**PRILOG IV**

**TEHNIČKE SPECIFIKACIJE /**

**ANNEX IV**

**TECHNICAL SPECIFICATIONS**

Tehničke specifikacije sastavni su dio ovog Poziva na dostavu ponude te se iste nalaze u privitku. / Technical specifications are integral part of this Tender documentation and can be found as an attachments to this Tender documentation.

Ponuda mora zadovoljiti sve tražene tehničke karakteristike, te obuhvatiti sve stavke iz tehničke specifikacije koje predstavljaju minimalne tehničke karakteristike. Ponuditelj OBAVEZNO POPUNJAVA stupac 3. Upisati ponuđeno DA/NE, definirajući nudi li traženo u stupcu 1. Kako bi se ponuda smatrala valjanom, ponuđeni predmet nabave mora zadovoljiti sve što je traženo u obrascu Tehničkih specifikacija. / Tenderer must satisfy all the required technical specifications and include all items in the technical specification that represent the minimum technical specifications. Tenderer MUST COMPLETE Column 4. Enter the offered YES / NO, defining whether the Bid is requested in Column 2. In order for the Tenders to be considered valid, the economic operator must satisfy all required in the Technical Specifications form.

Grupa 1 - NABAVA 5-OSNE GLODALICE ZA MEDICINSKU OPREMU / Group 1 - PROCUREMENT OF 5-AXIS MILLING MACHINE FOR MEDICAL EQUIPMENT

|  |  |  |  |
| --- | --- | --- | --- |
| **Opis** | **Description** | **Upisati ponuđeno DA/NE** | **Enter the offered YES/NO** |
| **1.** | **2.** | **3.** | **4.** |
| Broj osi: min 5 | Axis quantity: minimum 5 axis |  |  |
| Snaga: min 6.3 kW | Power: minimum 6.3 kW |  |  |
| Način obrade: mokro glodanje | Milling mode: wet milling |  |  |
| Posmak: min 5900 mm/min | Feed speed: minimum 5900 mm/min |  |  |
| Kapacitet broja alata: min 15 | Tool magazine capacity: minimum 15 |  |  |
| Promjena alata: automatski | Tool changing: automatic |  |  |
| Snaga vretena: min 2.5 kW | Spindle power: minimum 2.5 kW |  |  |
| Hlađenje vretena: vodeno hlađenje | Spindle cooling: water cooling |  |  |
| Maksimalna brzina: min 58.000 rpm | Max speed: minimum 58.000 rpm |  |  |
| Napajanje: AC 220V±10% | Power supply: AC 220V±10% |  |  |
| Raspon rada: min. XYZ:300/120/140mm A: 360° B:±35° | Milling range: minimum XYZ:300/120/140mm A: 360° B:±35° |  |  |
| Materijali: titan, kobalt krom, vosak, staklo keramika, akril | Materials: titanium, CoCr, wax, glass ceramics, PMMA |  |  |
| Točnost ponavljanja: maksimalno 1 mikron | Repetition accuracy: maximum 1 microns |  |  |
| Težina stroja: min 800 kg | Wight: minimum 800 kg |  |  |
| Spremnik vode: min 25 l | Water tank: minimum 25 l |  |  |
| Uključeni diskovi, blokovi i alati neophodni za mokru obradu materijala s uključenim CAM softverom | Included disks, blocks and tools necessary for wet processing of materials with included CAM software |  |  |
| Mogućnost obrade zubne krune, zubnog mosta, upornjaka, konstrukcije, bravice | Possibility of processing dental crown, dental bridge, abutment, construction (implant bridge), brackets |  |  |
| Oprema za hlađenje vretena uključena | Included spindle cooling equipment |  |  |
| Isporuka na adresi: Fallerovo šetalište 22, 10000 Zagreb, Hrvatska | Delivery on the address: Fallerovo šetalište 22, Zagreb, Croatia |  |  |
| Rok isporuke: najviše 9 mjeseci od sklapanja ugovora o nabavi | Delivery deadline: maximum 9 months from the conclusion of the contract |  |  |
| Jamstveni rok - minimalno 12 mjeseci | Warranty period - minimum 12 months |  |  |
| Nabava i isporuka | Procurement and delivery |  |  |

Grupa 2 - NABAVA CNC TOKARSKOG STROJA ZA MEDICINSKU OPREMU/ Group 2 - PROCUREMENT OF CNC LATHE FOR MEDICAL EQUIPMENT

|  |  |  |  |
| --- | --- | --- | --- |
| **Opis** | **Description** | **Upisati ponuđeno DA/NE** | **Enter the offered YES/NO** |
| **1.** | **2.** | **3.** | **4.** |
| **Stroj treba imati sljedeći pribor i funkcije: / The machine should have the following accessories and functions:** | | | |
| Jedinica za pričvršćivanje glavnog vretena | Main spindle chucking unit |  |  |
| Jedinica za pričvršćivanje stražnjeg vretena | Back spindle chucking unit |  |  |
| Prednja pogonska jedinica | Gang rotary tool driving unit |  |  |
| Stražnja pogonska jedinica | Back rotary tool driving unit |  |  |
| Revolver pogonska jedinica (min. 10 pogonjenih alatnih pozicija) | Turret rotary tool driving unit (minimum 10 live tooling station turret) |  |  |
| Jedinica za dovod rashladnog ulja (s detektorom razine) | Coolant oil supply unit (with level detector) |  |  |
| Jedinica za dovod ulja za podmazivanje (s detektorom razine) | Lubricating oil supply unit (with level detector) |  |  |
| Uređaj za stražnju obradu pogonjen zrakom | Air-driven knock-out device for back machining |  |  |
| Detektor pomicanja stroja | Machine relocation detector |  |  |
| Zaključavanje vrata | Door lock |  |  |
| Uređaj za prikupljanje produkata | Product chute |  |  |
| Kapacitet za pohranu programa | Program storage capacity |  |  |
| Konstantna površinska kontrola brzine | Constant surface speed control function |  |  |
| Automatska funkcija isključivanja | Automatic power-off function |  |  |
| Indikator brojača proizvoda | Product counter indication |  |  |
| Funkcija indeksiranja vretena | Spindle indexing function |  |  |
| Ekranska funkcija prikaza vremena rada | Operating time display function |  |  |
| Funkcija provjere programa na stroju | On-machine program check function |  |  |
| Detektor promjene brzine vretena | Spindle speed change detector |  |  |
| Prikaz informacija o radu stroja | Machine operation information display |  |  |
| Set kontrole loma alata | Tool breakage control set |  |  |
| Transportna traka | Transport line |  |  |
| Materijali: titan, kobalt krom | Materials: titanium, CoCr |  |  |
| Korištenje full servo tehnologije | Using full servo technology |  |  |
| Stražnji stup za alat opremljen je osi Y i može nositi min. 9 alata | Back tool post is equipped with a Y axis and minimum 9 tools can be carried |  |  |
| B os koja može raditi na oba vretena | B axis capable of working on both spindles |  |  |
| Rotirajući alati na nosaču alata standardno imaju os B, a svaki od četiri alata može se montirati za stražnju i prednju obradu | The rotary tools on the gang tool post feature a B axis as standard, and four tools each can be mounted for back and front machining |  |  |
| Kut zakretanja osi B je min. 130° i može se koristiti u prednjoj i stražnjoj obradi | Swivel angle of the B axis is minimum 130° and it can be used in front and back machining |  |  |
| **Tehničke specifikacije tokarilice: / Technical specifications of the lathe** | | | |
| Broj osi stroja: min 10 | Number of machine axis: minimum 10 |  |  |
| Maksimalni promjer obrade: min ø15mm | Maximum machining diameter: minimum ø15mm |  |  |
| Maksimalna dužina obrade: min 190mm | Maximum machining length: minimum 190mm |  |  |
| Maksimalni promjer bušenja glavnog vretena: min Ø9mm | Maximum drilling diameter for main spindle: minimum Ø9mm |  |  |
| Promjer prolazne rupe glavnog vretena: min Ø18mm | Main Spindle through-hole diameter: minimum Ø18mm |  |  |
| Brzina glavnog vretena: min 12.000 min-1 | Main Spindle speed: minimum 12.000 min-1 |  |  |
| Maksimalni promjer bušenja rotacionih alata: min. ø5 mm | Maximum drilling diameter for gang rotary tool: minimum ø5 mm |  |  |
| Brzina vretena rotacionih alata: min 8.000 min-1 | Gang rotary tool spindle speed: minimum 8.000 min-1 |  |  |
| Maksimalni promjer bušenja stražnjih rotacionih alata: min ø5 mm | Maximum drilling diameter for back rotary tool: minimum ø5 mm |  |  |
| Brzina vretena stražnjih rotacionih alata: min 8.000 min-1 | Back rotary tool spindle speed: minimum 8.000 min-1 |  |  |
| Promjer stezanja stražnjeg vretena: min ø15 mm | Maximum chuck diameter for the back spindle: minimum ø15 mm |  |  |
| Duljina prihvata materijala stražnjeg vretena: min 120 mm | Maximum protrusion length of the back spindle: minimum 120 mm |  |  |
| Duljina prihvata materijala stražnjeg vretena: min 28 mm | Maximum protrusion length of the back spindle workpiece: minimum 28 mm |  |  |
| Maksimalni promjer bušenja stražnjeg vretena: min Ø7 mm | Maximum drilling diameter for the back spindle: minimum Ø7 mm |  |  |
| Brzina stražnjeg vretena: min 12.000 min-1 | Back spindle speed: minimum 12.000 min-1 |  |  |
| Maksimalni promjer bušenja revolver rotacionih alata: min. ø5 mm | Maximum drilling diameter for turret rotary tool: minimum ø5 mm |  |  |
| Brzina revolver rotacionih alata: min 8.000 min-1 | Turret rotary tool spindle speed: minimum 8.000 min-1 |  |  |
| Broj alata koji se mogu montirati: min 35 | Number of tools to be mounted: minimum 35 |  |  |
| Snaga motora vretena kod 50%/100%: min 2.0/3.5 kW | Motor for spindle drive at 50%/100%: minimum 2.0/3.5 kW |  |  |
| Snaga motora rotacionih alata: min 0.65 kW | Motor for gang tool post rotary tool drive: minimum 0.65 kW |  |  |
| Snaga motora revolver alata: min 0.65 kW | Motor for turret rotary tool drive: minimum 0.65 kW |  |  |
| Snaga motora stražnjeg vretena kod 50%/100%: min 0.70/1.4 kW | Motor for back spindle drive at 50%/100%: minimum 0.70/1.4 kW |  |  |
| Snaga motora pumpe za hlađenje: min 0.35 kW | Motor for coolant oil: minimum 0.35 kW |  |  |
| Napajanje: AC 220V±10% | Power supply voltage: AC 220V±10% |  |  |
| Transformator: min 20kW | Transformer: minimum 20kW |  |  |
| Agregat za ispiranje visokim tlakom: min. 60 bara i min. 20 l/min | High pressure rinse unit: minimum 60 bar and minimum 20 l/min |  |  |
| Jedan okomiti držač alata sa min. 5 alata za tokarenje i min. 4 rotaciona alata | One vertical tool holder with minimum 5 tools for machining and minimum 4 rotary tools |  |  |
| 5 kom pogonjenih alata za poprečno bušenje i tokarenje | 5 pcs live tool for cross drilling and milling |  |  |
| 1 kom držač alata za B os sa min. 8 pogonjenih alata | 1 pcs tool holder for B axis with minimum 8 live tools |  |  |
| 2 kom držača fiksnih alata za bušenje | 2 pcs fixed tool holder for drilling |  |  |
| **Tehničke specifikacije automatskog uređaja za potrebe posluživanja stroja šipkama: / Technical specification of automatic Bar Loading Magazine for processing bars** | | | |
| Promjer šipke: 2 – 20 mm | Bar diameter: 2 – 20 mm |  |  |
| Maksimalna duljina šipke: min 3000 mm | Maximum bar length: minimum 3000 mm |  |  |
| Potrošnja energije: maksimalno 1.8 KW | Power consumption: maximum 1.8 KW |  |  |
| Podesiva sila doziranja: prilagodljiv, maksimalno 320 N | Adjustable Feed force: adjustable, maximum 320 N |  |  |
| Podesiva brzina umetanja: prilagodljiv, od 0 – 300 mm/s | Adjustable In feed rate: adjustable, from 0 – 300 mm/sec |  |  |
| Podesiva brzina punjenja: prilagodljiv, maksimalno 320 mm/s | Adjustable Forward feed rate: adjustable, maximum 320 mm/sec |  |  |
| Vrijeme punjenja: maksimalno 23 s | Loading time: maximum 23 sec |  |  |
| Kapacitet ulja: min 45 l | Oil capacity: minimum 45 l |  |  |
| Napajanje: AC 220 V±10% | Power supply voltage: AC 220 V±10% |  |  |
| Dovod komprimiranog zraka: min 5 bar | Compressed air supply: minimum 5 bar |  |  |
| Isporuka na adresi: Fallerovo šetalište 22, 10000 Zagreb, Hrvatska | Delivery on the address: Fallerovo šetalište 22, Zagreb, Croatia |  |  |
| Rok isporuke: najviše 9 mjeseci od sklapanja ugovora o nabavi | Delivery deadline: maximum 9 months from the conclusion of the contract |  |  |
| Jamstveni rok - minimalno 12 mjeseci | Warranty period - minimum 12 months |  |  |
| Nabava i isporuka | Procurement and delivery |  |  |

Grupa 3 - NABAVA 3D PRINTERA ZA METAL / Group 3 - PROCUREMENT OF 3D PRINTER FOR METAL

|  |  |  |  |
| --- | --- | --- | --- |
| **Opis** | **Description** | **Upisati ponuđeno DA/NE** | **Enter the offered YES/NO** |
| **1.** | **2.** | **3.** | **4.** |
| Tehnologija: selektivno lasersko taljenje | Technology: selective laser melting |  |  |
| Sistem lasera: fiber laser | Laser System: Fiber laser |  |  |
| Snaga lasera: min 190 W | Laser power: minimum 190 W |  |  |
| Dimenzije izrade: min. 100mm\*100mm\*100mm（D\*Š\*V） | Fabrications dimensions: minimum 100mm\*100mm\*100mm（L\*W\*H） |  |  |
| Maksimalna brzina skeniranja: min 9000 mm/s | Maximum scanning speed: minimum 9000 mm/s |  |  |
| Debljina sloja: 10-40μm | Layer Thickness: 10-40μm |  |  |
| Dimenzionalna točnost: maksimalno 0.1 mm | Dimensional accuracy: maximum 0.1mm |  |  |
| Sadržaj kisika: maksimalno 100 PPM | Oxygen Content: maximum 100 PPM |  |  |
| Promjer fokusa: 40-80μm | Focus Diameter: 40-80μm |  |  |
| Relativna gustoća: min 97% | Relative density: minimum 97% |  |  |
| Zaštitna atmosfera: kružno pročišćavanje, koeficijent sakupljanja ≥ 99% | Protective atmosphere: cycling purifying, collection coefficient ≥ 99% |  |  |
| Metalni prah: kobalt krom, titan | Metal Powder: CoCr, titanium |  |  |
| Inertni plin: dušik ili argon | Inert Gas: Nitrogen or Argon |  |  |
| Mogućnost proizvodnje zubne krune, zubnog mosta, upornjaka, konstrukcije, bravice | Possibility of production dental crown, dental bridge, abutment, construction (implant bridge), brackets |  |  |
| Napajanje: AC 220V±10% | Power Supply: AC 220V±10% |  |  |
| Isporuka na adresi: Fallerovo šetalište 22, 10000 Zagreb, Hrvatska | Delivery on the address: Fallerovo šetalište 22, Zagreb, Croatia |  |  |
| Rok isporuke: najviše 9 mjeseci od sklapanja ugovora o nabavi | Delivery deadline: maximum 9 months from the conclusion of the contract |  |  |
| Jamstveni rok - minimalno 12 mjeseci | Warranty period - minimum 12 months |  |  |
| Nabava i isporuka | Procurement and delivery |  |  |