PROCESSING OF SHAFTS WITH LOW STRENGTH

Kenjaboev Shukurjon Sharipovich
d.t.s. Professor, Namangan Engineering Construction Institute, Uzbekistan

Fatkhullaev Alisher Abdurashid ugli
Master student, Namangan Engineering Construction Institute, Uzbekistan

Abstract: *The article describes the process of shaft grinding, all the constituent elements of this process, the optimization of this process.*

Key words: *low strength shafts, production, grinding process, cylindrical grinding machines*

An analysis was made according to the degree of development of Engineering Technology in the Republic of Uzbekistan, modernization and automation of this industry in the republic. Modern machine-building enterprises that exist on the territory of the republic have been studied.

The object of this study is the optimization of the grinding process of shafts with low strength.

The analysis of methods for the production and processing of cylindrical surfaces in the modern world is carried out, the shortcomings of this process are studied, which implies several stages of processing to achieve the roughness requirements, based on the fact that cylindrical surfaces work in friction with the parts placed on them.

For the processing of external cylindrical surfaces, several types of grinding are used:

- Roughing
- Accurate (preliminaryandfinishing)
- Thin

Thus, to carry out this process, one of the important points will be the selection and study of equipment, i.e. grinding machine. This required an in-depth study of the range of grinding machines and their capabilities:

Grinding equipment is one of the most important tools used for surface grinding by machining parts. Details are processed on grinding machines, depending on the operating conditions. This article provides information about the different types of grinders and their advantages and disadvantages, as well as the importance of machining parts on the inside and outside. In addition, the accuracy of processing is important.

Basic Cylindrical Grinding Operations

The main operations include:

- rough (rough) grinding
- preliminary grinding
- final grinding

ISSN2277-3630 (online),PublishedbyInternational journal of Social Sciences & Interdisciplinary Research.,January-2022 https://www.gejournal.net/index.php/IJSSIR

- fine grinding

Roughing (roughing) grinding involves processing without preliminary turning operation with the removal of an enlarged (from 1 mm or more) allowance for diameter. It is expedient to carry out this operation in the modes power and high-speed grinding at vKp=50...60 м/с. Unlike turning grinding rough grinding provides higher accuracy (8...9th grade) and lower surface roughness (Ra = 2,5...5 мкм), does not require subsequent pre-grinding. His the use is advisable in the presence of precise blanks or blanks, poorly processed with a blade tool. Pre-grinding is usually performed after turning processing with increased cutting speed (vкр= 40...60 м/с).

Carry out before heat treatment to create base surfaces or as intermediate operation to prepare the surface for the final processing. Pre-grinding achieves precision, corresponding to 6 ... 9 grades, and surface roughness Ra = 1,2...2,5 мкм.

The optimal choice of equipment for this process is made on the basis of all factors affecting quality and requirements.

Theoretical part

In the theoretical part of this study, the factors affecting the accuracy of cylindrical surfaces during grinding are studied.

The processing accuracy is influenced by the following production factors: the properties of the material being processed and its dimensions; the accuracy of the machines used; the accuracy of the tool and fixture; selection of technological bases; processing methods and techniques; qualification of the worker-operator.

For comparative analysis, other types of processing of cylindrical surfaces with a stepped design were also studied. Basically, multi-cutting processing of a stepped shaft on a lathe has been studied.

The most likely impact on the grinding process of cylindrical surfaces is the optimization of cutting conditions. To achieve this goal, the existing cutting conditions for cylindrical grinding of cylindrical surfaces have been studied. Suchas:

- *Work with cooling;*
- *The frequency of rotation of the part nd and the longitudinal feed Spr;*
- *The circle works as a periphery or end face.*

Workpiece rotation frequency (min-1): 63…400 (adjustable steplessly). Grinding wheel speed - 1112 min-1. The speed of the longitudinal stroke of the table is 0.1 ... 6 m / min (adjustable steplessly).

Grinding wheel intermittent feed (mm/table travel): 0.0025; 0.005; 0.0075; 0.01; 0.0125; 0.015; 0.0175; 0.02; 0.0225; 0.025; 0.0275; 0.03; 0.0325; 0.035; 0.0375; 0.04; 0.0425; 0.045; 0.05.

ISSN2277-3630 (online),PublishedbyInternational journal of Social Sciences & Interdisciplinary Research.,January-2022 https://www.gejournal.net/index.php/IJSSIR

Sizes of the grinding wheel (new): Dk=600mm; Vk=63mm. Grinding speed for a wheel of this type Vkr = 35 m / s On the machine, the circle rotates with a speed of n = 1112 min.

The calculations of cutting conditions of several external cylindrical grinding processes were studied.

The next step was to identify the shortcomings of cutting modes, and subsequently eliminate these shortcomings. Thus, the expected optimization of the grinding process was obtained.

References:

1. Sysoev, S.K. Engineering technology. Design of technological processes: textbook, manual / S. K. Sysoev, A. S. Sysoeva, V. A. Levko. - St. Petersburg: Lan. 2011.
2. Handbook of technologist-machine builder. In 2 vols. T. 2 / ed. A. M. Dalsky, A. G. Suslov, A. G. Kosilova. - 5th ed., revised. and additional - M .: Mashinostroenie-1, 2001.
3. Sharipovich, K. S., Yusufjonovich, K. B., &Yakubjanovich, H. U. (2021). Innovative Technologies In The Formation Of Professional Skills And Abilities Of Students Of Technical Universities. International Journal of Progressive Sciences and Technologies, 27(1), 142-144.
4. KenjaboevShukurjonSharipovich. (2021). METHOD FOR CONSTRUCTING ROCKER MECHANISMS WITH FLEXIBLE LINKS ACCORDING TO ASSUR. European Scholar Journal, 2(6), 125-132. Retrieved from https://scholarzest.com/index.php/esj/article/view/943
5. Шукуржон Шарипович Кенжабоев, Дилафруз Шухрат-Кизи Акрамова, &Ривожиддин Қосимжон-Угли Хамиджанов (2021). «ОПТИМАЛЬНЫЙ ВЫБОР ШЛИФОВАНИЯ ВАЛОВ И ДРУГИХ ЦИЛИНДРИЧЕСКИХ ПОВЕРХНОСТЕЙ НА КРУГЛО ШЛИФОВАЛЬНЫХ СТАНКАХ». Academic research in educational sciences, 2 (12), 157-161.
6. Кенжабоев, Ш. Ш., &Негматуллаев, С. Э. (2020). ОБУЧЕНИЕ МАТЕРИАЛОВЕДЕНИЯ КАК СПЕЦИАЛЬНЫХ ПРЕДМЕТОВ ДЛЯ БАКАЛАВРОВ ТРАНСПОРТНЫХ НАПРАВЛЕНИЙ. In Современныеавтомобильныематериалы и технологии (САМИТ-2020) (pp. 162-166).
7. НЕГМАТУЛЛАЕВ, С. Э., КЕНЖАБОЕВ, Ш. Ш., & БЕКМИРЗАЕВ, Ш. Б. У. (2020). ОСОБЕННОСТИ МЕЖПРЕДМЕТНЫХ СВЯЗЕЙ ПРИ ИЗУЧЕНИИ ОБЩЕПРОФЕССИОНАЛЬНЫХ ДИСЦИПЛИН. In РОССИЙСКИЕ РЕГИОНЫ КАК ЦЕНТРЫ РАЗВИТИЯ В СОВРЕМЕННОМ СОЦИОКУЛЬТУРНОМ ПРОСТРАНСТВЕ (pp. 71-75).
8. Djuraev, A., Beknazarov, J. K., &Kenjaboev, S. S. (2019). Development of an effective resource-saving design and methods for calculating the parameters of gears with compound wheels. International Journal of Innovative Technology and Exploring Engineering, 9(1), 2385-2388.

ISSN2277-3630 (online),PublishedbyInternational journal of Social Sciences & Interdisciplinary Research., January-2022 https://www.gejournal.net/index.php/IJSSIR

9. Kenjaboev, S. (2019). The Study Of The Effect Of The Parameters Of Elastic Coupling On The Hacker Of Motion Of The Rocker Arm Of The Crank And Beam Mechanism. Textile Journal Of Uzbekistan, 2(1), 102-107.

10. Djuraev, A., Kenjaboyev, S. S., &Akbarov, A. (2018). Development of Design and Calculation of Frictional Force in Rotational Kinematic Pair of the Fifth Class with Longitudinal Grooves. Development, 5(9).

11. Кенжабоев, Ш., Турдалиев, В., &Абдуллажонов, А. (2018). Инновационная конструкция ременной передачи для приводов технологических машин. In Перспективы Интенсивного Подхода К Инновационному Развитию: Сборник Материалов Международной Конференции.–Наманган: Издательство «Намити (pp. 351-352).

12. Kenjaboyev, S. S., &Ljurayev, A. (2018). Kinematic Characteristics Of The Crank And Beam Mechanism With Composite Kinematic Pairs. Scientific-technical journal, 22(1), 42-47.

13. Djuraevich, D. A., &Sharipovich, K. S. (2018). Kinematic analysis of the four-link lever mechanism in accordance with the limits of elastic elements in sharnir. European science review, (5-6).

14. Sharifjanovna, Q. M. (2021). Perpendicularity of a Straight Line to a Plane and a Plane to a Plane. InternationalJournalofInnovativeAnalysesandEmergingTechnology, 1(5), 70-71.

15. Abduraximovich, U. M., &Sharifjanovna, Q. M. (2021). Methods of Using Graphic Programs in the Lessons of Descriptive Geometry. InternationalJournalofDiscoveriesandInnovationsinAppliedSciences, 1(6), 149-152.

ISSN2277-3630 (online),PublishedbyInternational journal of Social Sciences & Interdisciplinary Research., January-2022 https://www.gejournal.net/index.php/IJSSIR