

## **Evaluation of the Technical Condition and Efficiency Indicators of the Stone Crusher**

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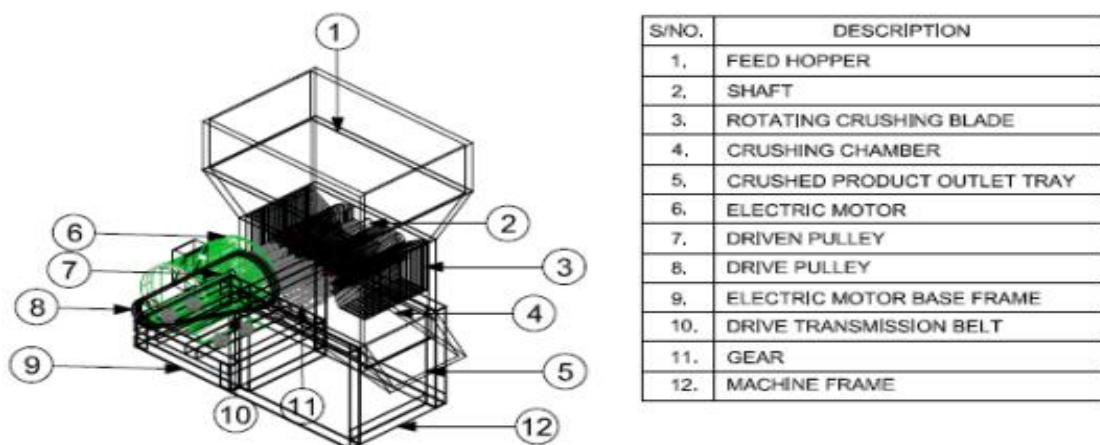
**Abstract.** *We use important crushing machines in several industries to reduce particle size using rock crushers. Nowadays, higher education institutions of the Republic of Uzbekistan in laboratories and research centers, as well as mining and construction used in networks. For crushing stones with raw materials and manual labor to meet various requirements in the Republic of Uzbekistan focusing on the use of stone crusher devices, ignoring the risks associated with sectors. Technological grinders are designed with a hammer mill it will be necessary to consider standard design requirements, local content and cost. Power required for crushing. Based on research, it is determined that granite is 4.5-6 kW with a required throughput of 500 kg/h. In basic studies, rock hardness, mechanical properties for material selection, material properties (anisotropic and isotropic), production requirements and the cost should be calculated. Grinding devices was tested and the actual capacity was 400 kg/h with a transfer efficiency of 65%. This the gradation coefficient of crushed rocks was found to be 3.73. A number of information are provided to improve the efficiency of shredder devices.*

**Keywords:** *Grinding stones, Impact energy of stones, size and properties of stones, efficiency of crushing equipment, isometric structure, vibration amplitude, crushing chamber.*

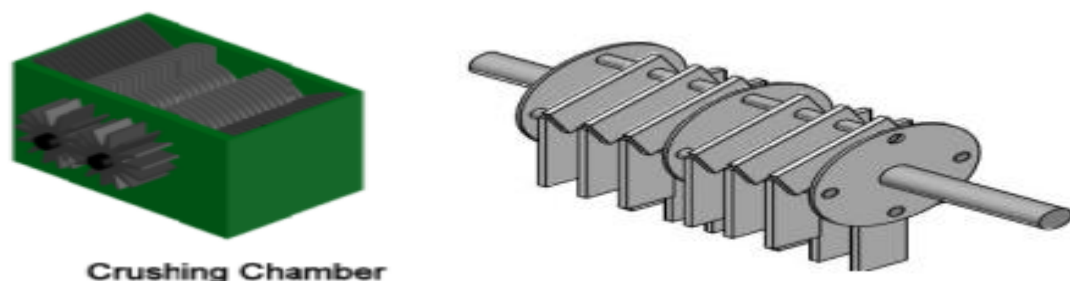
### **Introduction**

The task of grinding devices is to achieve grinding of solid particles, used for cutting and processing. The complete grinding of the stones is a very important aspect. In managing technical processes used for aggregate production and infrastructure construction processes, in the mining industry, widely used in agriculture. Stone crushers estimated value of an unexplored mineral it corresponds to the resources available in the Republic of Uzbekistan. Grinding stones so much with crude tools used in various workplaces around in our country, this is a boring, ineffective and time-consuming type of activity. Use of raw materials stone crushing tools are widely available it is frequent among different local people around the country causes deforestation as firewood is burned to help. Hard rock crushers are often used described by grinders and chisels. The most common crushers are jaw, gyrator, ball mill and impact crushers. Jaw crushers have a similar appearance hard and swinging jaws, swinging jaw moves back and forth relative to the target and thus leads to compression. Gyratory is similar in concept to a jaw crusher, but available concave and conical head instead of jaws and ball mill, the grinding particles are placed. From technical processes then a container with rolled steel balls placed together. As for particle impact crushers crushes are contained within a cage and exist then hammered continuously with a hammer and stones the desired size is achieved. A technical

influence on rocks grinders are the latest and modern type of grinders used. It is the most effective for stone crushing processes and a stone crusher was developed to reduce the particles power and energy spent in the formation of the aggregate helps to save the environment. Grinding devices can be made from local materials. These are the grinders ensures a reduction in total production cost, increase local expertise will help. Stone crusher machines are designed with technical processes Illustrated in Picture. 1. It is welded and later attached to the top of the grind installed on the camera. This ensures the convenience of grinding processes and if necessary, based on its technological parameters, it doubles the efficiency results. In technical parameters in the main body that carries the whole hammer. Collect 6 each as shown in Picture 2. It consists of mechanisms located on 4 smaller shafts. Metal pipe (stop) is provided between each hammer and the path to the sliding action of the hammers act as traffic barriers. A 10 mm sieve is installed under it, to prevent over-sized stones from the stone serves in the implementation of transition processes.



**Picture.1. Isometric structure diagram of stone crusher mill.**



**Picture. 2. Crushing chamber scheme**

## Results and Discussion

The impact plate is provided directly at a line of influence to aid in grinding describes process control.

Stones cannot come out, chamber due to the sieve installed up to the outer limit the required size is obtained. Multiple screen sizes can be used depending on the required size. There is a circuit that allows access to the circuit of the grinding mechanism mounted on a maintenance hammer unit. Grinding stone plays a major role in reducing the particle size of rocks or stones. Defined as a jaw crusher a device for crushing large stones or rocks. Crushed rocks and stones from a jaw crusher screened on a dry-type vibrating screen and conveyed to the cone crusher by conveyor. A finger is a device for crushing stones from a cone crusher into small pieces. The operation of the production process of artificial sand production with these devices creates a significant degree of impulse or shock and vibration. Wet type vibrating screen and sand unit defined as a device for sorting (or sorting) and washing stones using water, and it from barmak to fine sand. In the

case of a vibrating screen unit, two wet types vibrating screen units are controlled by connecting to a welded H-beam in parallel and three wet-type vibrating sand units also operate in parallel with a welded H-beam, technical processes are carried out accordingly. Vibration isolation is a procedure to eliminate or reduce unwanted vibrations. Basically, it involves inserting a flexible element between the vibrating mass. Grinding to reduce the dynamic response of the equipment or vibration source the system can be achieved under specified vibration excitation conditions. Therefore, it can be achieved not only by passive, but also by controlled vibration isolators. It is known that Isolation systems can be classified as passive, active and semi-active. A passive isolator consists of: flexible material (stiffness), energy dissipator (damper) and mass as a single degree of freedom mechanical system. An example of passive isolators in a mechanical system includes a metal coil spring, cork, felt, pneumatic springs and viscoelastic materials such as elastomer or rubber springs. Among passive isolators, rubber springs are widely used in shear mode, or a combination of shear and compression modes together with complex viscoelastic elements. An active vibration isolator has actuators with a closed-loop feedback control system. And so, the insulation performance of active insulation is high, but it requires high cost and complex sensors and control algorithms. Semi-active vibration isolation is distinguished by the addition of damping property in real time. This method is known to be simple but very effective. Among the three in vibration isolation approaches, the passive method is mainly used in artificial production sand or in the building of civil engineering structures.

## Conclusion

Vibration isolation for artificial sand manufacturing plant is mainly achieved by using rubber mounts and/or coil springs. More specifically, many rubber mounts and coil springs are installed under the screen and sand unit structures reduce vibrations caused by driving (or exciting) actuators such as oversized motors. That is why, this isolation system is vulnerable to external disturbances and time-varying driving uncertainty frequencies. This isolation system is usually designed to protect against the lowest frequency system because it produces the highest vibration amplitude. There were stone crushers with horizontal shaft hammer mills designed, locally produced materials and the performance tested in this work can be increased. The performance evaluation gives grinding ability. Technical parameters of stone crushing equipment theoretical production efficiency can be increased.

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