LĪGUMS

Rīgā. 2015.gada 18. augustā

LU Cietvielu fizikas institūta
līgumu uzskaites Nr. 2015/20/ERAF
Iepirkuma identifikācijas Nr. **LU CFI 2015/20/ERAF**

UAB „Energenas"
līgumu uzskaites Nr. _____

Latvijas Universitātes Cietvielu fizikas institūts (turpmāk tekstā LU CFI), nodokļu maksātāja reģistrācijas Nr.LV90002124925, tā direktora Andra Šternberga personā, kurš rīkojas saskaņā ar LU CFI nolikumu, turpmāk šā līguma tekstā saukts **Pasūtītājs**, no vienas puses, un

UAB „Energenas", nodokļu maksātāja reģistrācijas Nr. LT100001953612, tā direktora Pauliusa Vilemas personā, kurš rīkojas saskaņā ar UAB „Energenas" statūtiem, turpmāk šā līguma tekstā saukts **Piegādātājs**, no otras puses,

abi kopā turpmāk tekstā – **Puses** un katrs atsevišķi turpmāk tekstā arī **Puse**, pamatojoties uz **Pasūtītāja** rīkotā konkursa Nr. LU CFI 2015/20/ERAF „Iekārtu piegāde", turpmāk tekstā saukts **Konkurss**, rezultātiem un **Piegādātāja** iesniegto piedāvājumu,

ERAF līdzfinansēta projekta Nr. 2DP/2.1.1.3.3/15/IPIA/VIAA/011 „LU Cietvielu fizikas institūta institucionālās kapacitātes attīstība" realizācijai

noslēdz šādu līgumu, turpmāk tekstā saukts **Līgums**:

1. LĪGUMA PRIEKŠMETS

1.1. **Piegādātājs** pārdod, bet **Pasūtītājs** pērk iekārtas atbilstoši šī **Līguma** 1.pielikumā dotajai tehniskajai specifikācijai (turpmāk tekstā - **Prece**).

1.2. **Līguma** summa, ieskaitot nodokļus un nodevas, ar kurām tiek aplikta **Prece,** un visus citus ar **Līguma** izpildi saistītos izdevumus, ir 76 790,00 EUR (septiņdesmit seši tūkstoši septiņi simti deviņdesmit eiro un 00 centi), turpmāk šā **Līguma** tekstā saukta **Līgumcena**.

2. PIEGĀDES NOSACĪJUMI UN APMAKSAS KĀRTĪBA

2.1. **Prece Pasūtītājam** tiek piegādāta Rīgā, Ķengaraga ielā 8, LU CFI telpās.

2.2. Piegādājamā **Prece** tiek nodota **Pasūtītājam** (akceptēta, abpusēji parakstot pieņemšanas – nodošanas aktu) **Pasūtītāja** telpās ne vēlāk kā 100 dienu laikā skaitot no **Līguma** noslēgšanas.

2.3. **Pasūtītājs** veic avansa maksājumu EUR 38 395,00 (trīsdesmit astoņi tūkstoši trīs simti deviņdesmit pieci eiro un 00 centi) jeb 50% apmērā no **Līgumcenas** 30 (trīsdesmit) dienu laikā pēc bankas vai citas kredītiestādes, vai apdrošināšanas sabiedrības avansa garantijas saņemšanas, **Līguma** abpusējas parakstīšanas un avansa rēķina saņemšanas.

Atlikušo **Līguma** summas daļu EUR 38 395,00 (trīsdesmit astoņi tūkstoši trīs simti deviņdesmit pieci eiro un 00 centi) jeb 50% no līgumcenas **Pasūtītājs** apmaksā 30 (trīsdesmit) dienu laikā skaitot no abpusēji parakstīta pieņemšanas – nodošanas akta parakstīšanas un rēķina saņemšanas dienas.

3. LĪGUMSLĒDZĒJU PUŠU ATBILDĪBA

3.1. Par apmaksas termiņa neievērošanu vai par **Preces** piegādes kavējumu vainīgā līgumslēdzēja **Puse** pēc pirmā otras **Puses** pieprasījuma, maksā otrai **Pusei** līgumsodu 0,1% (procenta vienas desmitdaļas) apmērā no maksājuma summas vai piegādes apjoma par katru nokavēto dienu, bet ne vairāk kā 10% no līgumcenas. Līgumsoda samaksa neatbrīvo no **Līguma** saistību izpildes.

3.2. Katra līgumslēdzēja **Puse** atbild par **Līguma** neizpildi vai nepienācīgu izpildi, ja tās vainas dēļ nodarīts kaitējums otrai līgumslēdzēja **Pusei**.

3.3. **Puses** ir tiesīgas rīkoties caur saviem pārstāvjiem.

3.4. **Piegādātājs** atbild par **Pasūtītājam** piegādātās **Preces** kvalitāti, kādu noteicis attiecīgo **Preču** ražotājs saskaņā ar **Piegādātāja** izsniegto garantijas sertifikātu. **Preces** garantijas remonts ir jāveic atbilstoši vispārpieņemtajai praksei šādām **Precēm**.

3.5. **Precei** tiek noteikts garantijas laiks: 24 (divdesmit četri) mēneši no **Preces** piegādes brīža.

3.6. Garantijas apkalpošanas perioda laikā notikuša bojājuma gadījumā **Piegādātājs** uz sava rēķina, nepazeminot **Preces** kvalitāti, veic bojātās daļas nomaiņu vai remontu. Garantijas saistības ir spēkā pie nosacījuma, ka nav iestājušies garantijas sertifikātā norādītie apstākļi, kas pārtrauc garantijas saistības.

3.7. **Preces** bojājumus **Pasūtītājs** piesaka rakstiski pa faksu +370 37 401978 vai ziņojot uz e-pasta adresi info@energenas.lt .

Paralēli informācijas nodošanai var izmantot tālr. +370 37 401980 .

Piegādātājs rakstiski pa faksu +371 67132778 vai e-pastu ISSP@cfi.lu.lv apstiprina pieteikuma par **Preces** bojājumu saņemšanu.

3.8. **Piegādātāja** reakcijas laiks (vai nu laiks no **Preces** bojājuma pieteikšanas līdz **Piegādātāja** speciālista ierašanās pie **Pasūtītāja** brīdim, vai līdz brīdim, kad **Piegādātājs** akceptē bojātās **Preces** vai tās daļas nosūtīšanu garantijas remontam) ir ne vairāk kā 3 (trīs) darba dienas. Pretējā gadījumā **Piegādātājs**, pēc **Pasūtītāja** pirmā pieprasījuma, maksā **Pasūtītājam** sodu par līguma saistību nepildīšanu 0.2% (procenta divas desmitdaļas) no bojātās iekārtas vērtības (ieskaitot 21% PVN) par katru reakcijas kavējuma darba dienu, bet ne vairāk kā 5% no līgumcenas. Līgumsoda samaksa neatbrīvo no **Līguma** un garantijas saistību izpildes.

3.9. **Piegādātājam** ir pienākums uzsākt remontu nekavējoties un novērst pieteiktos defektus, abpusēji saskaņotā laikā, bet ne ilgāk kā 3 (trīs) mēnešu laikā. Ja bojājums nav novērsts saskaņotajā termiņā, tad **Pasūtītājs** var pieprasīt **Piegādātājam** maksāt sodu 0.2% (procenta divas desmitdaļas) no bojātās iekārtas vērtības (ieskaitot 21% PVN) par katru kavēto darba dienu, bet ne vairāk kā 5% no bojātās iekārtas vērtības. Soda samaksa neatbrīvo no **Līguma** un garantijas saistību izpildes.

3.10. Ja bojājumu neizdodas novērst 4 (četru) mēnešu laikā un šajā laikā iekārta nav aizvietota ar jaunu strādājošu, tad nākamā 1 (viena) mēneša laikā **Piegādātājs** atgriež **Pasūtītājam** summu iekārtas iegādes vērtībā.

4. CITI NOTEIKUMI

4.1. Gadījumā, kad rodas nepārvaramas varas apstākļi, tādi kā dabas katastrofas, karš, jebkuras militāras akcijas, valsts pārvaldes institūciju rīkojumi, lēmumi vai aizliegumi un citi ārkārtēji apstākļi, kurus **Puses** nevarēja paredzēt un novērst ar saviem līdzekļiem, līgumsaistību izpildes laiks pagarinās par periodu, kurā pastāv nepārvaramas varas radītie apstākļi. Ja nepārvaramas varas apstākļi pastāv ilgāk kā 3 (trīs) mēnešus, **Līguma** darbība tiek izbeigta un **Puses** veic savstarpējo norēķinu atbilstoši faktiski piegādātajai **Precei**.

4.2. **Līgums** stājas spēkā ar tā parakstīšanas brīdi un darbojas līdz pilnīgai abpusējai **Līguma** saistību izpildei. **Līgums** atspoguļo **Pušu** vienošanos attiecībā uz **Līguma** priekšmetu, apmaksas, piegādes u.c. nosacījumiem un atceļ visas iepriekšējās sarakstes un mutiskas vienošanās, kas pastāvējušas starp **Pusēm** līdz **Līguma** parakstīšanai.

4.3. Ja **Līgumā** nepieciešams veikt grozījumus, tie jāveic ievērojot Publisko iepirkumu likuma 67^1. panta noteikumus.

4.4. **Piegādātājs**, slēdzot **Līgumu**, iesniedz **Pasūtītājam** bankas vai citas kredītiestādes, vai apdrošināšanas sabiedrības izsniegtu avansa maksājuma garantiju 50% apmērā no **Līgumcenas** (ietverot PVN, ja piemērojams) ar derīguma termiņu ne īsāku kā **Līguma** termiņš un vēl 2 (divi) mēneši. Šai avansa maksājuma garantijai jāparedz avansa atmaksa bez papildus nosacījumiem ne vēlāk kā 10 (desmit) kalendāro dienu laikā pēc tam, kad ir saņemts **Pasūtītāja** pieprasījums.

4.5. **Pasūtītājs** atgriež avansa maksājuma garantiju **Piegādātājam** 1 (vienas) nedēļas laikā pēc abpusējas pieņemšanas-nodošanas akta parakstīšanas.

4.6. **Pasūtītājs** vienpusēji ir tiesīgs lauzt **Līgumu**, ja **Līguma** termiņš nav likumīgi pagarināts un **Preču** piegāde kavējas vairāk par 1 (vienu) mēnesi pēc šī **Līguma** termiņa beigām.

4.7. Ja piegāde nav notikusi noteiktajā laikā, Pasūtītājs patur vienpusējas tiesības no piegādes atteikties sakarā ar projekta finansētāja nosacījumiem. Tādā gadījumā bez nosacījumiem nekavējoši (ne vēlāk kā 10 kalendāro dienu laikā) tiek atgriezts avanss un piegādes līgums tiek pārtraukts.

4.8. Ja izpildās šī **Līguma** 4.6. vai 4.7. punktu nosacījumi un līgums tiek lauzts, bet **Piegādātājs** neatmaksā avansu 10 (desmit) kalendāro dienu laikā pēc **Līguma** laušanas, **Pasūtītājs** pieprasa garantijas izdevējam nekavējoties atmaksāt samaksāto avansu.

4.9. Visi būtiskie paziņojumi, kas attiecas uz šā **Līguma** noteikumu izpildi, sūtāmi ierakstītā vēstulē uz šā **Līguma** 5.punktā norādītām adresēm, vai nododami **Pusēm** personīgi. Ja paziņojumi tiek sūtīti ierakstītā vēstulē, tie uzskatāmi par saņemtiem trešajā dienā pēc to nosūtīšanas Latvijas adresātiem vai 14. dienā pēc to nosūtīšanas ārvalstu adresātiem.

Adreses maiņa kļūst saistoša otrai **Pusei**, tad, kad **Puse**, kuras adrese tiek mainīta nosūta tai paziņojumu vai dokumentu, kas apstiprina šādas izmaiņas.

Lai paātrinātu informācijas apriti, visi dokumenti adresātam vispirms jānosūta pa faksu vai uz oficiālo norādīto e-pasta adresi un saņēmējam jāatsūta apstiprinājums par saņemšanu.

4.10. Visi strīdi un domstarpības, kādas **Pusēm** radušās šā **Līguma** izpildes gaitā, un nav atrisināmas pārrunu ceļā 30 dienu laikā, tiek izskatītas Latvijas Republikas tiesu iestādēs, Latvijas Republikas normatīvajos aktos paredzētajā kārtībā.

4.11. **Puses** ar savu parakstu apliecina, ka tām ir visas tiesības (pilnvaras) slēgt **Līgumu** un ar to iegūstot savu pārstāvamo vārdā **Līgumā** minētās tiesības un pienākumus. Ja **Piegādātāja** pārstāvis līguma noslēgšanas brīdī nav bijis pilnvarots pārstāvēt **Piegādātāju**, tad viņš/viņa pats/pati, kā fiziska persona atbild par līgumsaistību izpildi ar visu savu mantu.

4.12. **Puses** pilnvaro veikt ar šā **Līguma** izpildi saistītās darbības (kontaktēties ar otru **Pusi**, parakstīt **Preces** pavadzīmes-rēķinus, nodot/saņemt **Preci**) šādas personas:

4.12.1. no **Pasūtītāja** puses: Aivaru Vembri, tālrunis 67260787, e-pasts: aivars.vembris@cfi.lu.lv ;

4.12.2. no **Piegādātāja** puses: Marius Stapulionis, tālrunis +370 37 401980, e-pasts marius@energenas.lt .

4.13. Šis **Līgums** ir sastādīts divos eksemplāros, katrs uz 3 (trīs) lappusēm, kopā ar 1. pielikumu – uz 11 (vienpadsmit) lappusēm, ar vienādu juridisku spēku. **Līguma** 1.pielikums „Tehniskā specifikācija" un citi **Līguma** iespējamie pielikumi ir tā neatņemamas sastāvdaļas.

Pēc **Līguma** parakstīšanas viens **Līguma** eksemplārs tiek nodots **Pasūtītājam**, bet otrs – **Piegādātājam**.

5. LĪGUMSLĒDZĒJU PUŠU JURIDISKĀS ADRESES UN CITI REKVIZĪTI

Pasūtītājs:	Piegādātājs:
Latvijas Universitātes Cietvielu fizikas institūts	UAB „Energenas"
Juridiskā adrese: Ķengaraga iela 8, Rīga, LV-1063, Latvija	Juridiskā adrese: Breslaujos g. 3-115, LT-44403, Kaunas, Lithuania
PVN reģ.Nr. LV90002124925	PVN reģ.Nr.: LT100001953612
Norēķinu konts: LV45TREL9154361000000 Banka: Valsts kase	Norēķinu konts: LT837180900009467013 Banka: AB Šiaulių bankas
Bankas kods: TRELLV22	Bankas kods: 71809

Pasūtītājs:

Z.v Andris Šternbergs

Piegādātājs:

Z.v. Paulius Vilemas

Laboratorinės įrangos padalinio vadovas
Marius Stapulionis

Finansininkas
Giedrius Grigalius

1. pielikums
Līgumam Nr. LU CFI 2015/20/ERAF

Tehniskā specifikācija

Position N. p.k.	Parameter Parametrs	Contracting Authority's requirements Pasūtītāja prasības	Bidders offer (The bidder gives detailed description of his offer here) Pretendenta tehniskais piedāvājums (Pretendents šeit sniedz piedāvājuma detalizētu aprakstu)
1	**Glove box 1**	1 pc, with below listed specifications	**1 pc. with below listed specifications**
1.1	Producer and model	Indicate	**Manufacturer/Ražotājs: MBraun Model/ Modelis: MB-Unilab Pro SP (1500/780)**
1.2	Type	Modular extension glove box, single sided gloves, 1.5 user workstation, antechamber installed on right side, leakrate O_2 = 0.05 Vol%/h, Class 1, ISO 10648-2	Modular extension glove box, single sided gloves, 1.5 user workstation, antechamber installed on right side, leakrate O_2 = 0.05 Vol%/h, Class 1, ISO 10648-2
1.3	Size	Internal size should be: Not less than: 1500 mm (W) x 780 mm (D) x 900 mm (H) External size should be: Not more than: 1505 mm (W) x 785 mm (D) x 905 mm (H)	Internal size: 1500 mm (W) x 780 mm (D) x 900 mm (H) External size: 1503 mm (W) x 783 mm (D) x 903 mm (H)
1.4	Materials	Chamber bottom, upper and side walls should be made from Stainless Steel (1.4301 grade (SUS304)), internal surface should be brushed and roughness should be <1 μm.	Chamber bottom, upper and side walls are made from Stainless Steel (1.4301 grade (SUS304)), internal surface is brushed and roughness is <1 μm.
1.5	Back wall/side	In back wall should be installed at least 4 flanges which size is DN40 and can be used for installation of feedthroughs. Should be included at least 1 pc electrical feedthrough for 230 V, 1 ph. Should be installed 2 pc HEPA H13 filters (one for gas inlet other for gas outlet) which could be possible replace with glove box gloves. Connection of filters with thread. 3 pc height adjustable shelf should be placed on back wall	In back wall is installed 4 flanges which size is DN40 and can be used for installation of feedthroughs. Included 1 pc electrical feedthrough for 230 V, 1 ph. Installed 2 pc HEPA H13 filters (one for gas inlet other for gas outlet) it's possible replace with glove box gloves. Connection of filters with thread. 3 pc height adjustable shelfs are placed on back wall.
1.6	Right wall/side	Should be installed: 1 pc big antechamber 1 pc mini antechamber	Is installed: 1 pc big antechamber 1 pc mini antechamber
1.7	Big antechamber	Dimensions: diam. Not less 390 mm, length not less 600 mm (±5 mm). 2 pc lifting up doors (made from anodized aluminum or similar material) Door closing mechanism with spindle handle for one hand operation. Tray size not less 575 x 290 mm (LxW). On top of antechamber should be installed pressure manometer. Operation of filling and evacuation of antechamber manual. Material Stainless Steel, wall thickness not less than 2.5 mm.	Dimensions: diam. 390 mm, length 600 mm. 2 pc lifting up doors (made from anodized aluminum). Door closing mechanism with spindle handle for one hand operation. Tray size 575 x 290 mm (LxW). On top of antechamber is installed pressure manometer. Operation of filling and evacuation of antechamber manual. Material Stainless Steel, wall thickness 3 mm.
1.8	Mini	Dimensions: diam. not less 150 mm, length	Dimensions: diam. 150 mm, length 400 mm.

	antechamber	not less 400 mm (±5 mm). Hinged doors inside and outside (made from anodized aluminum or similar material). On side of antechamber should be installed pressure manometer. Material Stainless Steel, wall thickness not less than 3 mm.	Hinged doors inside and outside (made from anodized aluminum). On side of antechamber is installed pressure manometer. Material Stainless Steel, wall thickness 3 mm.
1.9	Front window	Window coated with material resistant to many chemicals and scratches. Horizontally should be 3 pc glove port feedthroughs (made from Polyoxymethylene – POM) which diam. 220 mm). For one glove should be used at least 3 pc O-rings.	Window coated with material resistant to many chemicals and scratches. Horizontally are placed 3 pc glove port feedthroughs (made from Polyoxymethylene – POM) which diam. is 220 mm). For one glove is used 3 pc O-rings.
1.10	Lightning	Inside surface of glove box should be lightened with fluorescent lamp which is installed outside glove box on top part of front window. Lamp should have cover and switch.	Inside surface of glove box is lightened with fluorescent lamp which is installed outside glove box on top part of front window
1.11	Stand	Glove box should have not removable stand. Height 1000 mm (±10 mm). Stand made from Stainless Steel.	Glove box has not removable stand. Height 1000 mm. Stand made from Stainless Steel. With castors and mechanical feets (heigh adjustable)
1.12	Gas purifier	Removal: oxygen and moisture, < 1 ppm (referring to glove boxes with max., leakrate: <1*10-5 mbar l/s Max. purifying volume: >5 m^3. Capacity: at least 36 L of O_2 (oxygen) and at least 1350 g H_2O (moisture). Working gas can be: Nitrogen (N_2) or Argon (Ar). Circulation blower: adjustable speed, max. 88 m^3/h, Δp = 60 mbar, vibration dampened. blower body fully sealed. Pressure control (automatic): adjustable limits from -15 to +15 mbar incl. pressure sensor for glove box. Control through touch panel or foot switch. Possibility work in under pressure mode for user protection. Main valves: electro-pneumatic valves. Piping for gas circulation made from Stainless Steel. Purifier should be fully covered with side panels.	Removal: oxygen and moisture, < 1 ppm (referring to glove boxes with max., leakrate: <1*10-5 mbar l/s) Max. purifying volume: 5 m^3. Capacity: 36 L of O_2 (oxygen) and 1350 g H_2O (moisture). Working gas can be: Nitrogen (N_2) or Argon (Ar). Circulation blower: adjustable speed, max. 88 m^3/h, Δp = 60 mbar, vibration dampened, blower body fully sealed. Pressure control (automatic): adjustable limits from -15 to +15 mbar incl. pressure sensor for glove box. Control through touch panel or foot switch (included). Possibility work in under pressure mode for user protection. Main valves: electro-pneumatic valves. Piping for gas circulation made from Stainless Steel. Purifier is fully covered with side panels
1.13	Rotary vane pump	Needed. At least 17 m^3/h @ 60Hz pumping speed. Set should include oil mist filter and oil return kit. Pump should be connected to gas purifier with depressurized flexible hose (should be included).	Included. 17 m^3/h @ 60Hz pumping speed. In set is included: oil mist filter and oil return kit. Pump is connected to gas purifier with depressurized flexible hose (included).
1.14	Sensor set	Needed. At least 1 pc of Oxygen and 1 pc of Moisture analyzers. Installation in closed cycle circulation pipe line through DN40 flanges with centering ring and clamp. Parameters should be shown on touch panel screen.	Included. 1 pc of Oxygen and 1 pc of Moisture analyzers. Installation in closed cycle circulation pipe line through DN40 flanges with centering ring and clamp. Parameters are shown on touch panel screen.

1.15	O_2 sensor	Measuring range not shorter than from 0 to 1000 ppm of O_2. Fast response time up to 10 s. Sensitivity at least 10 mV/ppm. Accuracy not worse ±2% of displayed value. Supplied with not shorter than 3 m cable for connection to gas purifier.	Measuring range from 0 to 1000 ppm of O_2. Fast response time up to 10 s. Sensitivity 10 mV/ppm. Accuracy ±2% of displayed value. Supplied with 3 m cable for connection to gas purifier.
1.16	H_2O sensor	Measuring range not shorter than from 0 to 500 ppm of H_2O. Fast response time up to 120 s. Sensitivity at least 20 mV/ppm. Accuracy not worse ±5% of displayed value in range of 0-10 ppm and ±20% of displayed value in range of 10-100 ppm. Supplied with not shorter than 3 m cable for connection to gas purifier	Measuring range from 0 to 500 ppm of H_2O. Fast response time up to 120 s. Sensitivity 20 mV/ppm. Accuracy ±5% of displayed value in range of 0-10 ppm and ±20% of displayed value in range of 10-100 ppm. Supplied with 3 m cable for connection to gas purifier
1.17	Power saving mode	Needed. For economical and power saving operation of glove box. Given advantages should be: noise reduction by automatic switch off the vacuum pump; power consumption reduction. Power saving mode should provide energy savings when workstation or gas purification system is not used, or when it's not necessary to use 100% of power to keep atmosphere <1 ppm O_2 and H_2O. Functions: - The vacuum pump should be switched off, when the vacuum antechambers are not used for a longer time; - Positive pressure regulation without vacuum pump; - Automatic box light switch off Using power saving mode saving should be at least 80% comparing to fully operating system power consumptions.	Included (ECO mode). For economical and power saving operation of glove box. Given advantages are: noise reduction by automatic switch off the vacuum pump; power consumption reduction. Power saving mode provides energy savings when workstation or gas purification system is not used, or when it's not necessary to use 100% of power to keep atmosphere <1 ppm O_2 and H_2O. Functions: - The vacuum pump is switched off, when the vacuum antechambers are not used for a longer time; - Positive pressure regulation without vacuum pump; - Automatic box light switch off. Using power saving mode saving is 80% comparing to fully operating system power consumptions.
1.18	Controller	PLC controller with at least 7 inch color touch panel. All workstation functions should be controlled from panel screen. Multilanguage operation.	PLC controller with 7 inch color touch panel. All workstation functions are controlled from panel screen. Multilanguage operation.
2	**Glove box 2**	1 pc, with below listed specifications	**1 pc. with below listed specifications**
2.1	Producer and model	Indicate	**Manufacturer/Ražotājs: MBraun Model/Modelis: MB-Unilab Pro SP (1800/780)**
2.2	Type	Modular extension glove box, single sided gloves, 2 user workstation, antechamber installed on right side, leakrate O_2 = 0.05 Vol%/h, Class 1, ISO 10648-2	Modular extension glove box, single sided gloves, 2 user workstation, antechamber installed on right side, leakrate O_2 = 0.05 Vol%/h, Class 1, ISO 10648-2
2.3	Size	Internal size should be: Not less than: 1800 mm (W) x 780 mm (D) x 900 mm (H) External size should be: Not more than: 1805 mm (W) x 785 mm (D) x 905 mm (H)	Internal size: 1800 mm (W) x 780 mm (D) x 900 mm (H) External size: 1803 mm (W) x 783 mm (D) x 903 mm (H)
2.4	Materials	Chamber bottom, upper and side walls	Chamber bottom, upper and side walls are

		should be made from Stainless Steel (1.4301 grade (SUS304)), internal surface should be brushed and roughness should be <1 μm.	made from Stainless Steel (1.4301 grade (SUS304)), internal surface is brushed and roughness is <1 μm.
2.5	Back wall/side	In back wall should be installed at least 4 flanges which size is DN40 and can be used for installation of feedthroughs. Should be included at least 1 pc electrical feedthrough for 230 V, 1 ph. Should be installed 2 pc HEPA H13 filters (one for gas inlet other for gas outlet) which could be possible replace with glove box gloves. Connection of filters with thread. 3 pc height adjustable shelf should be placed on back wall	In back wall is installed 4 flanges which size is DN40 and can be used for installation of feedthroughs. Included 1 pc electrical feedthrough for 230 V, 1 ph. Installed 2 pc HEPA H13 filters (one for gas inlet other for gas outlet) it's possible replace with glove box gloves. Connection of filters with thread. 3 pc height adjustable shelfs are placed on back wall.
2.6	Right wall/side	Should be installed: 1 pc big antechamber 1 pc mini antechamber	Is installed: 1 pc big antechamber 1 pc mini antechamber
2.7	Big antechamber	Dimensions: diam. Not less 390 mm, length not less 600 mm (±5 mm). 2 pc lifting up doors (made from anodized aluminum or similar material) Door closing mechanism with spindle handle for one hand operation. Tray size not less 575 x 290 mm (LxW). On top of antechamber should be installed pressure manometer. Operation of filling and evacuation of antechamber manual. Material Stainless Steel, wall thickness not less than 2.5 mm.	Dimensions: diam. 390 mm, length 600 mm. 2 pc lifting up doors (made from anodized aluminum). Door closing mechanism with spindle handle for one hand operation. Tray size 575 x 290 mm (LxW). On top of antechamber is installed pressure manometer. Operation of filling and evacuation of antechamber manual. Material Stainless Steel, wall thickness 3 mm.
2.8	Mini antechamber	Dimensions: diam. not less 150 mm, length not less 400 mm (±5 mm). Hinged doors inside and outside (made from anodized aluminum or similar material). On side of antechamber should be installed pressure manometer. Material Stainless Steel, wall thickness not less than 3 mm.	Dimensions: diam. 150 mm, length 400 mm. Hinged doors inside and outside (made from anodized aluminum). On side of antechamber is installed pressure manometer. Material Stainless Steel, wall thickness 3 mm.
2.9	Front window	Window coated with material resistant to many chemicals and scratches. Horizontally should be 4 pc glove port feedthroughs (made from Polyoxymethylene – POM) which diam. 220 mm). For one glove should be used at least 3 pc O-rings.	Window coated with material resistant to many chemicals and scratches. Horizontally are placed 4 pc glove port feedthroughs (made from Polyoxymethylene – POM) which diam. is 220 mm). For one glove is used 3 pc O-rings.
2.10	Lightning	Inside surface of glove box should be lightened with fluorescent lamp which is installed outside glove box on top part of front window. Lamp should have cover and switch.	Inside surface of glove box is lightened with fluorescent lamp which is installed outside glove box on top part of front window
2.11	Stand	Glove box should have not removable stand. Height 1000 mm (±10 mm). Stand made from Stainless Steel.	Glove box has not removable stand. Height 1000 mm. Stand made from Stainless Steel. With castors and mechanical feets (heigh adjustable)
2.12	Gas purifier	Removal: oxygen and moisture, < 1 ppm	Included (MB-20G) Removal: oxygen and

		(referring to glove boxes with max., leakrate: <1*10-5 mbar l/s Max. purifying volume: >5 m^3. Capacity: at least 36 L of O_2 (oxygen) and at least 1350 g H_2O (moisture). Working gas can be: Nitrogen (N_2) or Argon (Ar). Circulation blower: adjustable speed, max. 88 m^3/h, Δp = 60 mbar, vibration dampened. blower body fully sealed. Pressure control (automatic): adjustable limits from -15 to +15 mbar incl. pressure sensor for glove box. Control through touch panel or foot switch. Possibility work in under pressure mode for user protection. Main valves: electro-pneumatic valves. Piping for gas circulation made from Stainless Steel. Purifier should be fully covered with side panels.	moisture, < 1 ppm (referring to glove boxes with max., leakrate: <1*10-5 mbar l/s) Max. purifying volume: 5 m^3. Capacity: 36 L of O_2 (oxygen) and 1350 g H_2O (moisture). Working gas can be: Nitrogen (N_2) or Argon (Ar). Circulation blower: adjustable speed, max. 88 m^3/h, Δp = 60 mbar, vibration dampened, blower body fully sealed. Pressure control (automatic): adjustable limits from -15 to +15 mbar incl. pressure sensor for glove box. Control through touch panel or foot switch (included). Possibility work in under pressure mode for user protection. Main valves: electro-pneumatic valves. Piping for gas circulation made from Stainless Steel. Purifier is fully covered with side panels
2.13	Solvent filter	Adsorber material: activated charcoal; Capacity: not less than 5 kg of charcoal which can adsorbe not less 500 g of organic solvents. Operation modes: - Inline: circulation of the glove box atmosphere through filter with continuous removal; - Bypass: with manual hand valves filter can be removed from circulation loop. This mode should allow save system operation during adsorber exchange, without breaking the circulation of the gas purifier. Pressure gauge – needed, max pressure 0.5 bar Integral leak rate not bigger <1*10-5 mbar l/s	Adsorber material: activated charcoal; Capacity: 5 kg of charcoal which can adsorbe 700 g of organic solvents. Operation modes: - Inline: circulation of the glove box atmosphere through filter with continuous removal; - Bypass: with manual hand valves filter can be removed from circulation loop. This mode allow to save system operation during adsorber exchange, without breaking the circulation of the gas purifier. Pressure gauge – included, max pressure 0.5 bar Integral leak rate <1*10-5 mbar l/s
2.14	Rotary vane pump	Needed. At least 17 m^3/h @ 60Hz pumping speed. Set should include oil mist filter and oil return kit. Pump should be connected to gas purifier with depressurized flexible hose (should be included).	Included. 17 m^3/h @ 60Hz pumping speed. In set is included: oil mist filter and oil return kit. Pump is connected to gas purifier with depressurized flexible hose (included).
2.15	Sensor set	Needed. At least 1 pc of Oxygen and 1 pc of Moisture analyzers. Installation in closed cycle circulation pipe line through DN40 flanges with centering ring and clamp. Parameters should be shown on touch panel screen.	Included. 1 pc of Oxygen and 1 pc of Moisture analyzers. Installation in closed cycle circulation pipe line through DN40 flanges with centering ring and clamp. Parameters are shown on touch panel screen.
2.16	O_2 sensor	Measuring range not shorter than from 0 to 1000 ppm of O_2. Fast response time up to 10 s. Sensitivity at least 10 mV/ppm. Accuracy not worse ±2% of displayed	Measuring range from 0 to 1000 ppm of O_2. Fast response time up to 10 s. Sensitivity 10 mV/ppm. Accuracy ±2% of displayed value. Supplied with 3 m cable for connection to gas

		value. Supplied with not shorter than 3 m cable for connection to gas purifier.	purifier.
2.17	H_2O sensor	Measuring range not shorter than from 0 to 500 ppm of H_2O. Fast response time up to 120 s. Sensitivity at least 20 mV/ppm. Accuracy not worse ±5% of displayed value in range of 0-10 ppm and ±20% of displayed value in range of 10-100 ppm. Supplied with not shorter than 3 m cable for connection to gas purifier.	Measuring range from 0 to 500 ppm of H_2O. Fast response time up to 120 s. Sensitivity 20 mV/ppm. Accuracy ±5% of displayed value in range of 0-10 ppm and ±20% of displayed value in range of 10-100 ppm. Supplied with 3 m cable for connection to gas purifier
2.18	Power saving mode	Needed. For economical and power saving operation of glove box. Given advantages should be: noise reduction by automatic switch off the vacuum pump; power consumption reduction. Power saving mode should provide energy savings when workstation or gas purification system is not used, or when it's not necessary to use 100% of power to keep atmosphere <1 ppm O_2 and H_2O. Functions: - The vacuum pump should be switched off, when the vacuum antechambers are not used for a longer time; - Positive pressure regulation without vacuum pump; - Automatic box light switch off Using power saving mode saving should be at least 80% comparing to fully operating system power consumptions.	Included (ECO mode). For economical and power saving operation of glove box. Given advantages are: noise reduction by automatic switch off the vacuum pump; power consumption reduction. Power saving mode provides energy savings when workstation or gas purification system is not used, or when it's not necessary to use 100% of power to keep atmosphere <1 ppm O_2 and H_2O. Functions: - The vacuum pump is switched off, when the vacuum antechambers are not used for a longer time; - Positive pressure regulation without vacuum pump; - Automatic box light switch off. Using power saving mode saving is 80% comparing to fully operating system power consumptions.
2.19	Controller	PLC controller with at least 7 inch color touch panel. All workstation functions should be controlled from panel screen. Multilanguage operation.	PLC controller with 7 inch color touch panel. All workstation functions are controlled from panel screen. Multilanguage operation.
2.20	Spin coater	Needed, single substrate table top model or integrated in glow box. Spin coater should be made from material resistant to chemicals. Dimension: should not be higher than 300 mm. Control – manual and automated (programmable). Programming – should have unlimited program storing availability with multi steps for recipe creation. Lid – should be transparent with hole in middle (center) for liquid dispensing. Lid should be protected with automatic safety lock, preventing opening when coating is in process. Controller – detachable interface with touch screen which have to be glove friendly, resistant to chemicals with not	Included (SPS SPIN 150i), single substrate table top model in glow box. Spin coater is made from material resistant to chemicals. Dimension: 250 mm. Control – manual and automated (programmable). Programming – has unlimited program storing availability with multi steps for recipe creation. Lid – transparent with hole in middle (center) for liquid dispensing. Lid is protected with automatic safety lock, preventing opening when coating is in process. Controller – detachable interface with touch screen which is glove friendly, resistant to chemicals with IP52 protection class. Timer – unlimited with ±0,1 second steps. Speed – range from 0 to 12'000 rpm with ±1 step, accuracy ±0,1 rpm.

		worse than IP52 protection class. Timer – needed with not shorted range from 1 sec to 30 min. Speed – in range from 0 to 8'000 rpm with ±1 step, accuracy not worse ±0,1 rpm. Acceleration/deceleration – in range from 1 to not less than 8'000 rmp/sec. Vacuum – need button for vacuum On/Off activation for substrate fixing. Substrate – spin coater should be able accept substrate sizes which are from 10 mm diameter to 160 mm diameter. Should be included needed vacuum chucks for substrate fixing. Utility connections should be done through glove box side wall. Vacuum should be created with same vacuum pump which is used for gas purification system. Liquid waste from process bowl should be collected outside glove box. Options: with spin coater should be delivered at least 50 pc of internal bowl liners with lid for protection of internal bowl.	Acceleration/deceleration – range from 1 to 30'000 rpm/sec. Vacuum – is button for vacuum On/Off activation for substrate fixing. Substrate – spin coater is able accept substrate sizes which are from 10 mm diameter to 160 mm diameter. Is included vacuum chucks for substrate fixing. Utility connections are done through glove box side wall. Vacuum is created with same vacuum pump which is used for gas purification system. Liquid waste from process bowl should be collected outside glove box. Options: with spin coater will be delivered 50 pc of internal bowl liners with lid for protection of internal bowl.
2.21	Glove box purging system	Needed, fast glove box purging function with inert gas. Operation/activation (ON/OFF) through control panel of gas purifier. Purging rate max 200 l/min with manual regulation valve.	Included (MB-BS-200), fast glove box purging function with inert gas. Operation/activation (ON/OFF) through control panel of gas purifier. Purging rate max 200 l/min with manual regulation valve.
3	Certification	All glove box parts and it's components should be CE marked (provide copies with offer).	All glove box parts and it's components are CE marked.
4	Installation	Needed. Before delivery should be provided utility requirements for system installation. All parts which will be connected directly to electrical sockets should work from standard 220-230 V network.	Included. Before delivery will be provided utility requirements for system installation. All parts which will be connected directly to electrical sockets will work from standard 220-230 V network.
5	Warranty	Not less than 24 month from date of delivery.	24 month from date of instalation.

Pasūtītājs:

Z.v. Andris Šternbergs

Piegādātājs:

Z.v. Paulius Vilemas

Laboratorinės įrangos
padalinio vadovas
Marius Stapulionis