



Co-funded by
the European Union



MINISTERSTVO
VĚDY, VYSOKÉHO
ŠKOLSTVÍ A
TĚLESNÉ VÝCHOVY

Purchase Contract

TBU - Respirometer for Measuring of Biological Processes

concluded in compliance with the provisions of § 2079 et seq. of Act No. 89/2012 Coll., Civil Code, as amended (hereinafter referred to as “*Civil Code*”), between the following Contracting Parties:

Tomas Bata University in Zlín

Public higher education institution established in compliance with Act No. 404/2000 Coll., on the Establishment of Tomas Bata University in Zlín

Residing at:	nám. T. G. Masaryka 5555, 760 01 Zlín
Identification Number:	70883521
Tax Identification Number:	CZ70883521
Bank details:	Komerční banka, a.s., Branch Zlín
Bank account No.:	[REDACTED]
ID data box:	ahqj9id
Represented by:	Ing. Silvie Vodinská, Bursar
Person supervising the performance of the subject matter of the Contract: (hereinafter referred to as “ <i>Buyer</i> ”)	[REDACTED]@utb.cz

and

ECHO Instruments d.o.o.

Residing at:	Zeče 25, 3210 Slovenske Konjice, Slovenia, EU
Identification Number:	545110800
Tax Identification Number:	SI 27927750
Bank details:	NLB d.d., Trg republike 2, SI-1520 Ljubljana
Bank account No.:	[REDACTED]
Represented by:	Dr. Andrej Holobar
Registration:	3.4.1992
E-mail:	[REDACTED]@echo.si
ID data box:	N/A
Contact person: (hereinafter referred to as “ <i>Vendor</i> ”)	[REDACTED]

I Subject matter of the Contract

- 1) The subject matter of this Contract is the Vendor’s obligation to hand over to the Buyer the item that is the subject of the purchase, to transport it to the place of destination (see Article III Paragraph 3 of the Contract) and to enable the Buyer to acquire an ownership right to the item.
- 2) The subject matter of this Contract is the Buyer’s obligation to take over the item and pay the agreed purchase price for it, all under the terms and conditions agreed below in this Contract.

II Item specification and price

- 1) For the purposes of this Contract, the item refers to the supply of a **respirometer for measuring of biological processes purchased for the needs of the Faculty of Technology of Tomas Bata University in Zlín**, within the implementation of the project: Development of Adequate Infrastructure for Doctoral Study Programmes at TBU in Zlín (RADOST), project registration number: CZ.02.01.01/00/22_012/0006919, with parameters specified in Annex 1 to this Contract.
- 2) The price of the item has been agreed as the maximum admissible and final (except for cases when VAT rates change after the signing of this Contract), and it includes all costs incurred by the Vendor and required for the fulfilment of his/her obligations specified in this Contract, in particular the costs of transport of the item and payment of any administrative or custom fees.

Name of the item	Number of items	Price per item without VAT
24 channel RESPIROMETER for measuring biological processes	1 piece	128.980,00 EUR

Total price of the item:

Total excl. VAT:	128.980,00 EUR
21% VAT:	EUR 0,00 reverse charge mode

III Other requirements set out for the performance, place and date of performance

- 1) The Vendor shall fulfil his/her obligation to supply the item by its delivery, installation, putting into operation and demonstration of operation in the Buyer's laboratory, including the delivery of related technical documentation/instructions, including the declaration of conformity. Training of employees in charge by a service technician and calibration of the device as part of the training shall also be included. The item shall be delivered new, properly packed and in sealed boxes (or in another form of shipping container depending on the nature of the item). A record shall be drawn up by the Contracting Parties on the delivery of the item, which shall be signed by authorized representatives of both Contracting Parties (hereinafter referred to as the "*record*"). The authorized representative of the Buyer is [REDACTED], the authorized representative of the Vendor is DR. Andrej Holobar. The risk of damage to the item shall pass to the Buyer at the moment of signing the takeover record. The Vendor is obliged to contact the authorized person of the Buyer no later than 2 working days before the intended delivery of the item to determine the exact place where (to which room) the item should be delivered.
- 2) **The place of performance** (delivery of the item) is **Tomas Bata University in Zlín, University Institute, Nad Ovčírnou 3685, 760 01 Zlín.**
- 3) The Vendor is obliged to deliver the item no later than **24 weeks** from the effective date of the Contract.

IV Payment terms

- 1) The Buyer undertakes to pay the Vendor the price of the item in accordance with Article II of this Contract on the basis of a tax document – invoice issued by the Vendor after delivery of the item (see Article III Paragraph 1) of this Contract), while the right of the Vendor to invoice arises on the day on which the official record is signed by both Contracting Parties. The tax document shall be issued by the Vendor within **14 calendar days** of signing of the official record. E-mail address for receiving of electronic invoices – fakturace@utb.cz.

- 2) **The invoice is due 30 days** from its delivery to the Buyer. The invoice shall be paid via a non-cash transfer to the Vendor's bank account specified in the invoice. The Buyer does not provide advances.
- 3) The invoice must meet the requirements set out for a tax document as is specified in § 29 of Act No. 235/2004 Coll., on Value Added Tax, as amended; otherwise the Buyer is entitled to return the invoice to the Vendor for correction until its due date. In such a case, the invoice payment period starts to run on the day of delivery of the corrected invoice to the Buyer. The following information must also be included in the invoice:
 - Name of public contract: **TBU - Respirometer for Measuring of Biological Processes, ID 2282**
 - Contract number,
 - Document number,
 - Issue date, due date, taxable date,
 - Financial institution and the account number to which the payment is to be made,
 - Constant code and variable code,
 - The amount charged without VAT, VAT, the amount charged including VAT,
 - Project title: **“Development of Adequate Infrastructure for Doctoral Study Programmes at TBU in Zlín (RADOST)”**,
 - Project number: **CZ.02.01.01/00/22_012/0006919**,
 - Title of the work,
 - The reason for billing with reference to the Contract,
 - Other formalities, if stipulated by a generally binding regulation.

The date of the provision of taxable supply must not precede the effective date of the Contract in accordance with the publication in the Register of Contracts pursuant to Act No. 340/2015 Coll., on Special Conditions for the Effectiveness of Certain Contracts, the Publication of Such Contracts and the Register of Contracts (Act on the Register of Contracts).

- 4) In case of doubt, the invoice is deemed to have been paid on the day on which the relevant amount is debited from the Buyer's account to the Vendor's account specified in the invoice.
- 5) The Vendor declares that the bank account specified in Paragraph 3 of this Article, to which the remuneration is to be transferred in accordance with this Contract, is one of his/her accounts used for economic activity, which are notified to the tax administrator and are intended to be published in a manner allowing remote access as specified in the provision of § 96 of Act No. 235/2004 Coll., on Value Added Tax, as amended (the VAT Act).
- 6) The Vendor further declares that he/she duly fulfils his/her tax obligations arising from the VAT Act, in particular the obligations relating to tax administration, and that the relevant tax administrator has not decided that the Vendor as a tax payer is an unreliable payer. If such a decision of the tax administrator is made during the term of this Contract, the Vendor undertakes to inform the Buyer of this fact immediately.
- 7) The Contracting Parties have agreed that the Buyer is entitled, from the moment he/she learns in any way that the Vendor has become an unreliable tax payer or that the payment is to be transferred to an account not disclosed in accordance with the provisions of § 98 of the VAT Act, to pay the Vendor the unpaid remuneration excluding VAT and to pay the relevant VAT at the statutory rate as is specified in the provisions of § 109a of the VAT Act directly to the bank account of the tax administrator, which is locally competent to the Vendor. The VAT shall be paid in this way no later than on the day when the remuneration excluding VAT is paid to the Vendor. The Contracting Parties have agreed that the payment of VAT to the account of the Vendor's tax administrator and the payment of the remuneration without VAT to the Vendor will be considered as the fulfilment of the Buyer's obligation to pay the agreed remuneration or its relevant part in accordance with this Contract, and the Vendor shall no longer require the Buyer to pay VAT in such a case.
- 8) If the Buyer suffers any financial damage as a result of the Vendor's false declaration regarding the bank account to which the payment is to be transferred, and regarding the fulfilment of tax obligations under this Article of the Contract, or because the Vendor has become an unreliable tax payer, and has not informed the Buyer of this fact, the Vendor undertakes to compensate the Buyer for such a damage without delay.

- 9) At the same time, if the Vendor breaches the obligation to inform the Buyer of the fact that he/she has become an unreliable tax payer, or if his/her statement regarding the bank account to which the payment is to be made, and regarding the fulfilment of tax obligations under this Article of the Contract proves to be false, the Vendor is obliged to pay the Buyer a contractual penalty amounting to 50 % of the agreed remuneration without VAT in accordance with Article II Paragraph 2 of this Contract. The Buyer's right to compensation, including damage exceeding the contractual penalty shall not be affected by the contractual penalty provision.
- 10) In the event that the Buyer pays the VAT relating to the price for the performance of the subject matter of this Contract twice, i.e. to the Vendor (by payment of the agreed price including VAT) and, at the same time, to the relevant tax administrator (for the reasons stated above), the Vendor is obliged to return the duplicate payment of VAT or a part thereof to the Buyer upon the Buyer's request. At the same time, the Buyer is entitled to unilaterally offset his/her claim for the refund of the duplicate payment of the VAT or a part thereof against any of the Vendor's receivables at any time.
- 11) The provisions of Paragraphs 5 to 10 of this Article of the Contract shall apply only if the Vendor is or becomes a VAT payer registered in the Czech Republic during the term of this Contract.

V Liability and warranty

- 1) The Vendor shall be responsible for defects that the item has at the time of its handover and also within the provided warranty for defects discovered throughout the warranty period. The Vendor declares and undertakes that the item will be delivered as new, unused, not refurbished, that it is free of any factual or legal defects (i.e. in particular the rights of third parties).
- 2) The Vendor shall provide the Buyer with a guarantee that, during the warranty period, the item will have the properties stipulated by this Contract, by relevant legal rules and regulations, or usual properties, and that it will be fully usable for the agreed purpose, or for the usual purpose (hereinafter also referred to as the "*warranty*").
- 3) The warranty period starts on the day on which the official record is signed by both parties and is **24 months** from the date of handover of the item on the basis of the signed handover/takeover record.
- 4) During the warranty period, the Buyer will not be charged for materials, components used during the repairs, repair work, travel or other expenses incurred during the repairs.
- 5) The length of the warranty period shall be automatically extended by the number of days elapsed from the notification of the defect until its complete removal.
- 6) The Vendor is obliged to perform a service intervention for the claimed defect covered by the warranty within 30 days, and is obliged to remove the claimed defect (unless the Contracting Parties agree otherwise in writing) in situ. If the nature of the defect does not allow this, the Vendor is obliged to remove the defect within the shortest possible time with regard to the nature of the defect, either by repairing it or by replacing the whole item with a new one of the same or higher quality, and for the avoidance of doubt; the Contracting Parties shall agree on the exact length of such a period. The Contracting Parties shall draw up a record of the removal of the defect.
- 7) The warranty shall not apply to damage to the item caused by the Buyer due to unprofessional handling or improper operation, and also to damage caused by a third party and force majeure.
- 8) The Contracting Parties have further agreed that the Vendor is obliged to remove defects of the item that are not covered by the warranty at the Buyer's request, within a reasonable time and under his/her standard price conditions.
- 9) The Vendor undertakes to provide the Buyer with post-warranty service for the subject of purchase for a period of **60 months**, with the Vendor guaranteeing that spare parts will be available. Post-warranty service shall be invoiced according to this Contract under the standard price conditions of the Vendor at the time of the service intervention. The price of post-warranty service is not part of the price of the item as is specified in Article II Paragraph 2 of this Contract.

VI Sanctions

- 1) In the event of the Buyer's delay in paying the purchase price of the item, the Buyer is obliged to pay to the Vendor default interest in the amount according to the relevant legal regulation.
- 2) If the Vendor is in arrears with the delivery of the item within the agreed deadline, the Vendor is obliged to pay to the Buyer a contractual penalty in the amount of 0.2 % of the price of the item excluding VAT, specified in Article II, Paragraph 2), for each commenced day of delay, but no more than 100 % of the price of the item.
- 3) Contractual penalties under this Contract are payable within 15 days of the delivery of their calculation to the obliged party.
- 4) In the event of the Vendor's delay in performing the warranty repair within the deadlines set out in this Contract, or if the Vendor does not lend a replacement device of the same or higher quality, the Vendor shall pay a contractual penalty in the amount of 0.05 % of the purchase price of the item excluding VAT for each and every commenced day by which the performance of the warranty repair exceeds the period defined according to Article V, Paragraph 6) of this Contract.
- 5) Contractual penalty clauses shall not affect compensation for damages, claims or enforcement.

VII Final provisions

- 1) The Vendor declares that he/she does not meet the characteristics of the warning signs (RED FLAGS), does not violate the horizontal principle of "do no significant harm" by his/her actions, and is not in a conflict of interest. Information for the Contractors is provided in Annex 2 to this Contract.
- 2) In connection with the basic principles of public procurement specified in the Public Procurement Act (PPA), both Contracting Parties have an interest in the performance of the subject matter of the Contract in accordance with the principles of socially responsible procurement, environmentally responsible procurement and innovation. On the basis of this fact, upon performing of the public contract, the Contractor undertakes to:
 - a. Comply with aspects of socially responsible procurement, i.e. to comply with all legal regulations, in particular labour law, employment, occupational health and safety regulations valid in the country of their registered office, in respect of all persons who will participate in the performance of the subject matter of this Contract. The Contractor is obliged to ensure the fulfilment of these obligations with his/her potential subcontractors.
 - b. To comply with aspects of environmentally responsible procurement, i.e. to comply with all technical standards and environmental requirements, minimize the impact on the environment, and respect sustainability, e.g. by taking all measures that can be reasonably required of him/her in order to protect the environment and limit damages caused by pollution, noise and other activities carried out by him/her, and undertakes to ensure that emissions, soil pollution and wastewater produced by his/her activities do not exceed the values set by the relevant legal regulations.
 - c. Where possible and appropriate, implement new or significantly improved products, services or practices related to the subject matter of this Contract.
- 3) The Buyer is entitled to require the submission of records or other suitable documents from which the fulfilment of the abovementioned obligations arises, and the Contractor is obliged to submit these documents to the Buyer without undue delay.
- 4) The Vendor takes into cognizance the fact that he/she is a person obliged to cooperate in the performance of financial control in accordance with § 2 Letter e) of Act No. 320/2001 Coll., on Financial Control in Public Sector Administration, as amended.
- 5) The Vendor undertakes to allow all entities authorized to perform inspections, from whose funds the performance of the subject matter under this Contract is paid, or other relevant inspection entities, to inspect the documents related to this performance, for the period of time stipulated by the legal regulations of the Czech Republic for their archiving (Act No. 563/1991 Coll., on Accounting, as amended, and Act No. 235/2004 Coll., on Value Added Tax, as amended).

- 6) The work is part of a project co-financed by the EU within Johannes Amos Comenius Operational Programme. The Contracting Parties are obliged to follow the rules governing publicity set out for projects co-financed from this programme when implementing the work and promoting it. The Vendor is obliged to keep all documentation related to the performance of the subject matter of this Contract at least until 31 December 2041, unless the Czech legal system stipulates a longer period. The Buyer, the grant provider, or entities authorized by the latter (or other inspection bodies under applicable legislation) shall have access to these documents upon request.
- 7) The rights and obligations of the Contracting Parties arising from this Contract and not expressly regulated by its wording shall be governed by the laws of the Czech Republic, excluding any conflict-of-law rules, in particular by the Civil Code. The English version of the Contract is intended for informational purposes only. Only the Czech version of the Contract is legally binding. In the event of an interpretative dispute, the Czech version shall always take precedence.
- 8) This Contract may only be amended or supplemented by written numbered amendments that will be expressly marked as an amendment to the Contract and signed by authorized representatives of both Contracting Parties.
- 9) This Contract shall come into force on the day on which it is signed by authorized representatives of both Contracting Parties and shall come into effect on the day on which it is published in the Central Register of Contracts in accordance with Act No. 340/2015 Coll., on Special Conditions on the Effectiveness of Certain Contracts, the Publication of Such Contracts and on the Register of Contracts (Act on the Register of Contracts).
- 10) If any provision of this Contract is or becomes unlawful, invalid or unenforceable in any way, the legality and enforceability of the remaining provisions of the Contract shall not be affected or impaired. The Contracting Parties undertake to replace any such illegal, invalid or unenforceable provision with a new provision that is as close as possible to the illegal, invalid or unenforceable provision in its meaning.
- 11) This Contract has been made in writing and each Contracting Party shall attach its qualified electronic signature to it in accordance with the relevant provisions of Act No. 297/2016 Coll., on Trust Services for Electronic Transactions.
- 12) This Contract shall come into force on the day on which the last Contracting Party attaches the electronic signature and shall come into effect on the day on which it is published in the Central Register of Contracts in accordance with Act No. 340/2015 Coll., on Special Conditions on the Effectiveness of Certain Contracts, the Publication of Such Contracts and on the Register of Contracts (Act on the Register of Contracts).
- 13) An integral part of this Contract is **Annex 1** – Detailed Technical Specification of the Item, **Annex 2** – Information for Contractors.

In Zlín on:

In Slovenske Konjice on:

On behalf of the Buyer:

On behalf of the Vendor:

Dokument je podepsán elektronickým podpisem	
Podepisující:	Ing. Silvie Vodinská
Organizace:	Univerzita Tomáše Bati ve Zlíně
Sériové č. cert.:	23105347
Výdavatel cert.:	PostSignum Qualified CA 4
Datum a čas:	02.12.2024 14:18:58
Důvod:	
Místo:	

ANDREJ Digitally signed by
HOLOBAR ANDREJ HOLOBAR
Date: 2024.12.02
09:20:22 +01'00'

.....
Ing. Silvie Vodinská
Bursar of TBU in Zlín
Signed electronically

.....
Dr. Andrej Holobar
Signed electronically



Co-funded by
the European Union



MINISTERSTVO ŠKOLSTVÍ,
MLÁDEŽE A TĚLOVÝCHOVY

dAnnex 1

Technical Specifications

TBU - Respirometer for Measuring of Biological Processes

IDENTIFICATION DETAILS OF THE CONTRACTING AUTHORITY

Official name:	Tomas Bata University in Zlín
Residing at:	nám. T. G. Masaryka 5555, 760 01 Zlín
Identification No.:	70883521
Rector:	Prof. Mgr. Milan Adámek, Ph.D.

The subject of the public tender is a **respirometer for measuring of biological processes**, planned to be purchased for the needs of the Faculty of Technology of Tomas Bata University in Zlín within the implementation of the project entitled **Development of Adequate Infrastructure for Doctoral Study Programmes at TBU in Zlín (RADOST)**, Reg. No. **CZ.02.01.01/00/22_012/0006919**.

General description of the device:

It is a device enabling the measuring of activity/growth of microbial and other types of cells. The device can be used to assess the growth conditions of cultures, to determine their ability to degrade various substrates, including those which are heterogeneous, and also to assess the effects of toxic substances. The device enables both measuring of basic properties of pure and mixed microbial cultures, as well as the monitoring of important influences in technical applications of microorganisms. It enables measuring of biological processes in the aqueous and soil environment. The device possesses the ability to monitor the amount of O₂ consumed and of CO₂ and CH₄ produced.

Minimum requirements regarding technical properties of the device

- The device must enable measuring in compliance with the ISO 14855-1, ISO 14852 and ISO 17556 standards.
- The device must enable accurate measuring of microbial activity under anaerobic conditions.
- Oxygen concentration measuring sensor (O₂) – paramagnetic, with a range of 0-25%
- Carbon dioxide concentration measuring sensor (CO₂) – with an optimum range of 0-2,000 ppm
- Carbon dioxide concentration measuring sensor (CO₂) – with a range of 0-3%
- Methane concentration measuring sensor (CH₄) – with a range of 0-5%
- Parallel measuring in no less than 24 reactors
- Each reaction vessel shall be controlled separately.

- Testing possible at two different temperatures
- The system is equipped with condensers enabling the monitoring of biological decomposition at temperatures above 25 °C.
- The system enables operation within a temperature range of 10 – 60 °C and better.
- No less than 24 reaction vessels with the volume of 250 ml or higher, for implementation of tests in aqueous (aerobic/anaerobic) environment.
- No less than 24 reaction vessels with the volume of 500 ml or higher, for implementation of tests in the soil environment (soil/compost).
- Reaction vessels must be placed in an environmental/thermostatic chamber providing a constant temperature of the environment.
- The device must provide mixing (or bubbling) of the mixture in order to prevent sedimentation.
- The air supply system (air pump) must be adjustable (mass flow controllers), and must provide aerobic conditions.
- Recommended air pump capacity and an adjustable flow volume range in accordance with ISO standards
- Adjustable temperature range in accordance with ISO standards
- Thermostatic-control unit: Accuracy of ± 1 °C and better
- Forced air convection inside the environmental chamber
- Gas-tight and corrosion-resistant hoses, connectors and seals for connecting of reaction vessels to the air supply, and a system for measuring of generated gases
- Safety elements

Additional equipment:

- Equipment necessary for flawless operation of the device
- PC (micro tower, SFF or small tower) + monitor
- Backup power supply (for a period of approx. 25 minutes of operation in the event of a power failure, with all respirometer devices connected)

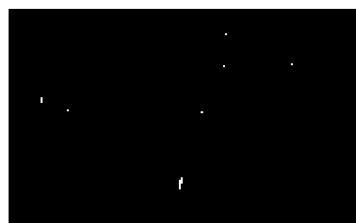
Device compatibility:

- All PC software and hardware equipment compatible with Windows 10 and higher,
- Power supply enabling the device to operate in an electrical network with a voltage of 230 V and a frequency of 50 Hz
- E/F/C electric plug

**or in compliance with another similar standard*

According to the attached quote to the tender documentation, we confirm compliance with described specifications.

Dr. Andrej Holobar, CEO ECHO Instruments d.o.o.
Slovenske Konjice, 17.9.2024

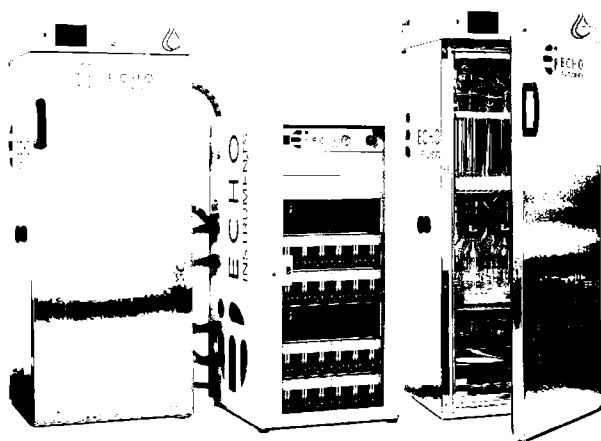




ECHO INSTRUMENTS

Technical specifications of ECHO instruments ER24 respirometer

- 24 channels – ISO14855 / ISO 17556 / ISO 14852
- Continuous measurements of all 24 reactors
- Measurements in aerobic, anaerobic conditions
- 24 reactors for solid samples-volume: 2.7 liters
- 24 reactors for liquid samples-volume: 1 liters
- Magnetic stirring for all liquid sample reactors
- 2 x Thermostatic chamber - temperature range 3°C-70°C for testing at different temperatures. Temperature settings 0,1°C. Accuracy <1°C. Forced air convection
- Air source - ECHO Instruments air pump (compressor) to enable flushing and provide aerobic conditions.
- CO2 removal system (CO2 scrubber column)
- Mass Flow Controller for each reactor (range: 0-500 ml/min)
- Flow setting and control for each reactor
- 2 x Infrared Carbon dioxide (CO2) Sensor (range: 0-2000 ppm, accuracy +/-2%)
- 2 x Infrared Carbon dioxide (CO2) Sensor (range: 0-3%, accuracy +/-2%)
- 2 x Infrared Methane (CH4) Sensor (range: 0-5%, accuracy +/-2%)
- 2 x Oxygen (O2) sensor - Paramagnetic (range 0-25%, Heated sensor)
- Condensing system for all 24 reactors
- Corrosion and gas tight resistant valves, tubes, connectors
- PC (micro tower) + Monitor + Mouse + Keyboard
- Process control software (gas concentration, gas production, biodegradation %, temperature, flow pressure, Rh). All measured parameters also visible in charts. All data exportable to Ms Excel.
- UPS (backup power supply) to ensure approx. 25 min of operation in case of power failure
- Installation and training (2-3 days at Customers Lab) included
- Transport + insurance costs included
- Installation and transport costs are not included in offer.



24 channel ER respirometer



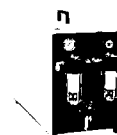
Vessel – solids



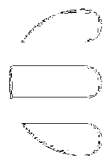
Vessel - Liquids



CO2 scrubber



compressor



Dimensions / Power consumption

24 channel ER24 Respirometer – 2 thermostatic chambers

Dimensions:

- Control unit: 60x60x120cm, Weight 120kg
- Thermostatic chamber 1: 60x60x150cm, Weight 105 kg (without vessels)
- Thermostatic chamber 2: 60x60x150cm, Weight 105 kg (without vessels)
- Compressor (Air pump): 36x20x40cm; Weight 23 kg

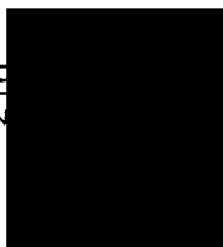
Electrical specifications:

- Control unit: 115-230 VAC, / Frequency: 50-60 Hz / Nominal power: 600W
- Thermostatic chamber 1: 115-230 VAC, / Frequency: 50-60 Hz / Nominal power: 350W
- Thermostatic chamber 2: 115-230 VAC, / Frequency: 50-60 Hz / Nominal power: 350W
- Compressor (Air pump): 115-230 VAC, / Frequency: 50-60 Hz / Nominal power: 300W

Dr. Andrej Holobar, 17.9.2024



E
IN





ECHO
INSTRUMENTS

Tomas Bata University in Zlín
nám. T. G. Masaryka 5555
CZ-76001 Zlín

ECHO Instruments d.o.o.
Zeče 25, SI-3210 Slovenske Konjice
www.echoinstruments.eu / info@echoinstruments.eu

Tel.: +386 3 759 23 80, www.echo.si / info@echo.si
Registrirano pri Okrožnem sodišču v Celju, vložna št.ev.:1/02363/00
Osnovni kapital: 27.124,00 EUR
Matična št.: 5451108000, ID za DDV: SI27927750
IBAN: SI56 0400 1005 0355 987, SWIFT: KBMASI2X
IBAN: SI56 0284 5026 3417 356, SWIFT: LJBASIX

Quotation: 24-010-0490

Slovenske Konjice, 17. 09. 2024

Article number	Description	Number	Price per unit	Price EUR
2005566	24 channel Respirometer - ER24 24 channels – ISO14855 / ISO 17556 / ISO 14852 Continuous measurements of all 24 reactors Measurements in aerobic, anaerobic conditions 24 reactors for solid samples-volume: 2.7 liters 24 reactors for liquid samples-volume: 1 liters Magnetic stirring for all liquid sample reactors 2 x Thermostatic chamber - temperature range 3°C-70°C for testing at different temperatures. Temperature settings 0,1°C. Accuracy <1°C. Forced air convection Air source - ECHO Instruments air pump (compressor) to enable flushing and provide aerobic conditions. CO2 removal system (CO2 scrubber column) Mass Flow Controller for each reactor (range: 0-500 ml/min) Flow setting and control for each reactor 2 x Infrared Carbon dioxide (CO2) Sensor (range: 0-2000 ppm, accuracy +/-2%) 2 x Infrared Carbon dioxide (CO2) Sensor (range: 0-3%, accuracy +/-2%) 2 x Infrared Methane (CH4) Sensor (range: 0-5%, accuracy +/-2%) 2 x Oxygen (O2) sensor - Paramagnetic (range 0-25%, Heated sensor) Condensing system for all 24 reactors Corrosion and gas tight resistant valves, tubes, connectors PC (micro tower) + Monitor + Mouse + Keyboard Process control software (gas concentration, gas production, biodegradation %, temperature, flow pressure, Rh). All measured parameters also visible in charts. All data exportable to Ms Excel. UPS (backup power supply) to ensure approx. 25 min of operation in case of power failure Installation and training (2-3 days at Customers Lab) included Transport + insurance costs included Application support (phone / online) - FREE of charge	1,00	123.700,00	123.700,00
2980248	Sealing for respirometer vessel - spare	24,00	20,00	480,00
2980655	Annual service and calibration for 24 channel respirometer The annual service includes: - Complete System check - Complete Performance check - Software update - Replacement of Peristaltic pump heads - Replacement of Air filters - Replacement of gaskets for vessels solid samples Calibration includes: (customer has to provide calibration gases) - O2, CO2,CH4 sensor calibration - Flow, Pressure, Temperature, Moisture - travel and accomodation costs	1,00	4.800,00	4.800,00
Total amount EUR			128.980,00	

Payment: 30 days net
Delivery time: 12-16 weeks
Warranty: 2 years;
Validity: 31.12.2024

Origin: The country of origin is Slovenia, EU.

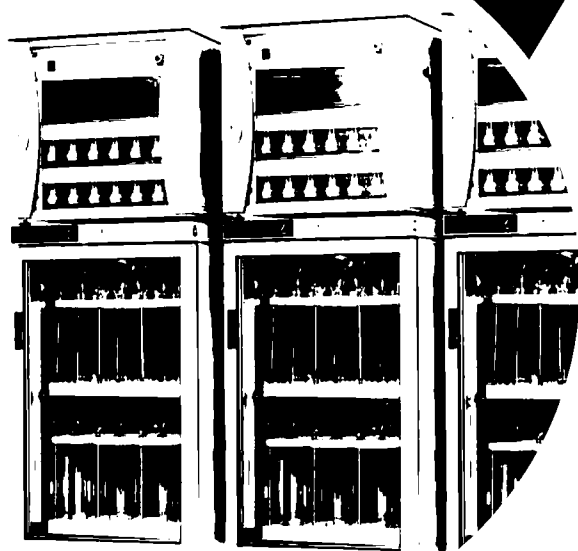
BANK DETAILS: Bank: NLB d.d., Trg republike 2, SI-1520 Ljubljana
IBAN: SI56 0284 5026 3417 356, SWIFT Code: LJBASIX

Page 1/1

ECHO Instruments
Tine Žlebnič, CSO



ECHO
INSTRUMENTS



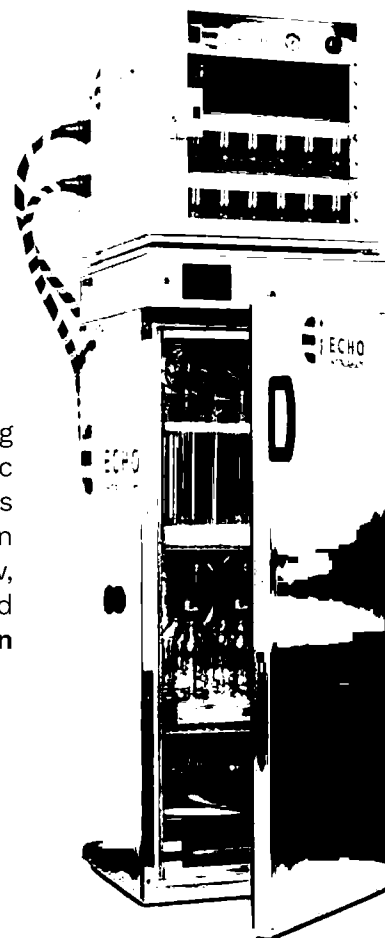
ECHO
INSTRUMENTS



WWW.ECHOINSTRUMENTS.EU

INSTRUMENTS FOR BIODEGRADATION MEASUREMENTS

Respirometer is a device that measures respiration of living organisms. Respirometer determines aerobic or anaerobic biodegradability of solid, liquid and algae samples in various applications. The system measures O₂ and CO₂ concentration in flow through the sample under controlled conditions. Flow, temperature, pressure, humidity are also measured continuously. Software automatically calculates **CO₂ production** and **biodegradation %**. Additional gases can also be measured.



12 channel Respirometer

- **ISO 14855-1, ASTM D 5338**; Aerobic biodegradability of plastics in compost;
- **ISO 14852**; Biodegradability of plastics in aqueous medium;
- **ISO 17556**; Biodegradability of plastic materials in soil;
- **ASTM D6691**; Marine degradation, **OECD 301 B**, etc;
- Sea and lake sediment biodegradability tests;
- Sludge measurements;
- Organic waste biodegradation measurements;
- Insects and small animals respirometry;
- Food respiration, R&D in plastics, biotechnology, ecology, pharmacy, packaging, etc;
- **¹³C Isotope** measurements (with additional $\delta^{13}\text{C}$ analyzer).
- Modular design (upgradable);
- On-line biodegradation measurements;
- Plug & Play system;
- Aerobic or anaerobic measurements;
- 12 / 24 / 36 / 48 / 60 channel systems;
- Laboratory or industrial use;
- MFC (mass flow controller) for each channel;
- Various flow configurations;
- Flow leakage alarm;
- Automatic humidification;
- Multitube cable connections;
- Customizable;
- O₂ and CO₂ sensors installed;
- Optional sensors: CH₄, H₂S, H₂, NH₃;
Temperature range +3...+70 °C;
- Air source (compressor) included;
- Internal air supply connection;
- Various sizes of vessels;
- Vessels with illumination;
- No special connections required;
- Remote control software;
- Data export in MS Excel;
- Calculation of CO₂ production;
- Calculation of biodegradation %.

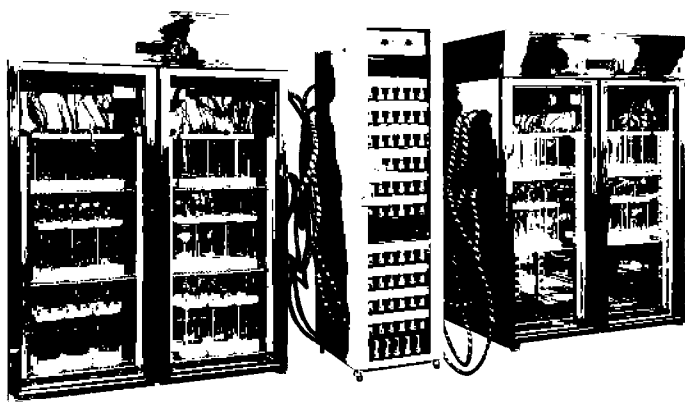
● **Dimensions – Control units:**

- 12 channel respirometer: 60 × 60 × 60 cm;
- 24 channel respirometer: 60 × 60 × 120 cm;
- 36, 48 & 60 channel respirometer: 60 × 60 × 200 cm;

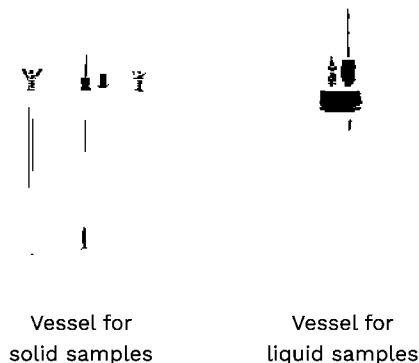
● **Dimensions – Thermostatic chambers:**

- 12 channel respirometer: 60 × 60 × 150 cm;
- 24 channel respirometer: 80 × 80 × 200 cm;
- 36 channel respirometer: 150 × 86 × 200 cm;
- 48 & 60 channel respirometer: 150 × 86 × 200 cm (2x);

- O₂ and CO₂ sensors (additional sensors on request);
- MFC ±1.5 % full-scale: 0–200 mL/min, 0–500 mL/min or 0–1000 mL/min;
- Connecting multicore cables;
- Vessels for solid samples: 2.8 L;
- Vessels for liquid samples: 250–1000 mL;
- Vessels for algae samples (controlled LED lighting): 1000 mL.



60 channel Respirometer

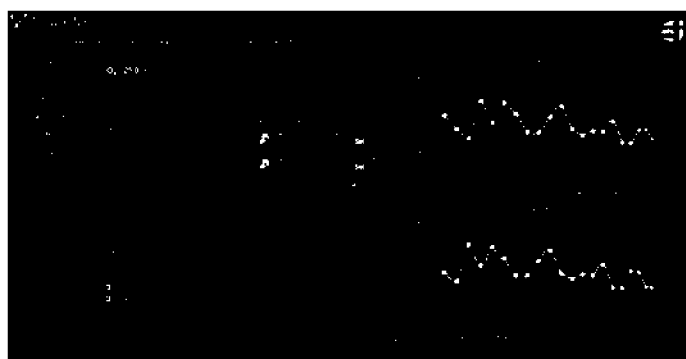
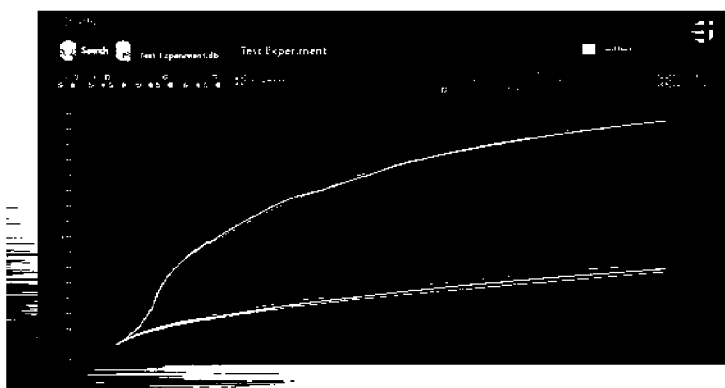


Vessel for solid samples

Vessel for liquid samples

Vessels

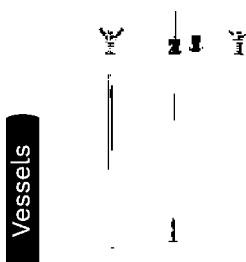
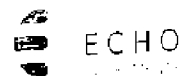
ECHO Instruments ER respirometer software



COMPACT – MODULAR XC RESPIROMETER

COMPACT XC RESPIROMETER FOR SCREENING AND R&D MEASUREMENTS,
CONNECTED TO EXISTING HARDWARE OR AS A COMPLETE SETUP

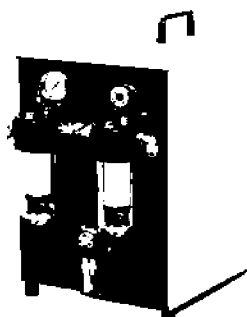
- **STAND-ALONE CONTROLLER** for connection to existing hardware (vessels, cabinets, etc);
- **COMPLETE SETUP** with vessels, thermostatic cabinet, air source, PC, etc;
- **SUITABLE FOR R&D TESTS, SCREENING and RAPID TESTS;**
- **MODULAR DESIGN & UPGRADABLE;**
- **NEW** Software with additional features;
- Different mixing options.



Solid samples



Liquid samples



Complete setup XC Respiriometer

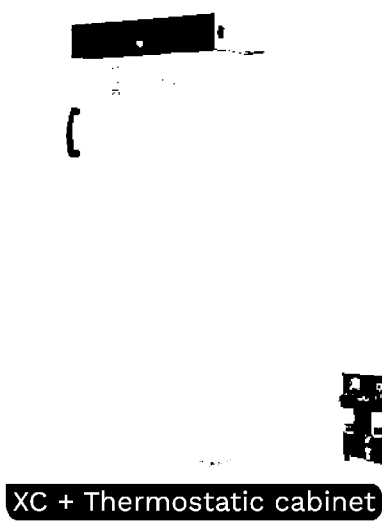


ECHO
INSTRUMENTS

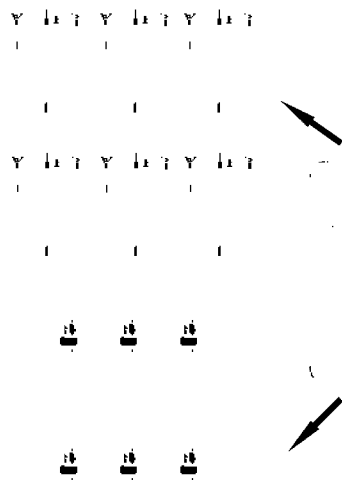
- Multi-channel system: 6 / 12 / 18 / 24 / 36, etc;
- Plug & Play design (easy to install, use and maintain);
- Suitable for screening and R&D measurements;
- O₂, CO₂, temperature, flow, pressure, humidity measurements;

- Various sizes of vessels;
- Remote desktop control;
- Various ranges of gas sensors;
- User-friendly software with MS Excel export;

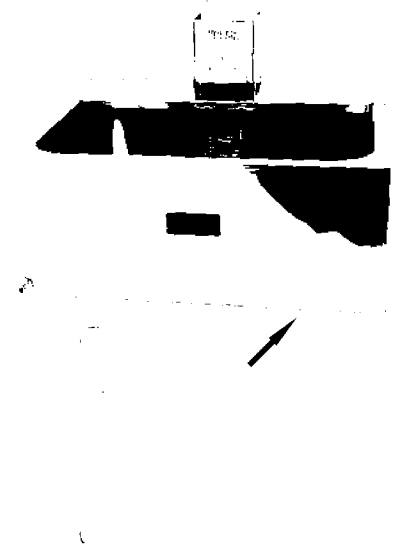
XC RESPIROMETER CAN BE CONNECTED TO VARIOUS LABORATORY EQUIPMENT & BIOREACTORS. CONFIGURATION OF MULTIPLE UNITS IS POSSIBLE WITH ONE SOFTWARE. MEASUREMENTS DATA BASE CAN BE SYNCHRONIZED TO ANY CLOUD OR BACKUP SERVICE.



XC + Thermostatic cabinet

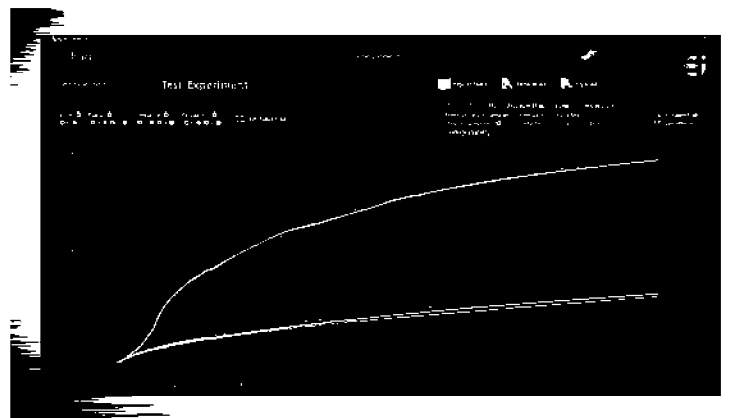
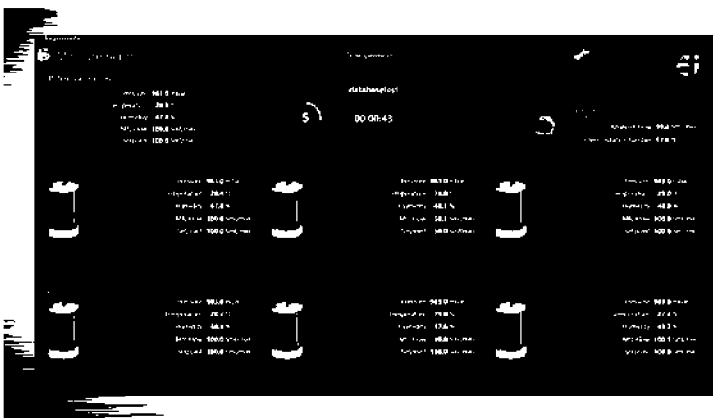


XC + Vessels



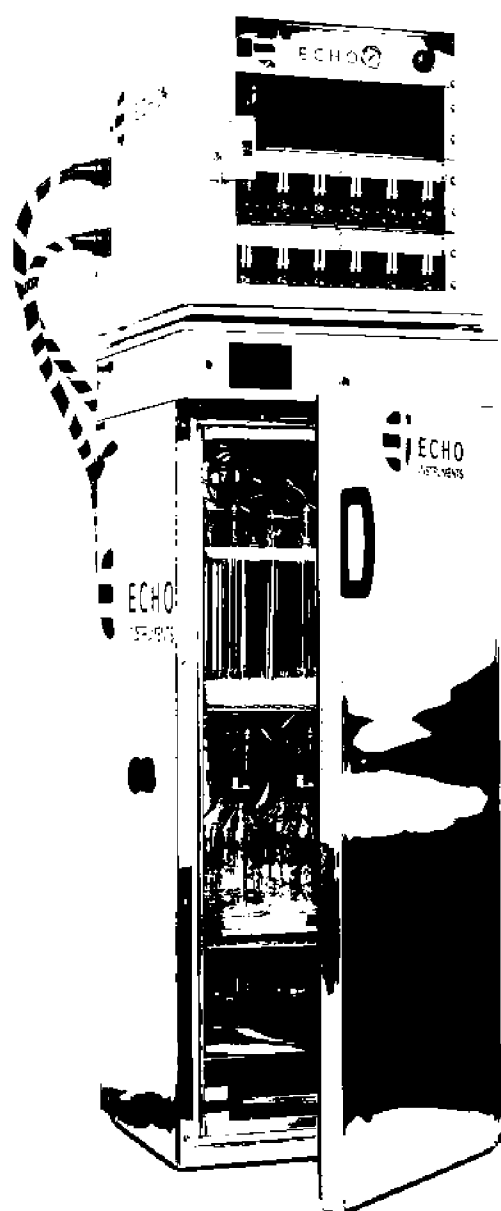
XC + Water bath

ECHO Instruments XC respirometer software

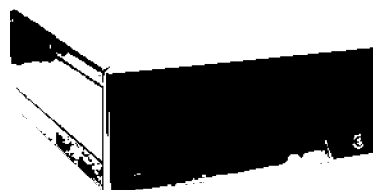


^{13}C ISOTOPE MEASUREMENTS WITH ER RESPIROMETER

CONNECT $\delta^{13}\text{C}$ ISOTOPE ANALYZER TO ER RESPIROMETER FOR PRECISE ON-LINE BIODEGRADATION MEASUREMENTS



ER Respiriometer



$\delta^{13}\text{C}$ isotope analyzer, e.g. 1



$\delta^{13}\text{C}$ isotope analyzer, e.g. 2

- **MEASURING $\delta^{13}\text{C}$ ISOTOPE ON-LINE;**
- Software integration between analyzers;
- Biodegradation in compost;
- Biodegradation in soil;
- Biodegradation in marine waters;
- Biodegradation in fresh waters;
- Biodegradation in waste waters;
- Biodegradation in sediments;
- Biodegradation in algae environment;
- **Certification** measurements;
- Modular and upgradable;
- Suitable for various applications;
- Customizable.



RESPIROMETERS STANDARDS AND APPLICATIONS

- Biodegradation in compost;
 - Biodegradation in soil;
 - Biodegradation in marine waters;
 - Biodegradation in fresh waters;
 - Biodegradation in waste waters;
 - Biodegradation in sediments;
 - Biodegradation in activated sludge;
 - Biodegradation in algae environment;
 - Measuring $\delta^{13}\text{C}$ Isotope ON-LINE;
 - Organic waste biodegradation measurements;
 - Insects and small animals respirometry;
 - Food respiration, R&D in plastics, biotechnology,
 - Aerobic and anaerobic conditions;
 - And many more.
-
- **ISO 14855-1 & ASTM D5338;** Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions;
 - **ISO 17556:2019;** Determination of the ultimate aerobic biodegradability of plastic materials in soil by measuring the oxygen demand in a respirometer or the amount of carbon dioxide evolved;
 - **ISO 14852:2021;** Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium. Method by analysis of evolved carbon dioxide;
 - **ISO 16929:2021;** Determination of the degree of disintegration of plastic materials under defined composting conditions in a pilot-scale test;
 - **ASTM D6691-17;** Standard Test Method for Determining Aerobic Biodegradation of Plastic Materials in the Marine Environment by a Defined Microbial Consortium or Natural Sea Water Inoculum;
 - **OECD 301B;** Biodegradability of the material by evaluating the production of CO_2 over a minimum of 28 days in a liquid environment;
 - **ISO 23977, ISO 18830, ISO 19679, ISO 22403, ISO 22404** and many more.

PLASTIC DISINTEGRATION RESPIROMETER – DT

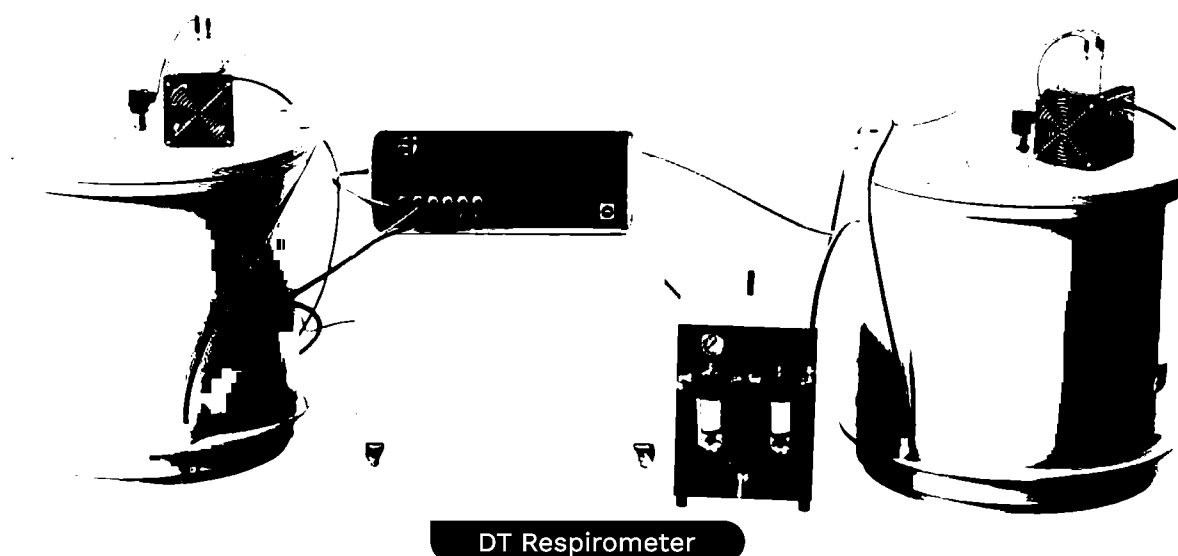
DETERMINATION OF THE DEGREE OF DISINTEGRATION OF PLASTIC MATERIALS UNDER DEFINED COMPOSTING CONDITIONS IN A PILOT-SCALE TEST

The biological treatment of biodegradable plastic materials includes aerobic composting in well-operated, municipal or industrial biological waste treatment facilities. Determining the degree of disintegration of plastic materials in a pilot-scale plant is an important step within a test scheme to evaluate the industrial compostability of such materials.

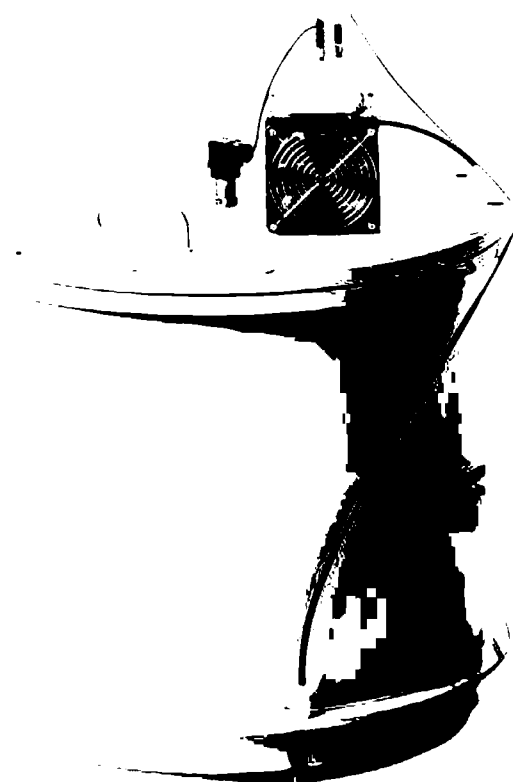
The disintegration test is performed under defined and standardized composting conditions on a pilot-scale level.

The test material is mixed with fresh bio waste in a precise concentration and introduced into a defined composting environment. A natural ubiquitous microbial population starts the composting process spontaneously and the temperature increases. The composting mass is regularly turned over and mixed. Temperature and O₂ concentration are regularly monitored.

- **ISO 16929**; Plastics — Determination of the degree of disintegration of plastic materials under defined composting conditions in a pilot-scale test



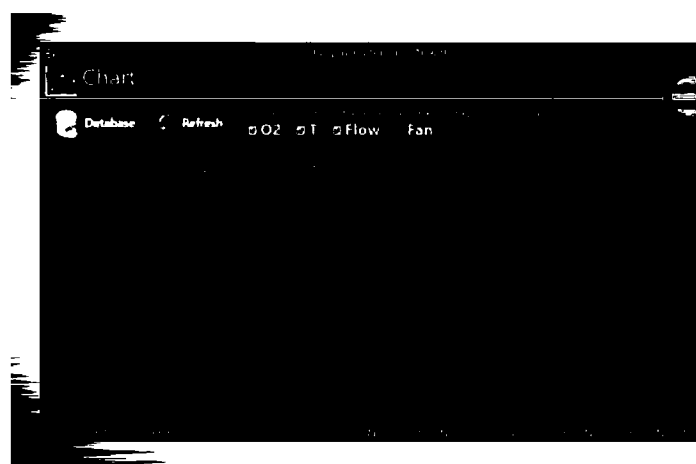
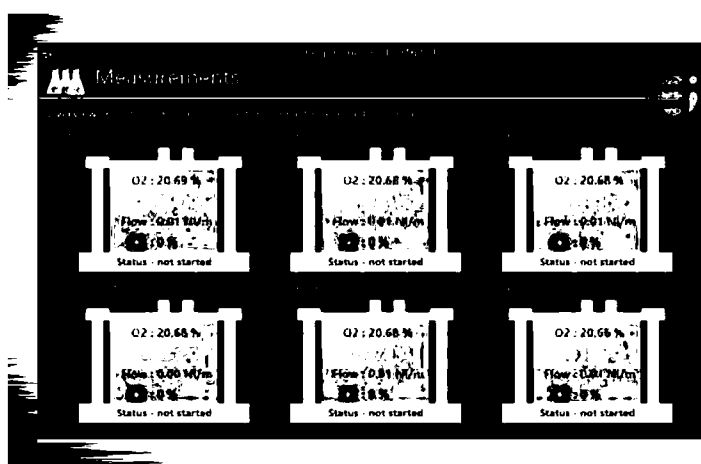
- Single or multi-channel system: 1 / 3 / 6 / 12;
- Plug & Play design (easy to install, use and maintain);
- Integrated PC in the control unit;
- Cooling system for each reactor;
- Temperature, flow, measurements;
- Sensor O₂: Range 0–25 %, Accuracy: 2 %;
- Various sizes of vessels;
- Remote desktop control;
- Air pump – compressor;
- User-friendly software with excel export files.



Bioreactor 64 L

- Dimensions – Control unit: 39 × 49 × 20 cm;
- Volume of vessels: 35 L, 64 L, 140 L, etc;

ECHO Instruments DT respirometer software

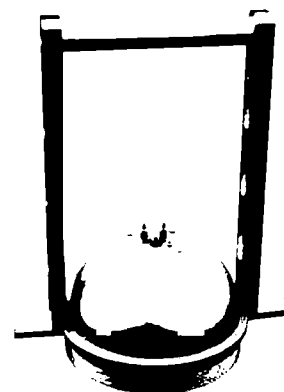


CO₂ FLUX MEASUREMENTS

Portable and automatic Soil flux devices are ideal for simultaneous measurements of gas flux CO₂, O₂, CH₄, Radon, H₂, H₂S, SO₂, VOC, Hydrocarbons, etc. over a wide dynamic range on various surfaces. Devices are suitable for measurements in the fields, forests, landfills and other areas.

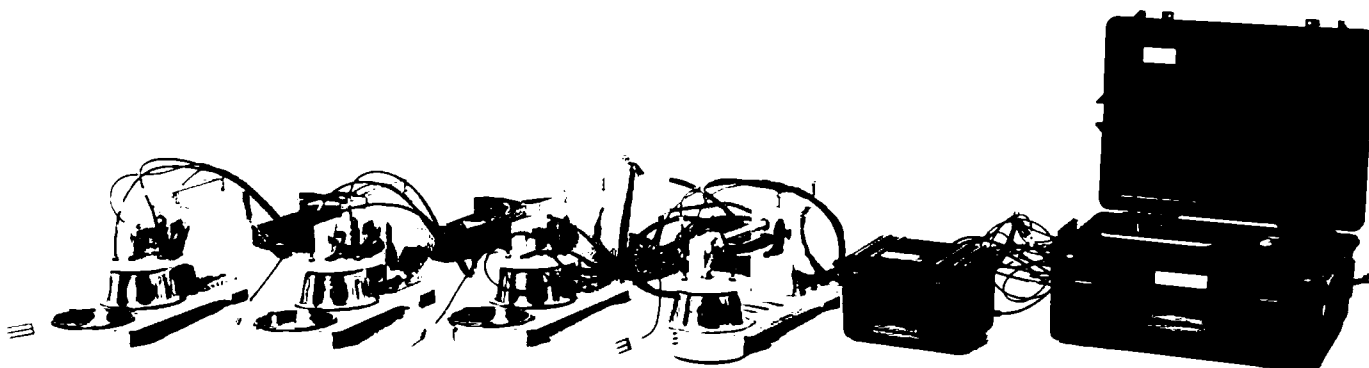


Portable Soil Flux



Various gas sensors measure the gas concentration inside the measuring head. Software calculates the flux directly on-site. Accurate GPS module determines the exact location of the measurements.

- Flux CO₂ from soil;
- Flux CO₂ from compost;
- Flux CO₂ from landfills;
- Identifying ground and underground spills – pollution in ecological disasters;
- Agronomy;
- Post-fire ground activity;
- Uranium mines mapping;
- Carbon fingerprint & greenhouse gases;
- Gas presence on playground areas.



Automatic Soil Flux

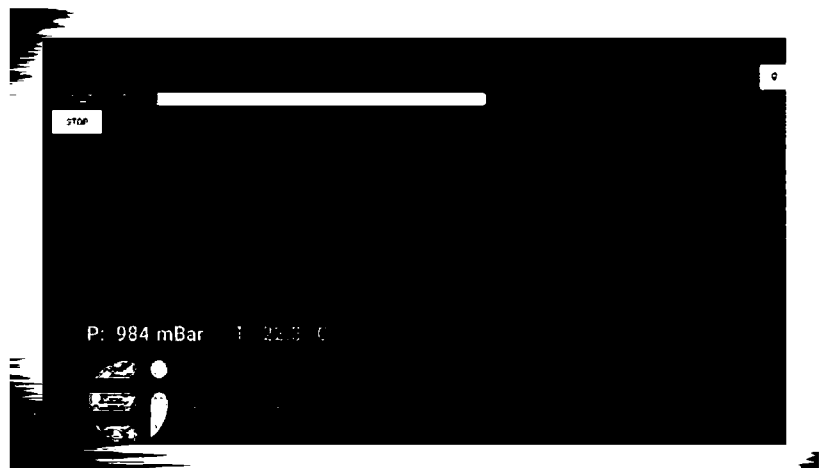
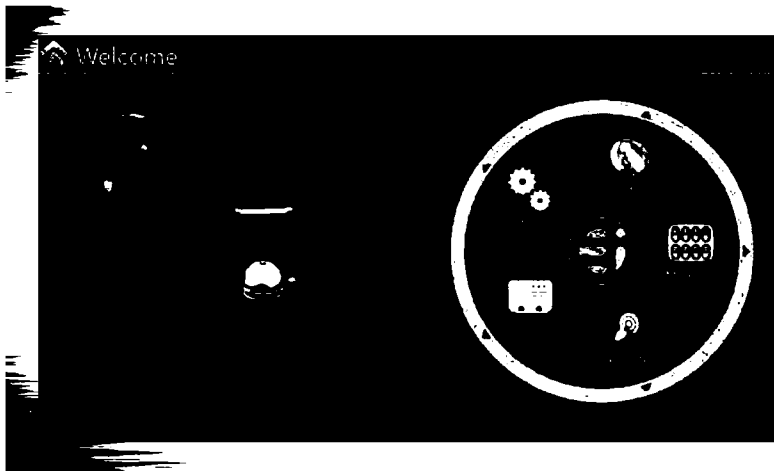
- Portable or stationary (automatic);
- Map location (inbuilt GPS module);

- Up to 5 different gas sensors with different ranges;
- Operation via tablet, mobile phone or PC.

- Operating conditions; Portable version:
+5...+40 °C < 90 % RH, non-condensing;
- Operating conditions automatic:
+10...+40 °C < 90 % RH, non-condensing;
- Storage conditions: +20...+40 °C < 90 % RH,
non-condensing;

- Power supply: Li-ion battery;
- Gas sensors: O₂, CO₂, CH₄, VOC, H₂, H₂S, NH₃, Rn, etc;
- Automatic system: 4 / 8 channels.

ECHO Instruments Soil Flux software





ECHO
INSTRUMENTS

Zeče 25
3210 Slovenske Konjice
Slovenia, EU

Phone: +386 (0)3 759 23 80
Email: info@echoinstruments.eu





Co-funded by
the European Union



MINISTERSTVO ŠKOLNÍHO
VÝCHOVY, MLÁDEŽE A TĚLOVÝCHOVY

Information for Contractors
“RED FLAGS” Warning Signs, Horizontal “DO NO SIGNIFICANT HARM” Policy
and Prevention of CONFLICT OF INTEREST

TBU - Respirometer for Measuring of Biological Processes

Tomas Bata University in Zlín, as a contracting authority (and also a beneficiary), is obliged to deal with all of the above. The award of a public contract to the winning bidder is subject to compliance with these principles. The contracting authority requires the Contractor to comply with the following requirements:

A **warning sign** refers, in particular, to such a situation that could lead to serious irregularities, i.e. fraud, corruption, double funding, a conflict of interest, or to other types of incidents that would be in conflict with the actual Recovery and Resilience Facility Regulation, with the law of the European Union and of the Czech Republic. **Warning signs shall be identified at the component level by the component owner or by the implementation subjects.**

4 Red Flags (hereinafter referred to as “4RF”):

- Fraud
- Corruption
- Conflict of interest
- Double funding

Do no significant harm (hereinafter referred to as “DNSH”) means that in case of activities carried out by the beneficiary, the beneficiary must by all means avoid such activities – the beneficiary is not allowed to carry out or support such activities - that significantly harm any of the six environmental objectives of the EU:

- a) Climate change mitigation
- b) Climate change adaptation
- c) Sustainable use and protection of water and marine resources
- d) Circular economy which may cause significant harm to the environment
- e) Pollution prevention and control
- f) Protection and and restoring of biodiversity and ecosystems

Conflict of Interest

In accordance with Article 61 of the Financial Regulation (EU) 2018/1046, conflicts of interest of persons involved in the management, selection, evaluation, control and monitoring of all operations must also be prevented. In accordance with Article 61 Paragraph 3 of the Financial Regulation, a conflict of interest exists when:

- there are family reasons

- there are reasons related to emotional ties
- there are reasons related to political or national affiliation (e.g. membership in the same political party, citizenship of the same country other than the Czech Republic)
- there is economic interest (co-investment by several interested parties, interest in the implementation of a transaction, payments, expenses from which several interested parties earn profit)
- there is another direct or indirect personal interest threatening an impartial and objective performance of the functions of a participant in a financial transaction or of another person in accordance with Article 61 Paragraph 1 of the Financial Regulation