American Journal of Science and Learning for Development

Volume 1 | No 2 | Dec-2022

Investigation of Innovative use Methods in Bearing Rings Manufacturing

Akbarjon Baymirzaev, Ph.D

Department of Materials Science and Technology of New Materials, Andijan Machine-Bulding institute, Andijan, Uzbekistan

***Annotation*:** *Currently, scientific research consists of practical work. This article is about how to save money and time in machining by having results information. To achieve these results, the use of computing systems and programs is envisaged. This method is used in some processes in the production of bearing rings.*

Keywords: *material, shaft, hardness, content, vacuum, impact viscosity, bearing details, ring, casting method.*

Introduction

In our country, all industries are currently working on localization. Among these, the local production of bearing parts and how to produce one of its parts, rings, is an urgent topic. In addition, in order to clarify some processes in the production of bearing rings, we touched on the stage of mechanical processing.

In the scientific research processes that you know, experimental methods and theoretical methods are usually used. It is the method we are researching that includes engineering casting methods, mechanical processing, internal and external processing, and similar applications. We found it necessary to determine some methods of mechanical processing, which is one of the processes in this study, with the help of innovative logic programs. Programs of this level provide material and time savings. We chose the "Q-form" program, which is one of these programs. This system has Russian state certification and license.

When finding a solution to the problems of scientific research, it takes into account voltage, thermal conductivity, and similar conditions. As a result, it will be possible to get the necessary accuracy. In addition, this system provides an opportunity to solve problems based on other theories. Based on the results of this system, it collects technological and structural information and brings it into electronic form

Material and Methods

In this study, we will study only the methods used in the production of bearing parts. One of these methods involves mechanical treatment of the ingot, i.e. grinding.

Ring grinding is such a technological process that is used in the precision production of ball bearing details. The composition of ShX15 steel material selected in the production of the bearing ring and the cast part must be mechanically processed.

Explores issues related to detail processing through modeling in Q-Form software. With this method, we determine how much effort to spend for the desired result, using the capabilities of the programIf we take into account the fact that the bearings have a very high point stress and at the same time slip resistance, the removable bearing material must be able to withstand very high stresses and friction.

However, the impact viscosity should be close to that required by the bearings. To do this, we have proposed this method. Sufficient viscosity can be obtained by removing the bearing casting and then influencing its impact viscosity with the casting. The main problem is the chemical integrity of the bearing material, the absence of liquids and the increase in the impact viscosity. The above properties of bearing steel can be obtained, which can solve part of the problem of import of metal by bearing manufacturers.

Results

And of course, when it comes to results, many researchers choose different methods in their projects. Some researchers have achieved their results with the method we have chosen. With this method, we mainly stopped at mechanical processing. Of course, it is possible to increase the strength of the detail by nesting. These include hardness, abrasion resistance and impact resistance properties. With this, it is possible to determine the degree of impact at what angle and with what force during processing.The results show that work is currently underway on castings, but mainly due to the fact that we always have different materials for the use of secondary raw materials, different results are always achieved. It is natural that the results will not be satisfactory at the beginning, but we are getting closer to the indicators we have chosen. We hope to get closer results soon.

Small cast forms are taken at the beginning. In fact, it should be. This makes the job easier and faster. The composition of the material is processed in this order until it gives the results we expect. We then perform the chemical analysis during the casting period. This makes it much easier to achieve results.

If the results continue to be costly, we get help from computer programs. It speeds things up a lot and is cheap of course. If the computer calculates the data close to the result, it will be easier for us to get the result in practice.

As I mentioned above, results can also be achieved using computer programs. In the future, on the one hand, we will try to do this in practice and in computer programs. We are also currently looking for software. Of course how good it is when all things are systematic.

Discussion

The bearing is a support for a rotating shaft and shafts. The rotating or vibrating parts of the mechanism limit the position of the shaft relative to other parts, allowing the shaft to rotate smoothly and easily by directly absorbing the forces acting on the shaft. There are sliding and rolling bearings. The base surface of the sliding bearings may be cylindrical, conical or spherical, and the shaft neck may be dry (oil-free), semi-dry or lubricated (ie lubricated). There are detachable and non-detachable types of bearings. In detachable bearings, the bushing is usually mounted in a hole in the housing between the support surface and the shaft neck.

The proposed method is to take the bearing steel in an induction melting furnace and prepare it in a vacuum casting and circulating spreader to bring its density and dimensions to the level of technical requirements.

To do this, the steel is melted in an induction furnace, taking into account the follow-up of SHX15, and the steel is melted and the molten metal composition SHX15L is cast in the form of a bushing using ferroalloys.

After casting, the dimensions are determined on rotary spreaders and transferred to machining sites.

The above processes involve computational work in its own right. There is still a lot of work to be done to address these issues in the future. The reason is that very little work is being done on these materials in our country at the moment.

Conclusion

We talked about a number of advantages of this method. It is possible to evaluate and learn technology through computers without conducting practical experiments.

For modeling, the same input parameters set in the rolling mill management software are used. This makes the work of the modeling engineer much easier. Algorithms of the QForm Ring Rolling program were originally set up to simulate projection on two-stand rolling machines.

The main point is that such steels are not produced in our country. The production of steels of this brand is more complicated for factories, which hinders their main production. Because the production volume is so small that it exceeds 100 t / month, the bearing manufacturers cannot afford to buy more than that. Therefore, it is advisable to set up production in small furnaces so that the process can be implemented without affecting their production program. The proposed technological process meets the requirements for bearing steels and is of sufficient quality.

Taking the bearing balls (grains) by twisting method when removing the bearing bearings allows to prolong the service life of the bearing. The steel obtained by this method reduces the refractive index of the bubbles, that is, the linear bands formed by the torsion of the bubbles to some extent prevent breakage. According to research, custom-made swing bearings are more likely to be used in industry in the future, especially in machinery.

REFERENCES

1. Rustamjan ogli, Baymirzayev Akbarjon, and Nazarova Ruxsora Shuxratjon Qizi. "TEXNOLOGIYALARNIGINA EMAS, ILM-FANNITUSHUNADIGONFUQAROLAR KO'PROQ BO'LISHI KERAK." BARQARORLIK VA YETAKCHI TADQIQOTLAR ONLAYN ILMIY JURNALI 2.4 (2022): 442-445.
2. Baymirzaev, Akbarjon. "Research on the Production of Bearing Details in a Modern Method." International Journal on Integrated Education 4.3: 269-271.
3. Baymirzaev, Akbarjon. "Obtaining And Efficiency Of Steel Casting In Local Conditions In Mechanical Engineering." Academicia Globe: Inderscience Research 2.09 (2021): 21-25.
4. Mamitjonovich, Tojiboyev Begijon, et al. "TO CREATE A TECHNOLOGY FOR OBTAINING THE DETAILS OF BEARINGS USED IN INDUSTRY FROM METAL-COMPOSITE MATERIALS."
5. Baymirzayev Akbarjon, Cr, Brands C. Si Mn, and CP Ni Si. "Production of Bearing Parts by Means of Vacuum Casting."