

**ARRALI SILINDR YUZASIDAN TAKOMILLASHGAN QO‘SHIMCHA
HAVO BERUVCHI USKUNA YORDAMIDA MOMIQ AJRATISH.**

TTYeSI

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Annotatsiya: *Qo‘shimcha havo beruvchi uskunasiga qo‘yilgan asosiy texnologik talab shundan iboratki, bunda ishchi kamerada joylashgan qobirg‘ali panjara va arra tishlariga ilinib qolgan momiqni to‘liq ajratib olinishini amalga oshirish hamda chiqarish quvuriga to‘liq tushishini ta‘minlash.*

Аннотация: *Основное технологическое требование к оборудованию дополнительной воздухозаборника состоит в том, чтобы осуществить полное отделение ваты, зацепившейся за ребристую решетку и зубья пилы, расположенные в рабочей камере, а также обеспечить ее полное поступление в выпускную трубу.*

Abstract: *The main technological requirement for the equipment of an additional air intake is to carry out a complete separation of the cotton caught in the ribbed grate and saw teeth located in the working chamber, as well as to ensure its full flow into the exhaust pipe.*

Kalit so‘zlar: *Ishchi kamera, arra tishlari, momiq.*

Ключевые слова: *рабочий кулачок, зубья пилы, пух.*

Keywords: *working cam, saw teeth, fluff.*

1-rasmda keltirilgan birinchi va ikkinchi uchastkani farqlash uchun quyidagi belgilashni kiritib olamiz. Ajralgan momiq oqimining ko‘rsatkichlarini ρ_1 , p_1 , v_1 orqali belgilaymiz.

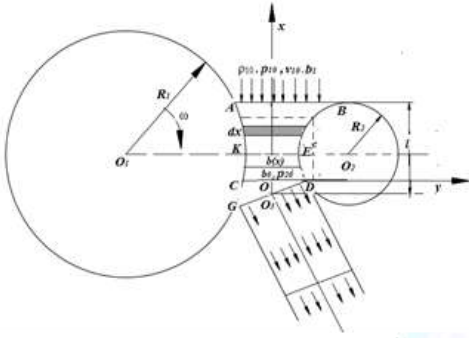
$$\epsilon_1 = \epsilon_0 + \frac{l^2}{R_0} \quad (1.1)$$

Shu uchastkadagi havo oqimining statsionar harakatlanishi

$$\rho v l \frac{dp}{dx} = - \frac{d(pb)}{dx} + \rho g b c + \rho (\sin \alpha \pm f \cos \alpha) \quad (1.2)$$

Bu yerda ρ , v , p – 11‘22’ ishchi sohasining ixtiyoriy kesimidagi zichlikligi, tezligi va bosimi. Bunda $0 < x < l$ bo‘lib $\operatorname{tg} \alpha = f$ – ishqalanish koeffitsientini beradi: l – ishchi zonaning umumiy balandligi; $b = b(x)$ ushbu uchastka kengligi.

$$b = b_0 + \frac{x^2}{R}; \quad R = \frac{R_1 R_2}{R_1 + R_2} - \text{keltirilgan radius} \quad (1.3)$$



ρ_1 -zichlik, r_1 –bosim, v_1 -havo oqimi tezligi, b_1 -siqilish zonasi kengligi, v -tezlik, ρ -zichlik, r – bosim, v_{10} - tezlik, ρ_{10} -zichlik, p_{10} - bosim.

1-rasm. Linter ishchi silindri va takomillashgan qo‘shimcha havo beruvchi uskuna orasidagi havo oqimining harakatlanish sxemasi

sxemasi

$0 < x < c$, x_1 uchastka uchun $x_1 > 0$ deb belgilab olamiz, bu erda havo oqimi tezligi arraning ω burchak tezligidan katta, $c < x < l$ x_2 uchastka uchun $x_1 < 0$ belgilab olinadi. Bu erda havo oqimining v tezligi arra silindrining ω burchak tezligidan kichik bo‘lib, $b_0 - x = 0$ kesimdagi uchastka kengligini belgilaydi.

(1.3) tenglamada ρ , v , p uchta noma’lum keltirilgan bo‘lib, ularni bir-biri bilan bog‘lash uchun muhit holati tenglamasidan foydalanamiz:

$$\rho = [1 + A(p - p_0)] \cdot \rho_0 \tag{1.4}$$

massani saqlanish qonunidan foydalanib, quyidagilarga ega bo‘lamiz:

$$\rho_{10} v_{10} b_1 = \rho v b = Q_0 / L \tag{1.5}$$

Bunda, $b_1 = b_0 + l^2 / R$

A-tajribalarda aniqlanidigan o‘zgarmas son, $Q_0 = \rho_0 v_0 S_0$ - mashinaning ish unumdorligi; ρ_0 , v_0 - siqilish uchastkasidan o‘tayotgan momiq massasining uzatish zonasidagi zichligi va oqim tezligi; S_0 - chiqish quvurining ko‘ndalang kesim maydoni.

(1.4) va (1.5) tenglamadan bosim orqali tezlikni ifodalaymiz:

$$v = \frac{v_0 b_{00}}{b [1 + A(\rho - \rho_0)]} = \frac{v_0 b_{00}}{b} [1 - A(p - p_0)] \tag{1.6}$$

(1.3), (1.4) va (1.6) tenglamalardagi v , p , b ifodalovchilarni (2.2)-tenglamaga qo‘yib, quyidagilarga ega bo‘lamiz:

$$\rho_0 v_0 b_{00} \left\{ -\frac{v_0 b_{00} b'}{b^2} [1 + A(\rho - \rho_0)] - \frac{v_0 b_{00}}{b} A \frac{dp}{dx} \right\} = -b \frac{dp}{ax} - p b' + \tag{1.7}$$

$$+ p_0 g b [1 + A(\rho - \rho_0)] + p (\sin \alpha \pm f \cos \alpha)$$

$\alpha \ll 1$ bo'lganda, $\sin \alpha = \frac{x}{R}$, $\cos \alpha = 1$ deb hisoblaymiz

$$\rho \cdot v \cdot \epsilon = \rho_0 \cdot \epsilon_{00} \cdot v_0$$

$$v = \frac{\rho_0 \cdot \epsilon_{00} \cdot v_0}{\epsilon \cdot \rho}$$

$$\epsilon_{00} = \epsilon_0 + \frac{h^2}{R}$$

$$v = \frac{Q_0}{h \cdot \rho \cdot \epsilon}$$

$\frac{dp}{dx}$ hosilaga nisbatan (1.7) tenglamani echamiz

$$\frac{dp}{dx} = pF_0(x) = F_1(x) \tag{1.8}$$

$$F_0(x) = \left[b^1 + \frac{\lambda b_{00}^2}{b^2} - \rho_0 g b A - \frac{x}{R} \pm f \right] \frac{b}{b^2 - \lambda b_{00}^2} \tag{1.9}$$

$$F_0(x) = \frac{\lambda b_{00}^2 b^1}{A b^2} (1 + A p_0) + \rho_0 g b (1 - A p_0) \tag{1.10}$$

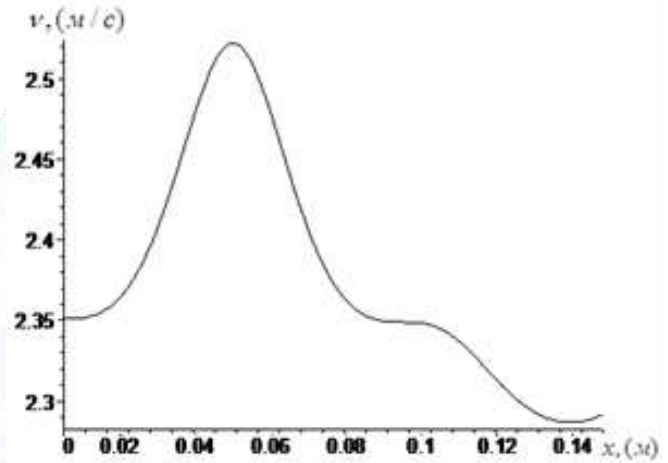
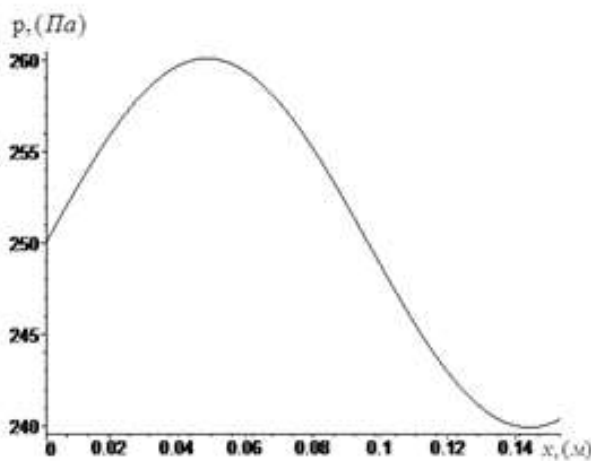
$$\lambda = \rho_0 v_0^2 \cdot A \tag{1.11}$$

(1.8) tenglama $p(l) = p_{10}$ shartda integrallanadi

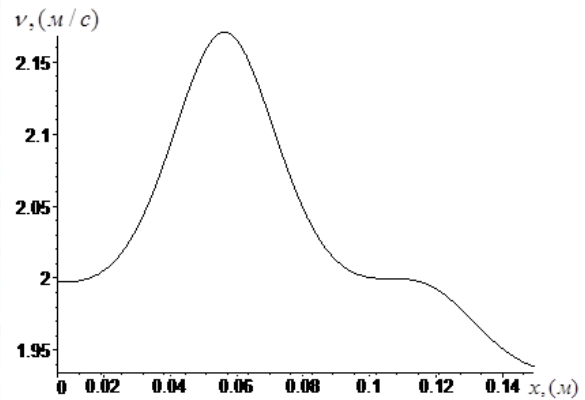
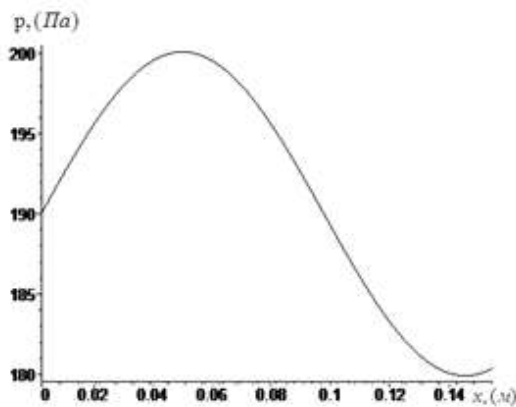
Tenglamani yechimi kvadratda ifodalanadi

$$p = e^{-Fr(x)} \left[p_{10} l^{F_2/l} - \int_x^l F_1(x) l^{F_2(x)} dx \right] \tag{1.12}$$

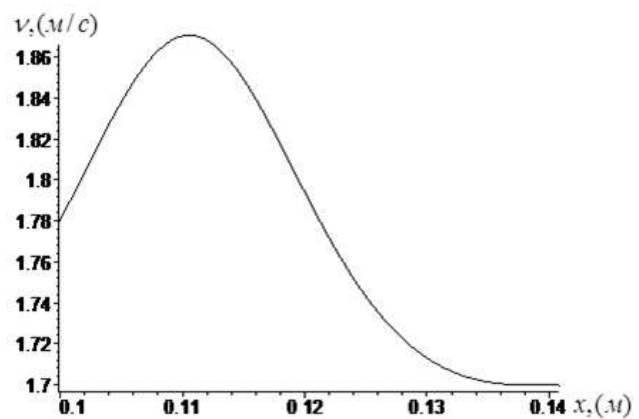
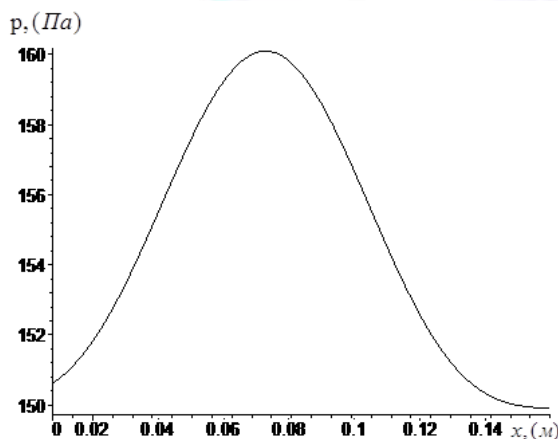
Siqilish zonasiga kirishdagi unumdorlik, bosimning har xil qiymatlari uchun Ox o'q bo'ylab momiq oqimining tezligi va $p(\Pi a)$ bosimining taqsimlanishini ko'radigan bo'lsak, taklif qilinayotgan so'rish usuliga asoslangan momiq ajratish moslamasida so'ruvchi tirqishning 0,02-0,1 m qiymatlarida 50-200 Pa bosim hosil qilib arra tishidan momiqni samarali ajratish mumkin. Bu holatda so'rish quvuridagi tezlik 1.4-2 m/s kattalikni tashkil etadi.



2-rasm. Siqilish zonasiga kirishdagi $Q_0 = 0,03\tau/\text{coat}$ unumdorlik, bosimning $p_{10} = 8\Pi a$, $p_{20} = 30\Pi a$ qiymatlari uchun Ox o‘q bo‘ylab momiq oqimining tezligi va $p(\Pi a)$ bosimining taqsimlanish grafigi



3-rasm. Siqilish zonasiga kirishdagi $Q_0 = 0,04\tau/\text{coat}$, unumdorlik, bosimning $p_{10} = 10\Pi a$, $p_{20} = 30\Pi a$ qiymatlari uchun Ox o‘q bo‘ylab momiq oqimining tezligi va $p(\Pi a)$ bosimining taqsimlanish grafigi



4-rasm. Siqilish zonasiga kirishdagi $Q_0 = 0,05 \text{т/соат}$, unumdorlik, bosimning $p_{10} = 10 \text{Па}$, $p_{20} = 30 \text{Па}$ qiymatlari uchun O_x o‘q bo‘ylab momiq oqimining tezligi va $p(\text{Па})$ bosimining taqsimlanish grafigi

Foydalangan adabiyotlar.

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