed the colmatant from its inner surfaces. [4].

So, only the soft deposits are usually responded to such mechanical cleaning, moreover, due to the nature of the surface exposure, the unaffected main bulk of the colmatant is remained, having concentrated beyond the inner loop of the filter and within the filter zone (e.g. the depressive funnel).

The decolmatation hydraulic methods are mainly included such traditional technological and processing methods, as the wells filters washing with the water, and the air – lift pumpings out under the various schemes, as well as the water injection into the filters, using the packers and the hydrograbs, and hydro-spears.

So, they often resort to the direct flushing water of the of the filtered space through the drill pipes into the working surface of the filter, in the course of exploration and the development of the drilled wells to be removed the washing solution and the clay cake erosion on the mine’s shaft walls.

It is practiced the interval standardized water filters flushing, having pumped under the pressure through the various parker devices for deeper decolmatation of the exploited and development wells.

This technology disadvantage is that having ousted from the shaft bridging and colmatating material is remained in the pore space, that it can be re – clogged within the filtered zone during the subsequent operation. [3].

So, the hydraulic impact effectiveness, along with the disabilities, is significantly increased, when the erosion of the bridging and colmatating crust on the inner surfaces of the filter by the water artesian water jets is combined with the mechanical treatment.

The electro-hydro-contact impact upon the filters and within the filtered zone of the wells has

practically been based on the impulse action of the electric energy between the spark ball electrodes, having installed inside the filter.

When high voltage current impulses applying to the spark ball electrodes, having immersed into the water, the fluid sample is occurred in the interelectrode space, which is accompanied by the significant amount of the energy release, having previously accumulated in the capacitor bank. So, the intensive heating of the plasma produced by the discharge current is resulted in the pressure increase in the discharge channel and its further extension with the strong compression of the adjacent layers of the fluid, in which the shock wave is arisen. So, for all this, the discharge channel is transformed into the rapidly increasing in the size – vapor cavity, which is caused the ripple series following one another compression – low pressure acoustic waves, and the alternating hydro-streams. The decolmatation filter and the sprinkled coating adjacent layers with the electrohydraulic impact is mainly achieved by the acoustic waves and hydro-streams shock force. [2].

The filters decolmatation efficiency by the electrocontact method is depended on the pressure at the shock wave front, the duration of its effect upon the filter, the generated pulses quality.

The various types of the plants are used to be performed electrocontact treatments, but the disk – shaped spark gap base of the negative electrode is particularly distinguished by the highest reliability when it is operated under the various conditions.

Thus, electrocontact method is allowed the parameters control possibility, and it is accessible for the development under the production organizations conditions. [1].

Its main drawback is in the incomplete cleaning of the filter channels from the destroyed colmanant remnants, that is brought the filter plugging point and he filtered zone.

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#### THE ROCKS FLUID DESTRUCTION APPLICATION IN THE STRIPPINGS PRODUCTION TECHNOLOGY AT OPENCAST MINING OF ORNAMENTAL ROCK DEPOSITS

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The stripping operations are practically produced at the different stages of the development of the mineral resources deposits. The ongoing removal of the alluvium, out-weathered, and the contained host rocks in the temporary or the permanent piles and dumps are laid in the basis of the capital mining and the current stripping operations. So, this process is preceded by the preparatory works, having consisted in their previous loosening, which is practically produced by the mechanical, blast – hole drilling, hydraulic, physical or chemical methods. The extraction, excavation and the loading of the loosed overburden rocks are practically fulfilled by the excavators, earth – moving or loading and transporting cargo machines and vehicles, and the haulage – by the different types of the technological careers strength and pit – run transport.

The natural quality preserving of the mineral resource in the extraction mining process is one of the main challenges in the open pits and the quarries of the ornamental rock. It may be significantly altered, depending on the rocks destruction method, having used at the stripping operations production. So, the explosion is practically used on a number of the open pits and the quarries of the ornamental rock for the preliminary preparation of the stripping and overburden mining rocks. So, the multi-directional network of the cracks and fractures in the marble and marbled limestone, having resulted from the explosion, can be extended up to 50 – 60 m, and in the granites – up to 100 m from the place of its execution. One of the ways to be reduced the artificial fracturing of the ornamental rock is the production development of the stripping operations technology, having provided the layer cutting of the alluvial, and out-weathered mining rocks from the indigenous useful mineral resource the cracks, having filled the viscous fluid. So, across the whole area of this layer, at the day surface layer, by the stripping mining rocks are impacted by the hammers, having mounted on the chassis of the crawler excavators, or of the incident of the large mass of the goods, having held in the place using the ropes by the same technical means. So, this is practically achieved the required quality of the pre – crushing, and the necessary prerequisites are being created for their subsequent cleaning with the smooth mining area, by the excavation and transporting equipment. The comparative studies of the efficiency of the