DETERMINATION OF GEOMETRIC PARAMETERS OF PREVIOUSLY UNTREATED ZONES

Mukhlisa Mukhtoralievna Rustamova
The Department of Descriptive Geometry and Engineering Graphics Fergana Polytechnic Institute, Republic of Uzbekistan

ABSTRACT

The article on the topic "Conducting research on identification and elimination of errors arising when processing complex shaped parts on cnc machines" contains 138 pages of a text document. The aim of the dissertation was to improve the existing manufacturing technology. As a result of the research, the technological process of machining was improved for a body part of high complexity "Housing" in conditions of mass production using technological equipment with numerical control.

Based on the plans for the surface treatment of the part, a starting technological process was developed and illustrations of the processing route were made. Suitable equipment and technological equipment have been selected.

***Keywords**: vacuum ring, cellulose, silicone rubber, nitrate.*

АННОТАЦИЯ

Статья на тему «Проведение исследований по выявлению и устранению ошибок, возникающих при обработке деталей сложной формы на станках с ЧПУ» содержит 138 страниц текстового документа. Целью диссертации было усовершенствование существующей технологии производства. В результате проведенных исследований усовершенствован технологический процесс механической обработки кузовной детали повышенной сложности «Корпус» в условиях серийного производства с использованием технологического оборудования с числовым программным управлением.

На основании планов обработки поверхности детали был разработан стартовый технологический процесс и сделаны иллюстрации маршрута обработки. Подобрано подходящее оборудование и технологическое оборудование.

***Ключевые слова:** вакуумное кольцо, целлюлоза, силиконовый каучук, нитрат.*

INTRODUCTION

As shown earlier, if concave milling F carotid cutters cylindrical surfaces formed zone. Finishing previously untreated zones produced sphere - symmetric with cutters, as well as in bulk processing slope portion surface and the machining depth is constantly changing, the cutting force is not constant, which leads to a change in the trajectory of the cutting chrome - tool, and as a result, error handling ... Existing methods, including additional adaptive devices do not allow the armature - -posed manage the processing of such sites when performing transitions.

For this reason, the question of the appointment of optimum modes of cutting - Nia in any part of the work surface should be resolved at the stage of development of the control program.

The existing CAM systems (including higher level UNIGRAPHICS , of CATIA , the PRO / ENGINEER) kernel build objects based on solid modeling (of pa - the format of the X _ T), and to control cutting conditions, must be carried out step by step the subtraction model of the work piece on the model blanks. But the systems work model is based facets (the format of the STL), and this at - the rank of modern CAM system is not able to produce the Boolean operators - radio. Even if we assume that the details of the formats and the work piece (from the previous - conductive operation) will be the same, the system will have to perform step-op - - determination of the shear volume, which will significantly increase the time of calculation of the control program.

When developing the control program, the CAM systems calculate only the trajectory of the tool movement . The technologist-programmer sets the following parameters:

- working feed;
- feed of the first cut;
- infeed and retraction of the tool;
- accelerated feeds;
- spindle rotation frequency.

It should be noted that the values of these parameters do not change during the execution of the control program.

In this regard, it becomes necessary to develop a new method that will allow to influence the shaping process by frame-by-frame control of cutting modes on any part of the surface to be machined .

To do this, it is necessary that the CNC system solves the following tasks:

- determined the change in the geometric parameters of the processing zone;
- adjusted the treatment regimens in leading them to a value optimal nym on an arbitrary portion of the machined surface.

Solving these problems will ensure the stabilization of the power of steam - meters, affecting the accuracy and quality of machined concave style - GOVERNMENTAL surfaces for finishing milling volume.

DISCUSSION AND RESULTS

When volumetric milling of concave shaped surfaces with ball milling cutters, the movement of the tool is usually assigned normal to the machined surface. This method reduces the number of workers and idle movements and also increases the accuracy and quality of processing. Tool path at a volumetric is a spline.

In order to determine the value of the maximum possible when starting, which is formed near the depression of the machined surface, it is necessary to know the path along which the tool moves. However, over - time CAM system, such an analysis does not automatically produce, it is necessary to build an additional section of the surface, which requires extra cost. From [28], the near vertex ellipse and hyperbola shaped differ little from each other. Based on this, we assume that the parameter is the maximum possible allowance is the same for any type of conic section, as well as mathematical transformation a parabola easier perceived CNC systems and setting the maximum allowance is formed specifically for the type of a pair of sections - bolas, then the calculation of the maximum possible allowance we make for paraboloid-crystal portion.

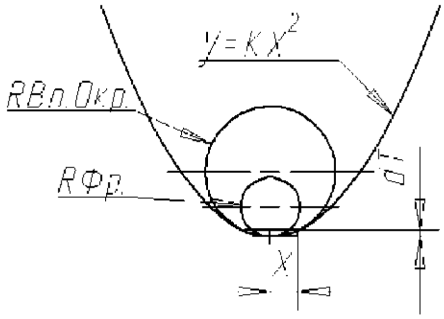

Figure 2.1. Parabola parameters calculation scheme

Parabola equation:

$$y = kx^2. \tag{2.1}$$

On the site of the parabola, which depends on the processing accuracy AT to construct a circle with a radius R $_B$ n. From industrial experience of - known that the maximum radius of the tool for maintenance of process D - without crushing, must be less than the radius of the inscribed circle of 1.1 times. Consequently, according to the construction of Fig.2.1, the parabola coefficient k - depends on the radius of the sphere of the tool used.

$$x=\sqrt{(1{,}1R_{фр.})^2-(1{,}1R_{фр.}-\Delta T)^2}=$$
$$=\sqrt{(1{,}1R_{фр.})^2-\left((1{,}1R_{фр.})^2-2{,}2R_{фр.}\Delta T+\Delta T^2\right)}=\sqrt{\Delta T(2{,}2R_{фр.}-\Delta T)}. \qquad (2.2)$$

From the parabola equation:

$$y=kx^2\Rightarrow k=\frac{y}{x^2}; \qquad (2.3)$$

$$\Rightarrow k=\frac{1}{2{,}2R_{фр.}-\Delta T}. \qquad (2.4)$$

The final semi-finish transition is made with a cylindrical cutter with a diameter equal to that of a ball-shaped finishing cutter. Consequently , the maximum value of the increasing allowance when processing a symmetric parabola is determined by the expression [42] (Fig.2.2):

$$H_{1нар}=y=kx^2\approx k(R_{фр.}+T)+T^2=\frac{(R_{фр.}+T)^2}{2{,}2R_{фр.}-\Delta T}+T^2. \qquad (2.5)$$

Expression (2.5) calculates the parameter of the maximum possible allowance that can be formed during roughing with a cylindrical cutter, provided that the diameter of the cylindrical cutter is equal to the diameter of the spherical cutter.

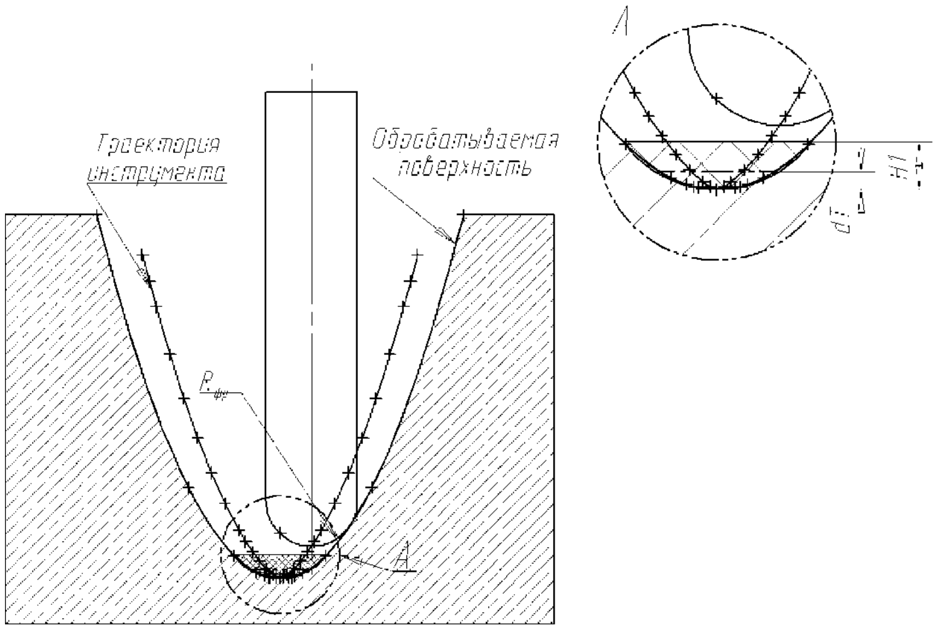

Figure 2.2. Scheme for calculating the maximum possible allowance

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Expression (2.5) calculates the depth of cut for a particular case, for a parabolic section. In practice, such a case is extremely rare, and additions.

The actual value of the allowance (Fig. 2.3) at any part of the machined path depends on:

- the diameter of the previously used tool O f $_{r}$.;
- pretreatment allowance T;
- the area of the radius of the arc of the circumference of the processed surface I_p.

For a concave shaped surface, during the processing of which the movement of the tool is carried out in a circle , the maximum depth of the unprocessed zone is calculated by the formula [43]:

$$H_{1окр.} = H_2 + T, \tag{2.6}$$

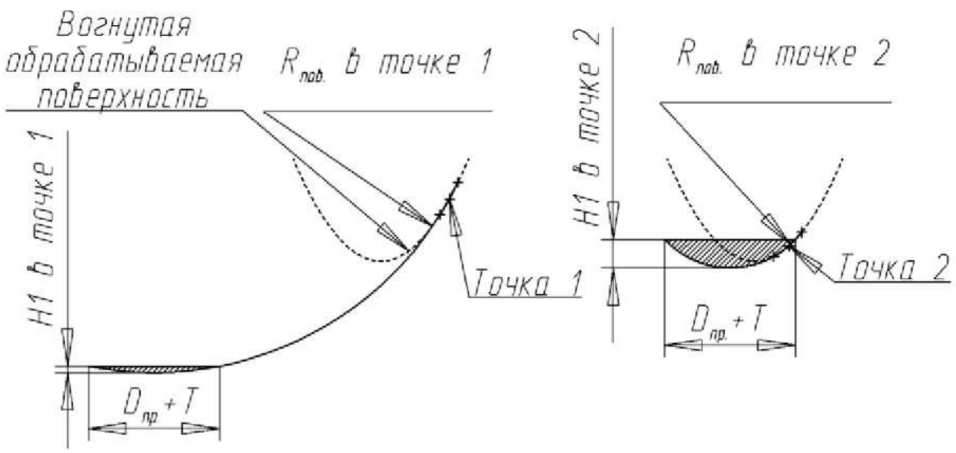

Figure 2.3. Dependence of the growing stock on the surface radius .

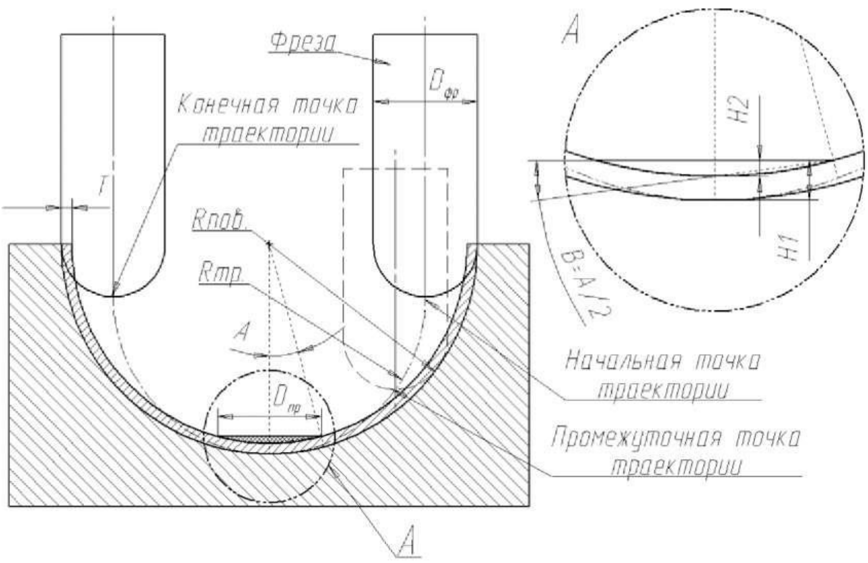

Figure 2.4. Calculated scheme of the increasing stock .

From figure 2.4 it follows

$$tg\alpha = \frac{2H_2}{R_{фр.}} \Rightarrow H_2 = \frac{R_{фр.} tg\alpha}{2}; \qquad (2.7)$$

$$\sin\alpha = \frac{R_{фр.}}{R_{пов.}} \Rightarrow \alpha = \arcsin\frac{R_{фр.}}{R_{пов.}}. \qquad (2.8)$$

Then Equation 2.6 will take the following value

$$т.к. H_2 = \frac{R_{фр.} \cdot tg\left(\arcsin\frac{R_{фр.}}{R_{пов.}}\right)}{2} \Rightarrow$$

$$H_{1окр} = \frac{R_{фр.} \cdot tg\left(\arcsin\frac{R_{фр.}}{R_{пов.}}\right)}{2} + T, \qquad (2.9)$$

CONCLUSION

Analysis of the obtained expression shows that the larger the preliminary allowance and the diameter of the preliminary tool, the higher the parameter of the depth of cut in the previously untreated zone, and the larger the radius of the machined surface, the smaller the depth of processing.

REFERENCES

1. Mamajonovich, K. A., Eraliyevna, T. Z., & Mukhtaraliyevna, R. M. (2020). Box curve (curl) of fan casing. ACADEMICIA: An International Multidisciplinary Research Journal, 10(5), 604-607.
2. AMINJANOVICH, U. J., AKHMADJONOVIC, A. S., & MUKHTORALIEVNA, R. M. (2021). AN EFFECTIVE CLEANER OF RAW COTTON FROM FINE TRASH PARTICLES. THE AMERICAN JOURNAL OF ENGINEERING AND TECHNOLOGY, 3(06), 47-50.
3. Muxtoralievna, R. M., Nosirjonovich, O. Z., & Zafarjonovich, M. J. (2020). Use of graphics computer software in the study of the subject" Drawing and engineering graphics”. ACADEMICIA: An International Multidisciplinary Research Journal, 10(5), 83-86.

4. Aminjanovich, U. J., Akhmadjonovic, A. S., & Mukhtoralievna, R. M. (2021). An Effective Cleaner of Raw Cotton from Fine Trash Particles. The American Journal of Engineering and Technology, 3(06), 47-50.
5. Усманов, Д. А., Умарова, М. О., Абдуллаева, Д. Т., & Рустамова, М. М. (2021). Исследование процесса очистки и хранения тонковолокнистого хлопка от сорных примесей. Бюллетень науки и практики, 7(3), 212-217.
6. Arziyev, S. S., & Rustamova, M. M. (2020). THE MODELING METHOD IN THE INTEGRATION OF DESIGN AND ENGINEERING GRAPHICS DISCIPLINES. Theoretical & Applied Science, (6), 569-572.
7. Turdialiyev, M., Shodimatova, S., & Rustamova, M. (2021, March). SPIRITUALITY AND ENLIGHTENMENT FOUNDATION FOR THE FUTURE OF HUMANITY. In Конференции.
8. Mamajonovich, K. A., Eraliyevna, T. Z., & Mukhtaraliyevna, R. M. (2020). Box curve (curl) of fan casing. ACADEMICIA: An International Multidisciplinary Research Journal, 10(5), 604-607.
9. Axmadbek Maxmudbek o'g'li Turg'unbekov, & Abdumajidxon Murodxon o'g'li Muxtorov (2021). THEORETICAL STUDIES OF THE TECHNOLOGICAL PROCESS OF MACHINING PARTS WITH CONCAVE SURFACES OF COMPLEX FORMS ON CNC MILLING MACHINES. Journal of Innovations in Social Sciences 1(1) ,90-97.
10. Ахмадбек Махмудбек Ўғли Турғунбеков (2021). НОТЕХНОЛОГИК ЮЗАНИНГ ТЕШИКЛАРИГА ИШЛОВ БЕРИШДА ДОРНАЛАШ УСУЛИНИ ТАДБИҚ ЭТИШ. Scientific progress, 2 (1), 4-10.
11. Abdumajidxon Murodxon O'G'Li Muxtorov, & Axmadbek Maxmudbek O'G'Li Turg'Unbekov (2021). VAKUUM XALQALARI UCHUN SILIKON MATERIALLARNI TURLARI VA ULARNING TAHLILI. Scientific progress, 2 (6), 1503-1508.
12. Karimov, R. (2021). PLANNING OF BELT BRIDGE FOR UNSYMMETRICAL PROGRESSIVE STAMPING. Scientific progress, 2(2), 616-623.
13. Karimov, R. J. O. G. L., & Toxtasinov, R. D. O. (2021). FEATURES OF CHIP FORMATION DURING PROCESSING OF POLYMER COMPOSITE MATERIALS. Scientific progress, 2(6), 1481-1487.
14. Karimov, R. J. O. G. L., O'G'Li, S. S. D., & Oxunjonov, Z. N. (2021). CUTTING HARD POLYMER COMPOSITE MATERIALS. Scientific progress, 2(6), 1488-1493.

15. Jaxongir o'g'li, R. K., & Sobirovna, N. S. IMPROVING THE QUALITY OF LASER CUTTING OF METALS BY OPTIMIZING THE TECHNOLOGICAL PARAMETERS OF THE PROCESS.
16. Rustam Karimov Jaxongir ugli, & Karimov Ravshan Xikmatullaevich. (2021). DESIGN OF DIES WITH SPLIT DIES. EURASIAN JOURNAL OF SOCIAL SCIENCES, PHILOSOPHY AND CULTURE, 1(3), 35–39.
17. Rustam Karimov Jaxongir o'g'li, Abullayeva Dona Toshmatovna, Rustamova Muxlisa Muxtoraliyevna, & Toxirov Islom Xakimjon o'g'li. (2021). PROGRESSIVE CONSTRUCTIONS OF ADJUSTABLE SHEET PUNCHING STAMPS. EURASIAN JOURNAL OF SOCIAL SCIENCES, PHILOSOPHY AND CULTURE, 1(2), 46–53.
18. I. O. Ergashev, R. J. Karimov, A. M. Turg'unbekov, & S. S. Nurmatova (2021). Arrali jin mashinasidagi kolosnik panjarasi bo'yicha olib borilgan ilmiy tadqiqotlar tahlili. Scientific progress, 2(3), 78-82
19. Ilhom Olimjonovich Ergashev, Rustam Jaxongir o'g'li Karimov, Ravshan Xikmatullayevich Karimov, & Salimaxon Sobirovna Nurmatova (2021). Kolosnik almashinuvchi mashinasi elementi egilishining nazariy tadqiqotlari. Scientific progress, 2(3), 83-87
20. Rustam Karimov Jaxongir ugli, & Polotov Karimjon Quranboevich. (2021). IMPROVE THE EFFICIENCY OF TURNING LIGHT ALLOYS. EURASIAN JOURNAL OF MATHEMATICAL THEORY AND COMPUTER SCIENCES, 1(3), 26–30.
21. Rustam Karimov Jaxongir ugli, & Jumaev Nizomiddin Kenjaboy ugli. (2021). COMBINED METHOD OF TURNING BILLS FROM POLYMER MATERIALS. EURASIAN JOURNAL OF MEDICAL AND NATURAL SCIENCES, 1(3), 1–6.
22. Rustam Karimov Jaxongir o'g'li, & Polotov Karimjon Quranbaevich. (2021). PROGRESSIV SHTAMPLASH KONSTRUKSIYALARINI REJALASHTIRISH. PLANNING OF PROGRESSIVE STAMPING CONSTRUCTIONS. EURASIAN JOURNAL OF LAW, FINANCE AND APPLIED SCIENCES, 1(3), 10–18.
23. Турсуналиев Исломжон Дилшоджон ўғли, & Рустам Каримов Джахонгир ўғли. (2021). ПОВЫШЕНИЕ КАЧЕСТВА КОНТАКТНОЙ СТЫКОВОЙ СВАРКЕ ПРИ МАССОВОМ ПРОИЗВОДСТВЕ В АВТОМОБИЛЬНОЙ ПРОМЫШЛЕННОСТИ. EURASIAN JOURNAL OF SOCIAL SCIENCES, PHILOSOPHY AND CULTURE, 1(3), 91–97. https://doi.org/10.5281/zenodo.5752576

24. No'monov Nodirjon Farxodjon ugli, & Karimov Rustam Jaxongir ugli. (2021). DESIGN OF A MODERN FASTENING AND LOOSENING DEVICE FOR MACHINING OF PLATE-TYPE PARTS ON A MILLING MACHINE. EURASIAN JOURNAL OF MATHEMATICAL THEORY AND COMPUTER SCIENCES, 1(4), 1–5. https://doi.org/10.5281/zenodo.5766304
25. Dostonbek, V., Nizomiddin, J., & Jurabek, S. (2021). EXPERIMENTAL AND THEORETICAL STUDIES OF THE PROCESS OF CUTTING POLYMER MATERIALS. Academicia Globe: Inderscience Research, 2(05), 485-490.
26. Ravshan, K., & Nizomiddin, J. (2020). INCREASING EFFICIENCY OF PRODUCTION OF MACHINE PARTS USING A COMBINED BLADE TOOL. ACADEMICIA: An International Multidisciplinary Research Journal, 10(5), 445-448.
27. Усманов, Д. А., Умарова, М. О., & Жумаев, Н. К. У. (2019). Построение графика проекций поверхности отклика для типа барабана и формы сороудаляющей сетки очистителя хлопка-сырца. Проблемы современной науки и образования, (11-1 (144)).
28. Eraliyevna, T. Z. (2021). History of architecture city and ferghana cities in the region. CENTRAL ASIAN JOURNAL OF SOCIAL SCIENCES AND HISTORY, 2(2), 11-15
29. Усманов, Д. А. (1981). Исследование эффективности очистки хлопка-сырца от сорных примесей. Дисс. канд. техн. наук. Ташкент.
30. Kholmurzaev, A. A., & Polotov, K. K. (2020). METHODS OF USING MEDIA EDUCATION IN THE LEARNING PROCESS. Theoretical & Applied Science, (5), 205-208.
31. Усманов Джасур Аминджанович, Холмурзаев Абдирасул Абдулахатович, Умарова Мунаввар Омонбековна, and Валихонов Достонбек Аъзим Угли. "ИССЛЕДОВАНИЕ ФОРМЫ СОРОУДАЛИТЕЛЬНОЙ СЕТКИ КОЛКОВО-БАРАБАННОГО ОЧИСТИТЕЛЯ ХЛОПКА-СЫРЦА" Проблемы современной науки и образования, no. 12-1 (145), 2019, pp. 35-37.