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YARIM AYLANALI KONSOLLI KOLOSNIKNI TASHQI KUCHLAR TA'SIRIGA BARDOSHLILIGINI MODELLASHTIRISH

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Anotatsiya

Solidworks CAD dasturidan foydalanib takomilashgan yangi yarim aylanali konsolli kolosnikni tashqi kuchlar ta'sirida hosil bo'lgan kuchlanish, ko'chish va defformatsiyalarga bardoshliligi masalasi tadqiq jarayoni yoritilgan.

Kalit so'zlar. Jin mashinasi, kolosnik, arra, silindr, cho'yan, Solidworks dasturi, Solidworks CAD, kuch miqdori, kuchlanish, deformatsiya va siljish.

МОДЕЛИРОВАНИЕ ПОЛУКРУГЛОГО КОНСОЛЬНОГО КОЛОСНИКА НА УСТОЙЧИВОСТЬ ВНЕШНИМ НАГРУЗКАМ

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Аннотация

Освещен процесс исследования с использованием САПР Solidworks новой полукруглого консольного колосника на устойчивость к растяжениям, смещениям и деформациям, вызванным внешними силами.

Ключевые слова: Джин, колосник, пила, цилиндр, чугун, программное обеспечение Solidworks, Solidworks CAD, сила, напряжение, деформация и перемещение.

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MODELING OF A SEMICIRCULAR CANTILIZED RIB-GRATE FOR STABILITY TO EXTERNAL LOADS

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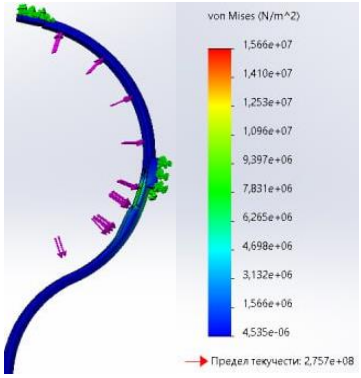
Annotation
The process of studying a new semicircular cantilever grate for resistance to tension, displacement and deformation caused by external forces using Solidworks CAD CAE system is covered.

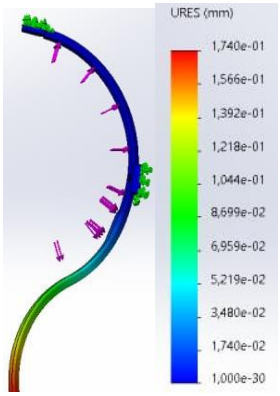
Keywords: Gin, rib, saw, cylinder, cast iron, Solidworks software, Solidworks CAD, force, stress, strain and displacement..

Yangi konstruksiyadagi jin mashinasining kolosnigini ustuvorligini sinash uchun Solidworks simulation dasturidan foydalanamiz. Buning uchun boshlangich qiymatlarni aniqlab olamiz. Buning uchun ushbu kolosnikka ta’sir etadigan kuchlarni qiymatini aniqlab olishimiz kerak bo’ladi. Yangi konstruksiyadagi jin mashinasining arrali silindrlari tomonidan xom ashyo valigiga ta’sir etuvchi zarb kuchi ishchi kameraning radiusi r=260, r=230, r=200, r=170 va r=140 da S=1359.6 N/metr qiymatida o’zgarmas qoladi. Konstruksiyada kuchlanishni taqsimlanish Simulyatsiyasi(1-rasm).



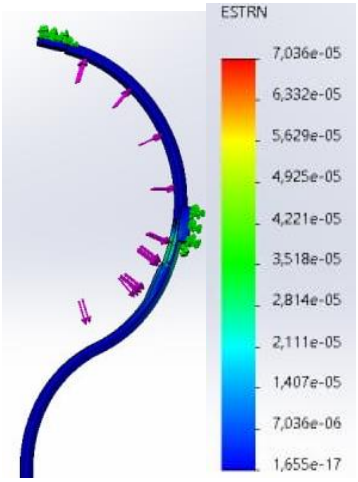
1-rasm. Konstruksiyada kuchlanishni taqsimlanish grafigi.

Ko'rinnib turibdiki ruxsat etilgan kuchlanish 27,5742e^{+7}(N/metr^2) ga teng. Simulyatsiyadan keyin masksimal kuchlanish 1,566e^{+07}(N/metr^2) ga teng. Shu sababli bizni konstruksiyamizga quyilgan kuchlar va yuklanishga ustuvor bo'ladi.



2-rasm. Konstruksiyada ko'chishni taqsimlanish grafigi.

2-rasmda simulyatsiyadan keyin eng masksimal ko'chish qiymati 1,740^{-01}(metr) teng. Ruxsat etilgan ko'chish moduli qiymati 8,6 e^{+10}(N/metr^2) ga teng bo'lganligi sababli bizni konstruksiyamizdagi kuchlar va yuklanishga ustuvor bo'ladi, konstruksiyamizni kuchish modulini qiymati katta bo'lganligi sababli korpusni kuchishi yoki ishlash jarayonida ishdan chiqish holatlari kuzatilmaydi va vibratsiya barataraf etiladi. Bunda konstruksiyani sinish yoki ishlash jarayonida ishdan chiqish holatlari bartaraf etiladi.



3-rasm. Konstruksiyada deformatsiya taqsimlanish grafigi.

3-rasmda ko'rsatilgan deformatsiyani taqsimlanish grafigidan ko'rinib turibdiki simulyatsiyadan keyin eng masksimal deformatsiya qiymati 7,036e^{-5}(N metr) ga teng bo'lganligi sababli bizni konstruksiyamiz chuzilishga mustaxkamligi chegarasi

qiymati 4,13613e^{+9}(N metr) bo'lganligi sababli quyilgan kuchlar va yuklanishga ustuvor bo'ladi va deformatsiya kuzatilmaydi.

Xulosa

Yarim aylanali konsolli kolosnikni yangi konstruksiyadagi jinga modellashtirishda Solidworks simulation dasturidan foydalanib kolosnikka ta'sir etadigan kuchlarni qiymatini aniqlab olindi. Yangi konstruksiyadagi kolosnik modeli, kulrang cho'yan texnik xarakteristika sxemasi, tayanch nutqalarini belgilash, kuch ta'sir qiluvchi ko'rsatkichlarni belgilash, kuchlanish, deformatsiya va siljishni aniqlab olindi.Natija qiymatlari shuni ko'rsatadiki bizning modellashtirgan kolosnigimiz siljishga , kuchlanishga va deformatsiyaga nisbatan bardoshliligi aniqlandi va ishlab chiqarishga qo'llashga tavsiya etildi.

Adabiyotlar

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