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REPAIR TECHNOLOGY OF PUMP UNITS IN PUMPING STATIONS, ITS PLACE IN PRODUCTION

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Abstract:
Pumping devices and stations equipped with centrifugal pumps are widely used in agriculture for irrigating land and draining it, for drinking and industrial water supply, and for transporting oil products. Pressure pipes are one of the main structures of pumping stations and devices. These pressure pipes do the main job of transferring water, oil and other liquids without waste. Therefore, pressure pipelines are a technology that saves the fluids being transferred. Therefore, it can be said that scientific research on pressure pipes is an urgent issue of today. Pressure pipes are provided with various fittings (lock, check valve, etc.), that is, equipment. If these fittings do not work normally, the normal operation mode of pumping stations and equipment will be changed.

Keywords: Pump, impeller, shaft, shaft, electric motor, centrifugal pumps, volumetric pumps, dynamic pumps.

Mechanical defects and deformations occur in the pump and its parts as a result of excessive pressure in the process of water absorption and transfer, as well as due to exhaustion of parts. Some of these defects can be seen with the naked eye, while others can be detected using special equipment. It is known that the pump and its parts are constantly working in the water environment, so its parts are often damaged due to corrosion. Corrosion defects cause surface roughness. Especially as a result of uneven bending of the pump vanes, additional shocks occur due to imbalance, cracks and fatigue of the vanes are observed [2].

The importance of pumping water in water management.
Recently, the number of people living in the Republic of Uzbekistan is growing very rapidly. As a result, there is a need to develop new cultivated areas in order to provide the population with food. Most of the land to be developed is located above the water sources, and the land needs water very much. In order to supply these lands with water, it is necessary to build pumping stations and pumping devices.
Currently, there are about 1,650 pumping stations in the regions of our republic, and about 1,500 of them are being used effectively. Most of these pumping stations are 25-30 years old, and their operational resources have already expired. Many pumping units, hydro-mechanical, hydro-energetic,

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mechanical and auxiliary equipment and hydro-technical structures have been in use for 35-40 years. 53% of inter-district and inter-farm machine canals and 25% of farm lands are irrigated with the help of small consumption pumping stations and devices installed in internal farm networks, about 11,000 units of vertical well pumping units are in operation.

Table 1 lists some large pumping stations operating in the regions of the Republic of Uzbekistan.
Table 1.

Large pumping stations operating in the Republic of Uzbekistan.

No	Provinces	Pumping stations	Characteristics		
			Q, m3/s	H, m	N, mW
1	2	3	4	5	6
1.	Bukhara	Olot	41	8.5	5.6
		Karakol	33	8.5	4.8
		Amubukharo-1	68	52.0	45.0
		Kuimozor	100	18-21	30.0
		Abu Bukhara-2	105	52.0	125.0
		Kiziltepa	92	45-72	125.0
		Conimex	12	26.0	6.0

Note: In addition to irrigation pumping stations, there are also many pumping stations that carry out drainage and drying operations and supply drinking water to agriculture.

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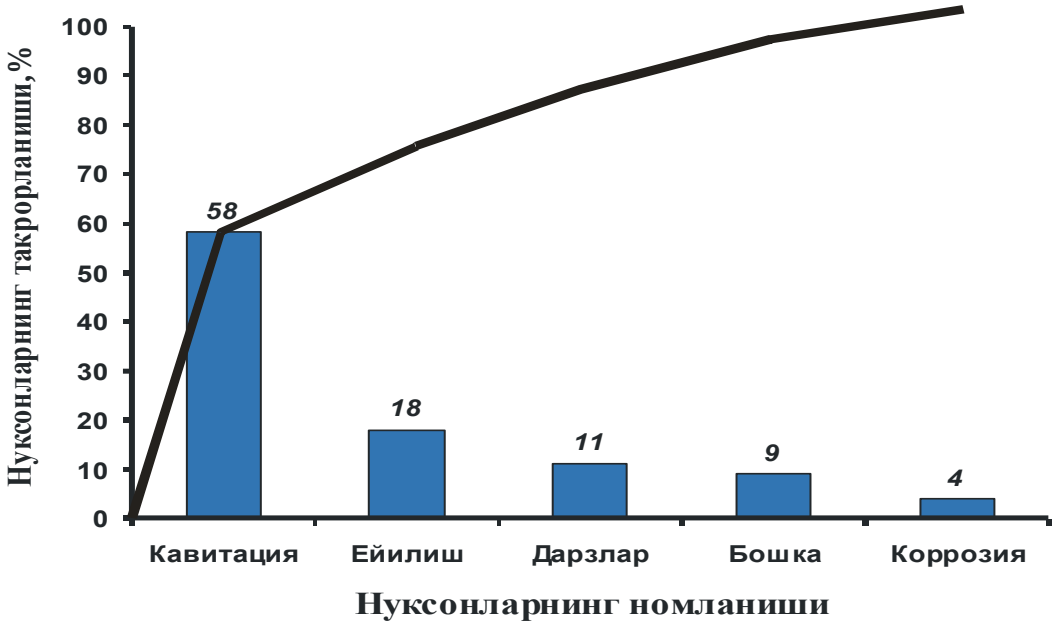

Figure 1. Impeller defectsdiagram

Working wheelcasings are 8%, and hydroabrasion of the working surface is 18%. Corrosion, cracks and other defects were also detected. The occurrence of these defects and their low duration require the modernization of technologies for increasing the wear resistance of the working surfaces of the main parts of the centrifugal pump.It is known from world experience that restoration of the hydrodynamic shape of the internal surface of the pump reduces the effect of hydraulic friction, and in practice, it is recommended to widely use polymer materials. In this case, the cost of restoration is 20-35% of the price of a new pump, and the resource is increased by 2-3 times on average. In this case, a decrease in bending was observed due to the complete restoration of its hydrodynamic shape. However, it was noted that restoration technologies with the help of polymer materials are effective in cases where the amount of bending is up to 0.3-1 mm [6].

Figure 2. External view of the pump impeller.

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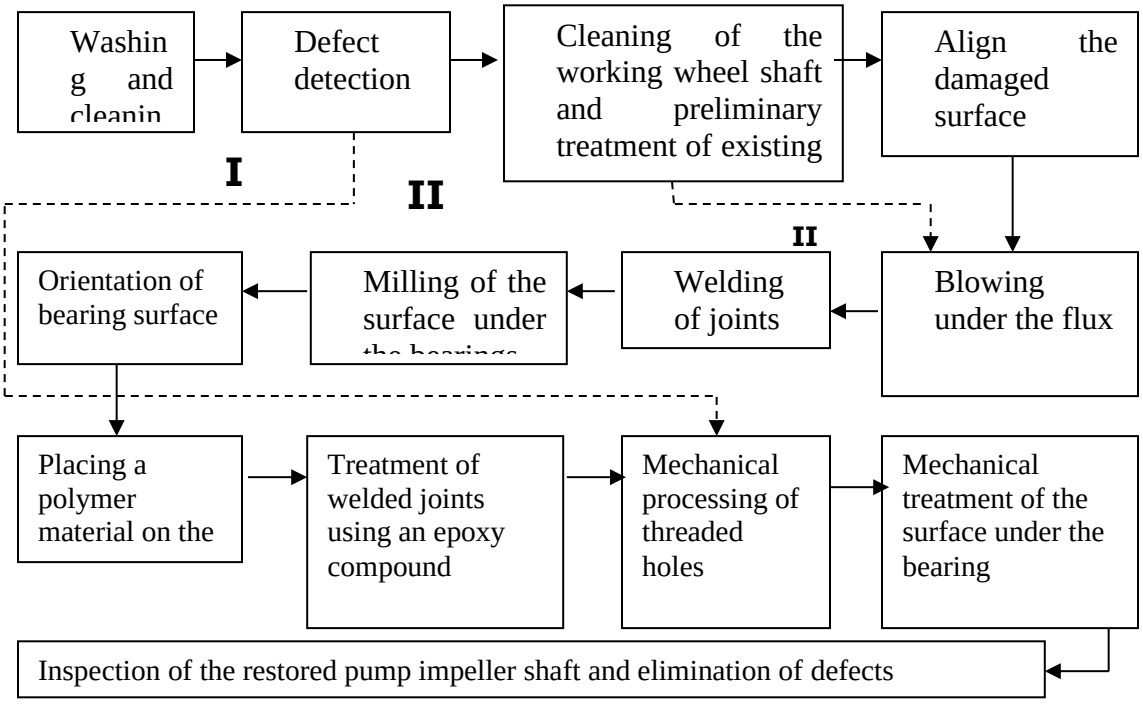
As everyone knows, the Amudarya River passes through the territory of the Central Asian countries of Tajikistan, Uzbekistan and Turkmenistan. The water turbidity of the Amudarya River also ranks high in the world. The water in the Amudarya River contains various types of sharp sediments, quartz-like solids, and the process of erosion is high due to the effect on the working wheels of the working pump units. As a result, the working wheels in the working pump units are in need of premature repair. When pumping water from the Amudarya River to the crops using pumping stations, the wear rate of the working wheels of the pump units is very high compared to the pump units working in clear waters.

Centrifugal pump disassembly (assembly) technological process.

The pump disassembly and assembly technological process map is developed in accordance with the requirements of ESKD, ESTD. The cutting route technological map can be created for the whole machine or some of its units. When designing the cutting process, the cutting route process, sketch map, equipment list, and detail list are created.



Used Literature

1. Мажидов Т.Ш. Отчет “Создать и усовершенствовать методы экспериментальных и сетевых исследований руслового прцесса, способы итехнические средства измерений русловых характеристик применительно к гидравлическому моделированию защитных мероприятий” Ташкент-1987

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2. Эргашев Р.Р., Бекчанов Ф.А., Насырова Н.Р. Диагностические испытания вертикальных насосов. Материалы международной научно-практической конференции «Пути повышения эффективности орошаемого земледелия» - Новочеркасск, №3(59), 2015. -31-36 с.
3. Чебоевский В.Ф. и др. Насосы и насосные станции. М., Агропромиздат,
4. Мусулманов Ф. Ш.Хамроев И.Ф.,Насосларнингтурлариваасосий кўрсаткичлари. Экономика и социум.ISSN 2235-1545.N11(78)-2020.942 бет.
5.Мусулманов Ф. Ш.Хамроев И.Ф.,Марказдан қочма сув насосларини таъмирлаш технологияси. Экономика и социум.ISSN 2235-1545.N11(78)-2020.952 бет.
6. Мусулманов Ф. Ш.Хамроев И.Ф.,Насос детални тиклаш усулларини таққослаш. Экономика и социум.ISSN 2235-1545.N1(78)-2020.962 бет
7. Sug'orishda yer osti suvlaridan ratsional va ekologik xavfsiz foydalanishning ilmiy asoslari (kungaboqar misolida)SR Axmedov, IN Tursunov, MM Rajabova, SH Hakimov - Science and Education, 2022
8. Scientific basis of rational and ecologically safe use of groundwater in irrigation (in the case of sunflower) SR Akhmedov, IN Tursunov, MM Rajabova... - Global Scientific Review, 2022
9. Scientific basis of the effect of groundwater sources on annual plant growth in current natural conditions SR Akhmedov, XT Tuxtaeva, ZU Amanova... - IOP Conference Series: Earth and Environmental ..., 2023
01, The drip irrigation method is a guarantee of high yields JA Dustov, NS Xusanbayeva, MM Radjabova - IOP Conference Series: Earth and Environmental ..., 2022
11. НАУЧНЫЕ ОСНОВЫ ВЛИЯНИЯ ПОДЗЕМНЫХ ИСТОЧНИКОВ НА ГОДОВОЙ ПРИРОСТ РАСТЕНИЙ В СОВРЕМЕННЫХ ПРИРОДНЫХ УСЛОВИЯХ ШР Ахмедов, ИН Турсунов, ММ Ражабова - Экономика и социум.