KOLOSNIK PUANSON MODELINI 3D MODELDAN RAQAMLIGA AYLANTIRISH KETMA-KETLIGI

Azizov Shuhrat Mamatovich.
Uzoqov Farhod G'afforovich
Namangan muhandislik-texnologiya instituti, O'zbekiston
E-mail: azizovshuhrat@gmail.com
E-mail: farxodjonuzoqov@gmail.ru
+998943010181

ANNOTATSIYA

Mazkur tadqiqot jarayonida kolosnik puanson modelini 3D modeldan raqamliga aylantirish ketma-ketligini amalga oshirish jarayonlari tahlil qilib o'tilmoqda. Raqamliga aylantirish orqali ishlab chiqarish korxonalaridagi stanok va dasgohlarimizni o'qiydigan holatini yaratishdir.

Kalit so'zlar: *Kolosnik, 3d modeli, puanson modeli, NX1.2 dasturi, post prosses, fanuc, Cad Cam dasturi, 1D50R5, Operation Navigator-Geometry va pobeditli frezlar.*

ПОСЛЕДОВАТЕЛЬНОСТЬ ПРЕОБРАЗОВАНИЯ МОДЕЛИ КОЛОСНИКА ПУАНСОНА ИЗ 3D МОДЕЛИ В ЦИФРОВУЮ

Азизов Шухрат Маматович,
Узоков Фарход Гафорович
Наманганский инженерно-технологический институт, Узбекистан

АННОТАЦИЯ

Реализация последовательности преобразования модели kolosnik poinson из 3D-модели в цифровую. Создание читаемого состояния наших станков и инструментов на производственных предприятиях путем цифровизации.

Ключевые слова: *Колосник, 3D модель, модель пойнсона, программа NX1.2, постпроцессы, fanuc, программа Cad Cam, 1D50R5, Operation Navigator-Geometry и победит фрезерные станки.*

Oriental Renaissance: Innovative, educational, natural and social sciences
Scientific Journal Impact Factor
Advanced Sciences Index Factor

VOLUME 2 | ISSUE 10
ISSN 2181-1784
SJIF 2022: 5.947
ASI Factor = 1.7

A SEQUENCE OF CONVERTING A KOLOSNIK POINSON MODEL FROM A 3D MODEL TO A DIGITAL ONE

Azizov Shuxrat Mamatovich,
Uzokov Farhod Gaforovich
Namangan Institute of Engineering and Technology, Uzbekistan

ABSTRACT

Implementation of the kolosnik poinson model conversion sequence from a 3D model to a digital one. Creating a readable state of our machines and tools in production enterprises by digitalization.

Keywords: *Kolosnik, 3D model, poinson model, NX1.2 software, post processes, fanuc, Cad Cam software, 1D50R5, Operation Navigator-Geometry and pobedit milling machines.*

KIRISH

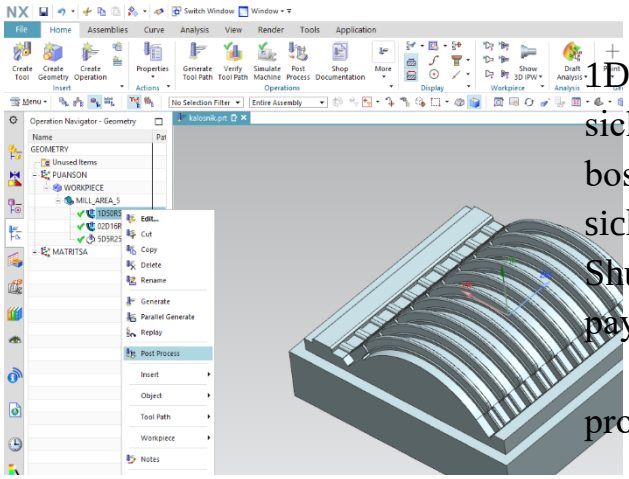
Hozirgi kunda paxta tozalash korxonalarida ishlab chiqarilayotgan paxta tolasining sifati bevosita texnologik jarayonda ishlayotgan mashinalarning samarali ishlashiga bog'liq[1-2]. Har bir texnologik jarayon sifatli tola ishlab chiqarish uchun u yoki bu darajada muxhim ahamiyat kasb etadi. Korxonada tola ishlab chiqarishga asosiy bog'liq jarayon - bu jinlash (toladan chigitni ajratish) jarayonidir. Tozalash sexlarida mayda va yirik iflosliklardan tozalangan paxtani jinlash sexining asosiy mashinasi bo'lgan arrali jinga uzatiladi. Jinning ishchi kamerasiga kelib tushgan chigitli paxtaning chigit tarogi yonida aylanayotgan arra tishlari bilan ilib olib, kolosnikli panjaraga olib keladi[3-4]. Ishchi kamerada arra tishlariga ilashgan paxta bo'lakchalari boshqa paxta bo'lakchalariga ilashib, ularni xam tortadi va xomashyo valigini xosil kiladi. Bu xomashyo valigi arrali tsilindrni aylanishiga karshi tomonga aylanadi va u arra tishlarini paxta tolasi bilan uzluksiz ta'minlab turadi[5].

Maqola mualliflari tomonidan jin mashinasi ishchi elementlarini takomillashtirgan holda bir qancha tadqiqotlar o'tkazildi. Tadqiqotlardan maqsad, Kolosnik puanson modelini 3D modeldan raqamliga aylantirish ketma-ketligi amalga oshirish. Raqamliga aylantirish orqali ishlab chiqarish korxonalaridagi stanok va dastgohlarimizni o'qiydigan imkoniyatini yaratib berish va shu jarayonni amalga oshiradigan qurilma tayyorlab, uning samarali ishlaydigan texnologik o'lchamlarini aniqlash hamda ishlab chiqarishga joriy etishdan iborat[6-7].

Optimallashda asosiy masala jin mashinasi ish unumdorligiga ta'sir qiluvchi ahamiyatli omillarni aniqlab olishdir, bunda jin mashinasining asosiy ishchi

qismlaridan biri bo'lgan "kolosnik" ga ishlov berish orqali toladan ajralgan chigitlarni ishchi kameradan chiqib ketish vaqtini tezlatish imkonini beruvchi parametrlar tanlab olinadi[8].

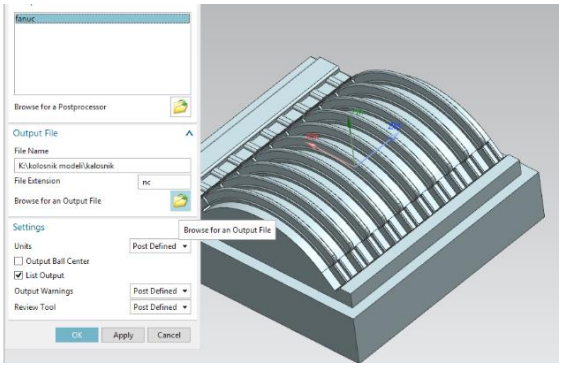
Yuqorida tayyorlagan 3 ta dasturimiz faqat 3D mdelni holati ya'ni uni bizning raqamli dastgohlarimiz o'qimaydi. Uni faqat NX1.2 dasturida ko'rish mumkin. Biz uni raqamli dastgohlarimiz o'qiydigan holatga qanday o'tkazamiz? Buning uchun biz NX1.2 dasturidan "Post prosses" orqali uni raqamli ko'rinishga keltirib olamiz[9-10].



Buning uchun tayyorlagan 1D50R5 dasturimizni tanlab sichqonchaning o'ng tomonini bosamiz va "post prosses" ni tanlab sichqonchani chap tugmasini bosamiz. Shunda quyidagi rasmdagi holat paydo bo'ladi(rasm-1).

Rasm-1: NX1.2 dasturidan "Post prosses".

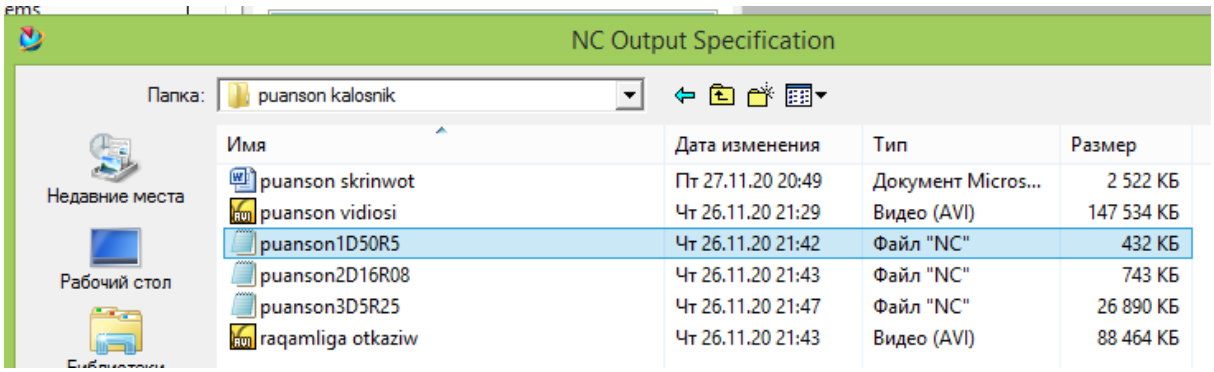
Bizning raqamli dastgohlarimiz "Fanuc" bo'lganligi uchun fanuc Cad Cam dasturidan foydalanamiz va o'zimizga kerakli holda, kerakli saxifaga saqlaymiz va OK ni bosamiz[11]. Natijada "Fanuc" oynasi ochiladi(rasm-2). "ME-1100" dastgohni umumiy ko'rinishi(rasm-3).



Rasm-2: Fanuc Cad Cam dasturi

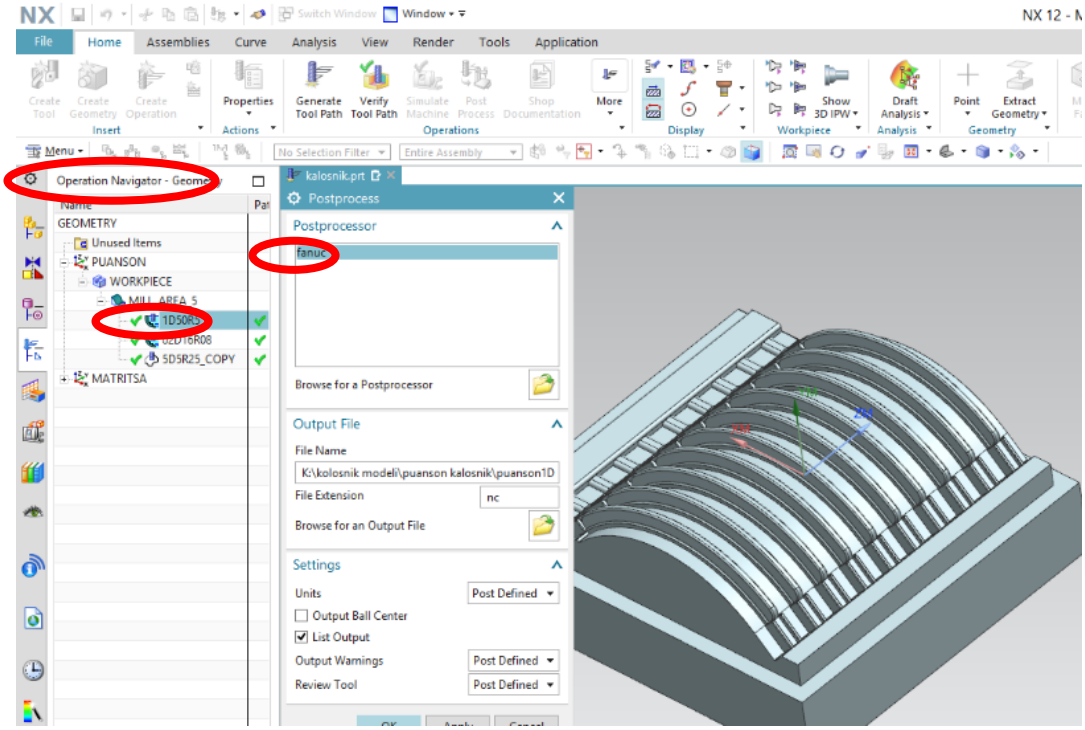
Rasm-3: "ME-1100" rusmli raqamli dastgoh

Kolosnik puanson modelini 3D modeldan raqamliga aylantirilgan ma'lumotlar *.nc fayl kengaytmasi bilan saqlaniladi. Masalan: fayl nomi puanson1D50R5.nc faylida dastur kodi yozilgan(rasm-4).



Rasm-4: puanson1D50R5.nc, puanson2D1608.nc va puanson3D5R25.nc fayllari.

Kolosnik puanson modelini 3D modeldan raqamliga o'tkazishda birinchi Operation Navigator-Geometry, ikkinchi 1D50R5, uchinchi "Fanuc" bo'limini tanlash orqali amalga oshiriladi(rasm-5).



Rasm-5: Operation Navigator-Geometry, 1D50R5, "Fanuc" bo'limi.

Shundan so'ng bizda yuqoridagi 5-rasmdagi holat paydo bo'ladi ya'ni bizning 1D50R5 dasturimiz 3D holatdan raqamli holatga aylanadi[12].

Natijada raqamli dastur kodi puanson3D5R25.nc fayliga yoziladi.

Puanson1D50R5.nc faylida dastur kodi.

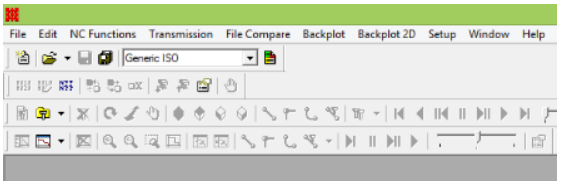
% (Date time - Thu Nov 26 21:42:09 2020)
(Operation name - 1D50R5) (Tool diameter - 50.00) (Tool corner radius - 5.00)
N10 G40 G17 G49 G54 G80 G90
N11 G00 X-.003 Y276.477 S5000 M03
N12 Z11.

N13 M08
N14 Z1.015 N16 X-.002 Y251.477
N17 X-221.364 Y251.473 F3000. N18 G03 X-221.971 Y251. I16.47 J-21.754
N19 G01 X-225. N20 G03 X-226. Y250. I0.0 J-1. N21 G01 Y246.978
…….
…….
N1761 X-213.938 Y-197.851 I35.005 J4.129
N1762 X-208.147 Y-209.492 I29.855 J7.589
N1763 X-188. Y-219.352 I20.365 J16.099
N1764 G01 X-185.781 N1765 G03 X-180. Y-218.654 I-.003 J24.33
N1766 X-174.219 Y-219.352 I5.783 J23.624 N1767 G01 X-172.
N1768 G03 X-160. Y-216.298 I-.063 J25.354
N1769 X-148.152 Y-219.351 I12.065 J22.306
N1770 X-140. Y-218.654 I1.526 J30.17
N1771 X-134.219 Y-219.352 I5.788 J23.668 N1772 G01 X-132.
…….
…….
N3515 G01 Z-118.92 F1500.
N3516 Y256.
N3517 X-205. F3000.
N3518 G03 X-231. Y230. I0.0 J-26.
N3519 G01 Y-230.
N3520 G03 X-205. Y-256. I26. J0.0
N3521 G01 X205.
N3522 G03 X231. Y-230. I0.0 J26.
N3523 G01 Y230.
N3524 G03 X205. Y256. I-26. J0.0
N3525 G01 X0.0 N3526 Y281. N3527 Z-115.92 N3528 G00 Z11.
N3529 M05
N3530 M09
N3531 M30 %
//----------

Saqlangan raqamli dasturini chiziqli harakati “CIMCOedit” kompyuter dasturi yordamida ko’rishimiz mumkin. “CIMCOedit” dasturi Windows ishchi stolida o’rnatilgan bo’lsa shu orqali kiriladi(rasm-6). O’rnatilmagan bo’lsa 1 chi navbatda

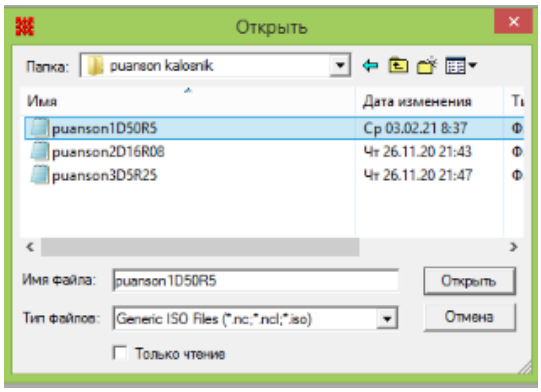
o’rnatib olinadi. So’ng dasturga kiriladi. Dastur oynasi quyidagi ko’rinishda bo’ladi(rasm-7).

Rasm-6: “CIMCOedit” dasturi



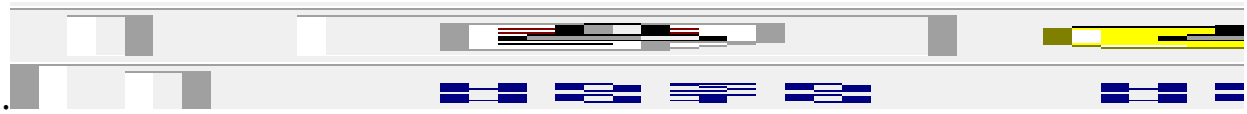
Rasm-7: “CIMCOedit” dasturi oynasi.

So’ngra CIMCOeditga kirib uni ichidan saqlangan fayilimizni topamiz va ochamiz(rasm-8).



Rasm-8: Faylni ochish.

Fayl ochilgandan so’ng quyidagi 9-rasmdagi holat yuzaga keladi ya’ni bizga raqamlar ko’rinshida saqlangan dasturimiz ko’rinish beradi. “basklot windiw” ni tanlab frezeri miz chiziqli harakatini ko’ramiz(rasm-9).



Rasm-9: Frezeri miz chiziqli harakati.

“basklot windiw” ni tanlab frezerimiz chiziqli harakatini ko’ramiz. Shu tariqa 1D50R5 dasturimizni harakat holatini raqamli dasgohda qanday bo’lishi va harakatlanishini ko’rib olamiz(rasm-10).

1D50R5 dasturimizni harakat holatini raqamli dasgohda qanday bo’lishi va harakatlanishi[13].

1D50R5 dasturimizni kodi.

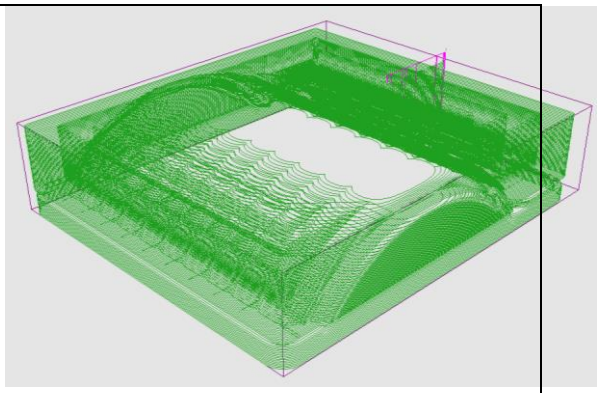
puanson1D50R5.nc

```
%
(Date time - Thu Nov 26 21:42:09 2020)
(Operation name - 1D50R5)
(Tool diameter - 50.00)
(Tool corner radius - 5.00)
N10 G40 G17 G49 G54 G80 G90
N11 G00 X-.003 Y276.477 S5000 M03
N12 Z11.
N13 M08
N14 Z1.015
N15 G01 Z-1.985 F1500.
N16 X-.002 Y251.477
N17 X-221.364 Y251.473 F3000.
N18 G03 X-221.971 Y251. I16.47 J-21.754
N19 G01 X-225.
N20 G03 X-226. Y250. I0.0 J-1.

.....

N3510 G01 X0.0
N3511 Y281.
N3512 Z-113.955
N3513 G00 Z11.
N3514 Z-115.92
N3515 G01 Z-118.92 F1500.
N3516 Y256.
N3517 X-205. F3000.
N3518 G03 X-231. Y230. I0.0 J-26.
N3519 G01 Y-230.
N3520 G03 X-205. Y-256. I26. J0.0
N3521 G01 X205.
N3522 G03 X231. Y-230. I0.0 J26.
N3523 G01 Y230.
N3524 G03 X205. Y256. I-26. J0.0
N3525 G01 X0.0
N3526 Y281.
N3527 Z-115.92
N3528 G00 Z11.
N3529 M05
N3530 M09
N3531 M30
%
```

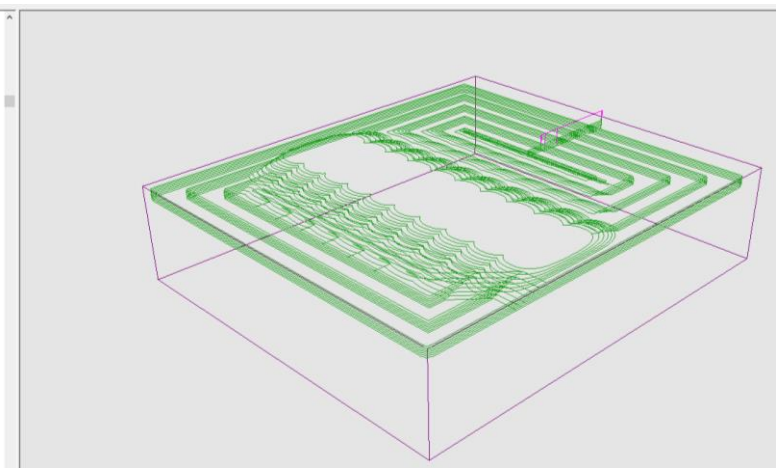
13519:1 Ins Wir 1251 (ANS



Rasm-10: 1D50R5 dasturimizni harakat holati.

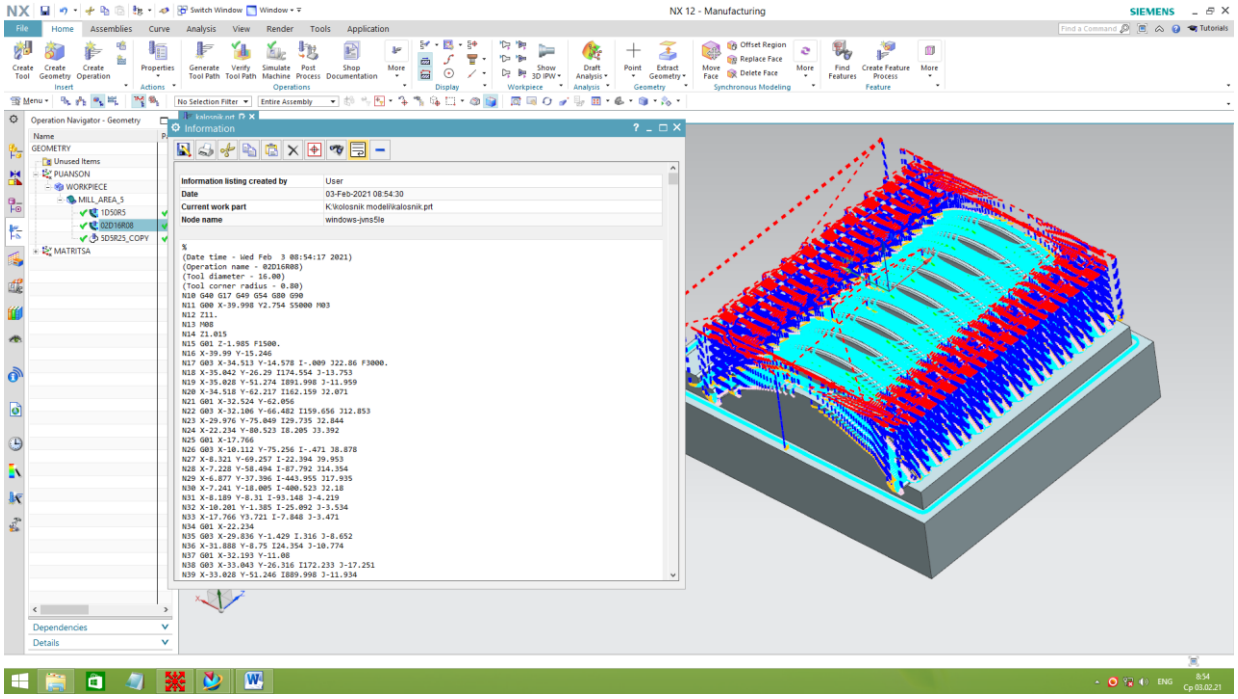
1D50R5 dasturimizni harakat holatini raqamli dasgohda qanday bo'lishi va harakatlanishini davomi(rasm-11).

```
N1913 G01 X-142.234
N1914 G02 X-159.999 Y-136.042 I.376 J30.287
N1915 X-177.766 Y-142.073 I-18.134 J24.237
N1916 G01 X-182.234
N1917 G02 X-197.493 Y-137.729 I.4 J30.374
N1918 G01 Y-222.491
N1919 X197.493
N1920 Y-137.731
N1921 X167.493 Y-171.129
N1922 G02 X159.998 Y-169.282 I10.64 J59.323
N1923 X142.419 Y-172.073 I-18.138 J57.49
N1924 G01 X137.575
N1925 G02 X120.001 Y-169.28 I.576 J60.306
N1926 X102.423 Y-172.073 I-18.149 J57.505
N1927 G01 X97.577
N1928 G02 X80.004 Y-169.281 I.57 J60.297
N1929 X62.417 Y-172.073 I-18.138 J57.476
N1930 G01 X57.583
N1931 G02 X39.998 Y-169.282 I.551 J60.268
N1932 X22.419 Y-172.073 I-18.138 J57.489
N1933 G01 X17.575
N1934 G02 X.001 Y-169.28 I.577 J60.306
N1935 X-17.577 Y-172.073 I-18.149 J57.505
N1936 G01 X-22.421
N1937 G02 X-39.997 Y-169.282 I.563 J60.286
N1938 X-57.584 Y-172.073 I-18.137 J57.476
N1939 G01 X-62.417
N1940 G02 X-80.001 Y-169.282 I.551 J60.268
N1941 X-97.581 Y-172.073 I-18.137 J57.486
N1942 G01 X-102.425
N1943 G02 X-119.999 Y-169.28 I.577 J60.306
N1944 X-137.577 Y-172.073 I-18.149 J57.505
N1945 G01 X-142.421
N1946 G02 X-159.997 Y-169.282 I.564 J60.287
N1947 X-167.493 Y-171.129 I-18.136 J57.477
N1948 G01 Y-192.491
N1949 X167.493
```



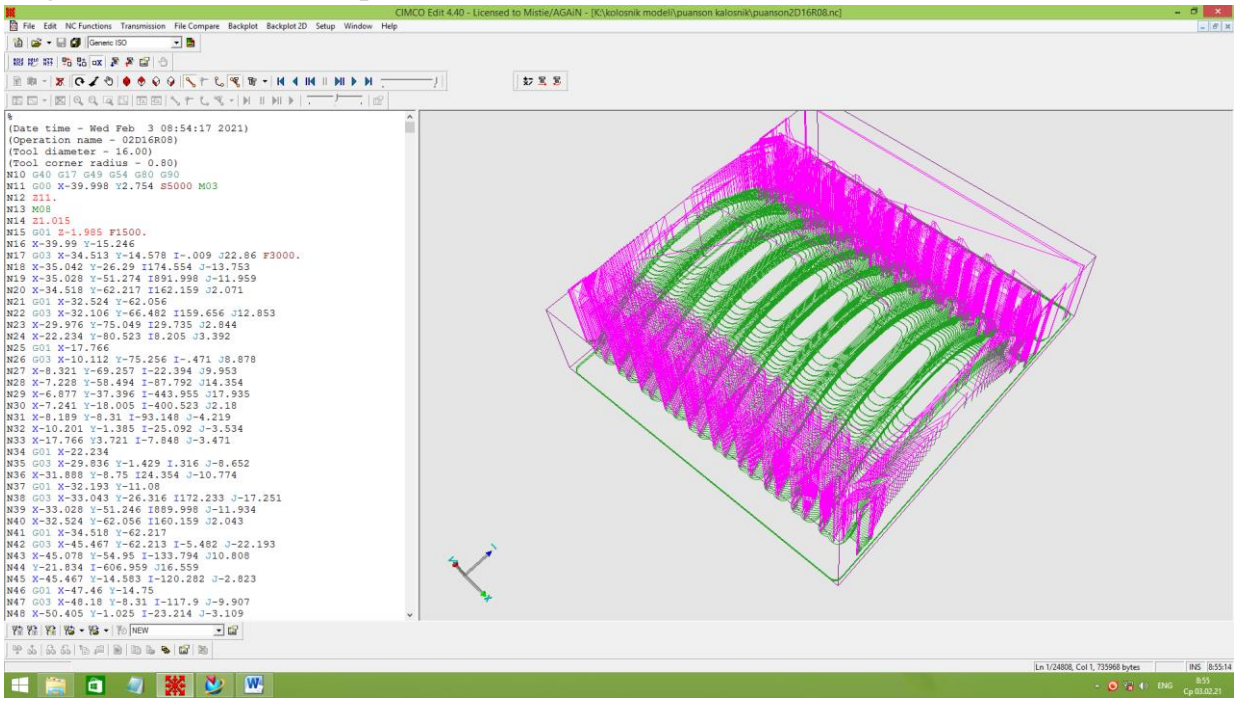
Rasm-11: 1D50R5 dasturimizni harakat holatini raqamli dasgohda harakatlanishini.

Keyingi 2D16R0,8 va 3D5R2,5 dasturilarmiz ham shu tartibda raqamliga o'tkazilib o'zimizga kerakli holatda saqlanadi(rasm-12).



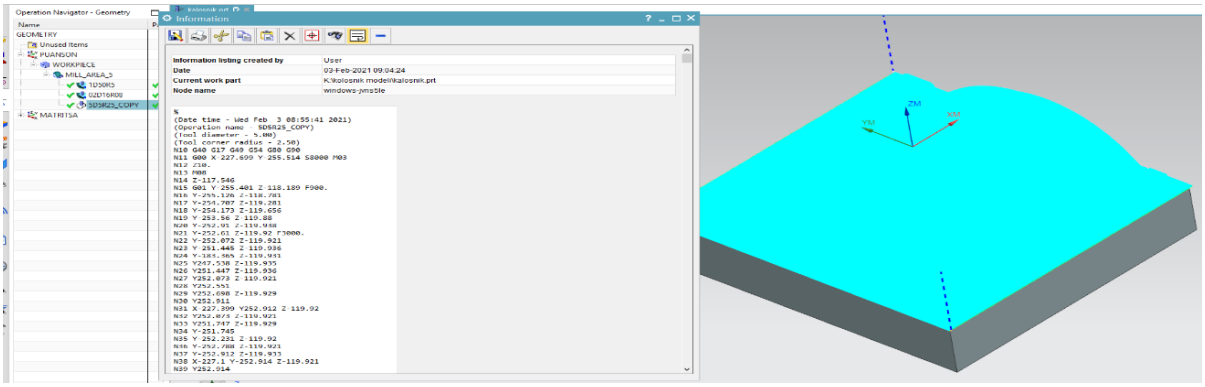
Rasm-12: 2D16R0,8 va 3D5R2,5 dasturilarmizda raqamliga o'tkazish.

2D16R0,8 va 3D5R2,5 dasturilarmiz ham shu tartibda raqamliga o'tkazilib o'zimizga kerakli holatda saqlanadi(rasm-13)



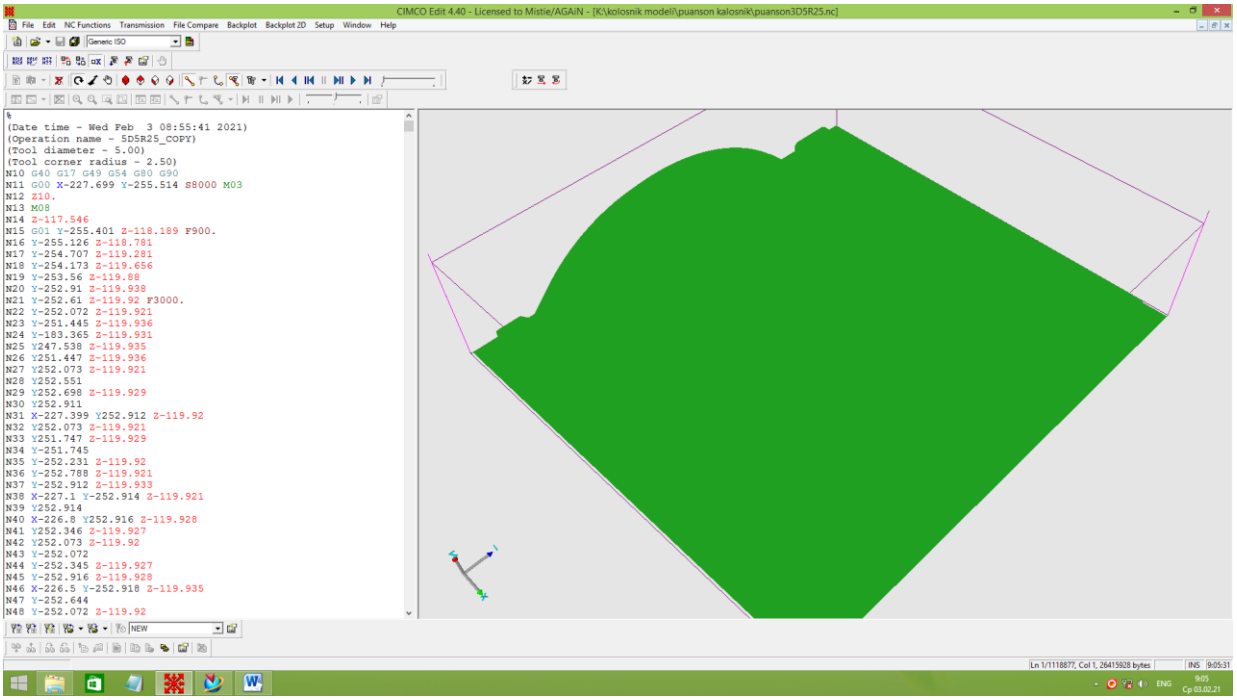
Rasm-13: 2D16R0,8 va 3D5R2,5 dasturilarmiz ham shu tartibda raqamliga o'tkazilib o'zimizga kerakli holatda saqlash.

Saqlashni amalga oshirgandan so'ng puanson3D5R25.nc faylidan nusxa olamiz(rasm-14).



Rasm-14: puanson3D5R25.nc faylidan nusxa olish.

Puanson3D5R25.nc faylidan nusxa olingandan keyingi holat quyidagi 15 rasmda ko'rsatilgan.

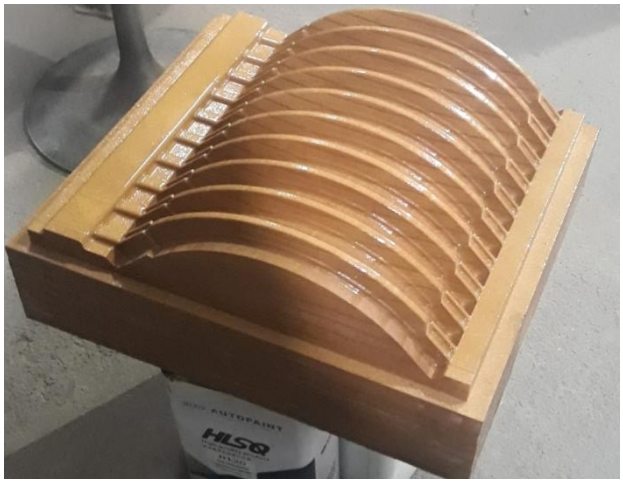


Rasm-15: Puanson3D5R25.nc faylidan nusxa olingandan keyingi holat.

So'ngra NX1,2 dasrurida qanday o'lchamda zagatovka tayyorlagan bo'lsak shunday holatda haqiqiy zagatovkani DSP xom ashyosidan tayyorlaymiz va uni raqamli dasgohga o'rnatamiz. Biz Chust shaxrida joylashgan "Texnolog GR" mchj korxonasida bu jarayonni amalga oshirdik(rasm-16).

Rasm-16: DSP xom ashyosidan tayyorlash va uni raqamli dasgohda.

DSP xom ashyosidan tayyorlab bo'lgandan so'ng laklab olinadi(rasm-17).



Rasm-17: Laklangan puanson modeli.

REFERENCES

1. Wang, G.H. and Li, Y.X. (2022) Development of New Ductile Iron with Super-High Thermal Conductivity and Elongation. *Journal of Iron and Steel Research International*, **29**, 462-473. https://doi.org/10.1007/s42243-021-00581-7

2. Hassan, M. (2017) Characterization of Face Sheet/Core Debonding Strength in Sandwiched Medium Density Fiberboard. *Materials Sciences and Applications*, **8**, 673-684. https://doi.org/10.4236/msa.2017.89048

3. Ning, B., Wu, H.B., Niu, G., *et al.* (2022) Cold Compression Deformation Method for reducing Residual Stress and Uniformizing Micro-Property in Ferrite Steel. *Journal of Iron and Steel Research International*, **2**9, 503-511. https://doi.org/10.1007/s42243-021-00563-9

4. Azizov, S.M. and Axmedhodjaev, X.T. (2016) The Optimal Modeling of an Angular Position of Saw Cylinders in Single-Chamber Two Cylinders Gin. *American Journal of Mechanical and Industrial Engineering*, **1**, 103-106. https://doi:10.11648/j.ajmie.20160103.2

5. Wang, Y.D., Zhang, L.F., Yang, W., *et al.* (2022) Effect of Nozzle Type on Fluid Flow, Solidification, and Solute Transport in Mold with Mold Electromagnetic Stirring. *Journal of Iron and Steel Research International*, **29**, 237-246. https://doi.org/10.1007/s42243-021-00577-3

6. Azizov, S. M., & Axmedhodjaev, H. T. (2015). Theoretical Analysis of Gin Cylinder for Simulating Dual Saw Cylinder Chamber Gin for Increasing Wear Proof, Energy Efficient, Saving Resources. *World Journal of Engineering and Technology*, *3*(03), 91.

7. Azizov, S., Ibrohimov, M., Uzoqov, F., & Mirzakarimov, M. (2021). The modelling and introductions of new type ribs of lattice of the two cylinder of gin. In *E3S Web of Conferences* (Vol. 273, p. 07020). EDP Sciences. https://doi.org/10.1051/e3sconf/202127307020

8. Jiang, D.B., Zhang, L.F. and Wang, Y.D. (2022) Effect of Mold Electromagnetic Stirring on Solidification Structure and Solute Segregation in Continuous Casting Bloom. *Journal of Iron and Steel Research International*, **29**, 124-131. https://doi.org/10.1007/s42243-021-00702-2

9. Briseno, J. and Casanova-del-Angel, F. (2021) Fracture Mechanics on Aluminum Specimens. *World Journal of Mechanics*, **11**, 237-257. https://doi.org/10.4236/wjm.2021.1112016

10. Mamatovich, A.S. and Abdusamat, K. (2011) Definition of Increasing the Fibre Capturing Surface of Saw Teeth of Cotton Ginning Machine through Mathematic Modelling. *World Journal of Mechanics*, **1**, 122-126. https://doi.org/10.4236/wjm.2011.13017

11. Azizov, S., Uzoqov, F., Mirzakarimov, M. and Usmanov, O. (2021) Analysis of Namangan 77 Cotton in Production Line with Different Saw Gins for Short Fiber Yield. *E3S Web of Conferences*, **273**, Article ID: 07021. https://doi.org/10.4236/wjm.2011.13017

12. Azizov, S.M. (2022) Calculation Energy of Efficiency New Ginning Machine.

VOLUME 2 | ISSUE 10
ISSN 2181-1784
SJIF 2022: 5.947
ASI Factor = 1.7

Journal: Engineering, **14**, 163-172. https://doi.org/10.4236/eng.2022.144016

13. Mamatovich, A.S., Abdusamat, K. and Arras, P. (2013) The Mathematical Simulation of Brush Drums in a Dual Saw Cylinder Chamber Gin for the Purpose of Increasing the Quantity of Captured Cotton Fiber from Saw. *World Journal of Mechanics*, **3**, 58-61. https://doi.org/10.4236/wjm.2013.31004