



PURCHASE CONTRACT
OPEN-PATH GAS ANALYZER WITH 3D SONIC ANEMOMETER
(GAS ANALYZERS 2019, PART No. 1)

SELLER

Name **LI-COR GmbH**
Registered office **Bad Homburg, Germany**
Comp. No (IČO) VAT No **DE 213 054 107**
(DIČ)
Incorporated in: **Bad Homburg** court in: **Bad Homburg** section record **HRB6992**
Represented by **Mr. Glen McMurdo, European Managing Director**

AND

BUYER

Name **Ústav výzkumu globální změny AV ČR, v. v. i.**
(Global Change Research Institute)
Registered office **Bělidla 986/4a, Brno, 603 00 Brno, Czech Republic**
Comp. No (IČO) **86652079** DIČ **CZ86652079**
Incorporated in **Register of public research institutes**
Represented by **prof. RNDr. Ing. Michal V. Marek, DrSc., dr. h. c., Director**

According to section 2079 of Civil Code, the above parties conclude the following contract:

I. SUBJECT MATTER OF CONTRACT

1. The seller undertakes that it will hand over the subject matter of purchase to the buyer and the seller undertakes that it will enable the buyer to acquire the ownership rights for the subject matter of purchase and the buyer undertakes to take over the subject matter of purchase and pay the purchase price for it to the seller.
2. The seller also undertakes to hand over the documents concerning the subject matter of contract.

II. SUBJECT MATTER OF PURCHASE

1. The subject matter of purchase is an open-path gas analyzer (2 pieces) with 3D sonic anemometer (2 pieces), which together form one of two parts of the mobile eddy covariance system.

Note: The second part of the mobile eddy covariance system is the meteorological station that will be purchased under another purchase contract. For the avoidance of doubt, this information does not impose an obligation on the buyer to buy the second part of the system at the seller.

2. The subject matter of purchase is specified in more details in Annex No. 1 to this contract.
3. The part and accessories of the subject matter of purchase are specified in more detail in Annex No. 1 of this contract.
4. The subject matter of purchase will be handed over in compliance with the following documents (ordered according to the degree in which they are binding):
 - a) This contract.
 - b) Written instructions from the buyer.
 - c) Technical standards concerning the materials and activities performed on the basis of this contract
5. Together with the subject matter of purchase, the seller will hand over to the buyer the documents necessary for the handover and use of the subject matter of purchase. These documents include mainly the following:
 - a) Certificates and declarations of conformity for materials and products used.
 - b) Detailed instructions or manuals for use of the subject matter of purchase.
 - c) Detailed instructions or manuals for maintenance of the subject matter of purchase.The documents will be prepared in Czech or English language.
6. The Seller undertakes to perform servicing of the subject matter of purchase for the time of duration of the guarantee period.

III. HANDOVER OF THE SUBJECT MATTER OF PURCHASE

1. The complete and faultless subject matter of purchase will be handed over latest **within 5 weeks from the signature of the contract**.
2. Earlier fulfilment is allowed.
3. The subject matter of purchase will be handed over at the workplace of the buyer at **Bělidla 986/4a, 603 00 Brno, Czech Republic**, unless the parties agree otherwise.
4. If the seller supplies more items than agreed, the purchase contract is also concluded for the excessive amount and the price of the excessive amount is included in the total purchase price.
5. The seller undertakes to hand over the subject matter of purchase unused and without any legal or material defects.
6. The effect of the handover do not occur before the moment when the buyer is allowed to handle the subject matter of purchase at the place of handover.
7. Latest within 5 working days from the day on which the subject matter of purchase is handed over, the buyer will inspect it and check its apparent properties and quantity. Within the same deadline, the buyer will either confirm takeover of the subject matter of purchase or state its objections concerning the quantity and apparent properties of the subject matter of purchase. If the buyer neither confirms takeover of the subject matter of purchase nor states its objections concerning the quantity and apparent properties of the subject matter of purchase, it is

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understood that the buyer took the subject matter of purchase over and that it does not have any objections concerning its apparent properties and quantity.

8. The fulfilment cannot be refused, even if the conditions of section 1912 (1) of Civil Code are met (mutual fulfilment).

IV. PURCHASE PRICE

1. The purchase price for fulfilment according to this contract was agreed:

Item	Quantity	Price for 1 item in CZK excl. VAT	Sum price in CZK excl. VAT
1. Open-path gas analyzer with 3D sonic anemometer	2 pcs	CZK 803.259	CZK 1.606.518
TOTAL price CZK excl. VAT.			CZK 1.606.518

2. The price is agreed for the basis of unit prices as the sum priced items.
3. The price is agreed as the highest permissible price including all the costs of the seller for fulfilment of this contract and price influences in the course of fulfilment of this contract.
4. VAT of the statutory rate will be added to the price excluding VAT.

V. PAYMENT TERMS

1. The price for the delivery of the subject matter of purchase and service performed will be paid based on one invoice, unless specified otherwise by the buyer. An annex of the invoice will be a copy of the handover of the subject matter of purchase.
2. All the invoices shall include the particulars of a tax document.
3. If the seller becomes an unreliable VAT payer pursuant to section 160a of VAT act, the seller is obliged to inform the buyer about this fact in writing immediately, latest the next workday after the decision about this fact comes into legal force. In the same way, the seller is obliged to inform the buyer that proceedings have been commenced against it pursuant to section 106a of VAT act.
4. The buyer will pay VAT to the account of the relevant tax administrator in the following cases:
 - a) If the seller publishes information that it is an unreliable VAT payer as of the day of taxable supplies or
 - b) If the seller becomes an unreliable VAT payer before the price is paid or
 - c) In case of any doubts of the buyer whether the seller is an unreliable VAT payer or not.
5. The due date of all the invoices is 25 days from the day on which the invoice is issued.
6. The buyer is entitled to return an invoice with defects within the due date period. The seller is obliged to submit a new invoice or a corrected invoice with a new due date specified.
7. The seller is obliged to deliver the invoice to the address of the registered office of the buyer latest within 5 working days from the day on which the confirmation of the subject matter of purchase handover.
8. An invoice is paid on the day when the corresponding amount is written off the buyer's account.
9. No advance is provided. No deposit is provided.

VI. GUARANTEE OF QUALITY AND COMPLAINTS

1. The seller provides a guarantee for quality of the subject matter of purchase. For the whole duration of the guarantee period, the subject matter of purchase:

- a) will be fit for use for the purpose stipulated in this contract.
 - b) will be fit for use for the usual purpose.
 - c) will keep its usual properties.
2. The seller provides a **guarantee for quality** for a period from **12 months**.
 3. The guarantee period starts to run on the day when the subject matter handover is confirmed. The guarantee period is extended by the time starting from the day when a complaint is made and ending on the day when the defect is rectified.
 4. The buyer is not in delay with claiming a defect if the right for the defect which the subject matter of purchase has at the moment of its handover is claimed in writing within 30 days from the day on which the buyer learns about the defect.
 5. The Seller is not in delay with rectification of a defect if the seller starts to perform activities aiming at the defect rectification without any unnecessary delay after the defect is claimed; continues this activity duly and **latest within 25 workdays from the moment when the defect is claimed** it rectifies the defect or replaces the subject matter of purchase with a defect-free one.

VII. INTERESTS ON OVERDUE PAYMENTS AND CONTRACTUAL PENALTIES

1. The party which is in delay with payment of a debt can be asked by the other party, if it fulfils duly its contractual and statutory obligations, to pay an interest on overdue payment, with the exception of the cases when the party which is in delay is not responsible for the delay. The parties agree on an **interest on overdue payment** at the amount of **0.025 % from the due amount per day**.
2. The buyer will charge a **contractual penalty of CZK 2,400.00 per day** in the following cases:
 - a) Delay of the seller with handover of the subject matter of purchase.
 - b) Delay with rectification of a defect on the subject matter of purchase at the moment of its handover.
 - c) Delay with rectification of a guarantee defect.
3. The buyer will charge a contractual penalty of CZK 50,000.00 in case the seller does not inform the buyer that the seller has become an unreliable VAT payer or that proceedings have been commenced against the seller pursuant to section 106a of VAT act.
4. A separate invoice will be issued for the contractual penalty with the due date of 30 days. The day of taxable supplies is considered to be the day on which the invoice is issued.
5. The parties agree that the obligation to pay a contractual penalty does not affect the right for damage compensation at the amount at which it exceeds the contractual penalty. If a contractual penalty is decreased by the court, the right for damage compensation remains at the amount at which the damage exceeds the amount determined by the court as adequate, without any other limitations.

VIII. CONTRACT TERMINATION

1. The contract can be terminated by a written agreement.
2. The buyer can withdraw from the contract in case of its significant breach by the seller. A significant breach of the contract is considered to be among others:
 - a) Delay of the seller with handover of the subject matter of purchase by more than 30 days.
 - b) Commencement of bankruptcy proceedings in which the seller is in the position of the debtor.

- c) If it is established that untrue data were included in the bid from the seller in connection with the public contract.
3. The seller can withdraw from the contract in case of its significant breach by the buyer. A significant breach of the contract is considered to be among others:
 - a) Commencement of bankruptcy proceedings in which the buyer is in the position of the debtor.
 - b) Delay of the buyer with settlement of an invoice by more than 30 days.
4. Withdrawal must be made in writing and it becomes valid when delivered to the other party.
5. Withdrawal from the contract does not cancel the mutual vindicatory liability of the parties.

IX. RESPONSIBLE PERSONS OF THE PARTIES

1. The representative of the buyer is Ing. Milan Fischer, Ph.D., fischer.m@czechglobe.cz, +420 732 342 022. This representative of the buyer can act on behalf of the buyer in connection with this contract in any respect, but he is not allowed to change or terminate this contract.
2. The representative of the seller is **Mr. Glen McMurdo**. This representative of the seller can act on behalf of the seller in connection with this contract in any respect, but he is not allowed to change or terminate this contract.

X. JOINT PROVISIONS

1. The right of ownership for the subject matter of purchase is transferred at the moment when the subject matter of purchase is handed over to the buyer.
2. Without written consent from the other party, none of the parties is allowed to transfer a receivable or liability arising from this contract to a third party.
3. Each of the parties accepts the risk of a change of circumstances pursuant to section 1765 of Civil Code for its debts arising on the basis of this contract.
4. No rights and obligations can be inferred from practices introduced by the parties or customs observed as a standard, both generally and in the particular field, concerning the subject matter of fulfilment of this contract.
5. If any of the provisions of this contracts becomes imaginary (petty), the impact of this defect on the other provisions of this contract will be assessed similarly according to section 576 of Civil Code.
6. The parties exclude application of the following provisions of Civil Code to this contract: section 557 (contra proferentem rule).
7. The seller is aware of the fact that it is a person obliged to cooperate during financial inspection. The seller is obliged to bind all its subcontractors to cooperate during a financial inspection.
8. The parties agree that the court competent to negotiate and decide all the potential disputes arising between the buyer and the seller pursuant to this contract or in connection with it is the general court of the buyer.

XI. FINAL PROVISIONS

1. This contract is governed by Czech legal regulations with the exception of colliding provisions. All the connected negotiations are held in Czech, Slovak or English.

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2. This contract does not depend on any other contract. No other contract depends on this contract.
3. This contract contains full agreement concerning the subject matter of the contract and all the particulars the parties were supposed to and wanted to agree in the contract and which they consider important for binding character of this contract. No statement of the parties made during negotiations concerning this contract may be interpreted in contradiction with the explicit provisions of this contract and it does not establish an obligation of any of the parties.
4. This contract can only be changed in writing in the form of numbered supplements to this contract. The parties can object invalidity of the contract or its supplement anytime due to the failure to observe the form, even if the fulfilment has already started.
5. The parties are aware that this contract meets the requirements specified in Act No 340/2015 Coll. and therefore it is subject to the obligation to be published in the register of contracts. The buyer undertakes to enter the contract in the register of contracts within the statutory period and send a confirmation that the contract was published to the seller upon its request.
6. This contract is prepared in two counterparts and each party will obtain one of them.
7. The following annexes are an integral part of this contract:
 - a) Annex No. 1: Technical specification of the subject matter of purchase
8. This contract comes into force at the moment when it is published in the register of contracts.

Bad Homburg, on this day **14 February 2019**

Brno, on this day

Mr. Glen McMurdo
European Managing Director
LI-COR GmbH

prof. RNDr. Ing. Michal V. Marek, DrSc., dr. h. c.
Director
Ústav výzkumu globální změny AV ČR, v. v. i.
(Global Change Research Institute)

ANNEX NO 1: TECHNICAL SPECIFICATION OF THE SUBJECT MATTER OF PURCHASE

Subject matter of purchase will fulfil all followed technical parameters:

Open-path gas analyzer with 3D sonic anemometer

(2 pairs = 2 pieces of gas analyzers and 2 pieces of 3D anemometer)

Manufacturer: LI-COR Inc.

Type: LI-7900EF

General description:

The subject of the purchase is a part of the mobile eddy covariance system consisting of an open-path gas (CO₂ and H₂O) analyzer system and sonic anemometer intended to be used for *in-situ* measurements of energy and carbon balance fluxes at the ecosystem level by eddy covariance method. The gas analyzer and the sonic anemometer are the core parts of eddy covariance instrumentation. As such they allow to measure high frequency (20 Hz) measurements of CO₂ and H₂O concentrations and 3D wind velocities. The analyzer is equipped with a control unit which allows the data from the analyzer to be collected, stored and also combined with the data from the 3D sonic anemometer and other external meteorological sensors to compute half-hourly fluxes of CO₂ exchange, latent and sensible heat in real time. The design of the open-path gas analyzer is ensuring no need for tubing and pump system which result in lower energy requirements. In addition, the open-path design is ensuring that the magnitude for frequency response correction of H₂O co-variances is significantly reduced.

Technical parameters (the below mentioned parameters correspond to one from two systems):

1. The gas analyzer allows to measure atmospheric concentration of CO₂ and H₂O using nondispersive infrared spectroscopy.
2. The design of the gas analyzer is solved as so-called open-path system with no need for tubing and pump system.
3. The length of the sampled air volume in the analyzer is not greater than 15 cm. This is ensuring that the path length (and hence frequency response) of the gas analyzer is similar to commonly used sonic anemometers.
4. CO₂ measurement range at least from 0 to 3000 $\mu\text{mol mol}^{-1}$, accuracy within 1% of reading or better.
5. H₂O measurement range at least from 0 to 60 mmol mol^{-1} , accuracy within 1% of reading or better.
6. RMS noise CO₂ (typical @ 370 ppm CO₂ and 10 mmol mol^{-1} H₂O): max. 0.2 ppm@20 Hz .
7. RMS noise H₂O (typical @ 370 ppm CO₂ and 10 mmol mol^{-1} H₂O) @20 Hz: max. 0.007 mmol mol^{-1} .
8. Zero drift CO₂ (per °C): ± 0.1 ppm typical, ± 0.3 ppm maximum.
9. Zero drift H₂O (per °C): ± 0.03 mmol mol^{-1} typical, ± 0.05 mmol mol^{-1} maximum.
10. Gain drift CO₂ (% of reading per °C @ 370 ppm): $\pm 0.02\%$ typical, $\pm 0.1\%$ maximum.
11. Gain drift H₂O (% of reading per °C @ 20 mmol mol^{-1}): $\pm 0.15\%$ typical, $\pm 0.30\%$ maximum.

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12. Direct sensitivity of CO₂ measurements to H₂O (mmol CO₂/mol H₂O): ±0.02 typical, ±0.04 maximum.
13. Direct sensitivity of H₂O measurements to CO₂ (mol H₂O/mol CO₂): ±0.02 typical, ±0.05 maximum.
14. 3D sonic anemometer allows to measure wind velocity in all 3 Cartesian directions (u, v and w) as well as to measure so called sonic temperature.
15. 3D sonic anemometer provides 20 Hz measurements and has digital outputs.
16. The horizontal components (u and v) can be measured within range of 0 – |30| m s⁻¹.
17. The vertical components (w) can be measured within range of 0 – |5| m s⁻¹.
18. The sonic temperature can be measured with the range of -40 to +50°C with minimum resolution of 0.05°C between 0 to +40°C.
19. Includes mounting kit to attach the analyzer and the anemometer to the horizontal arm.
20. System control unit allows synchronous measurements of gas analyzer and sonic anemometer, storing of raw data and real-time computation of fluxes using eddy covariance methodology including necessary corrections.
21. Data storage on removable industrial grade USB storage device (at least 8GB).
22. Data communication ports: Ethernet
23. Operating temperature range at least: -20 to +45 °C.
24. Power Requirements: in interval at least from 12 to 24 VDC.
25. Operational power consumption of the analyzer and the anemometer is not exceeding 10 W.
26. User setting measurement frequency at least for 10 and 20 Hz.
27. Windows® compatible user Interface.
28. Includes industrial grade Ethernet switch with at least 4 ports.
29. Includes industrial grade 4G Ethernet cellular modem with antenna for remote access.
30. All abovementioned components are provided with necessary communication and power cables (at least 5 m) ensuring full functionality of the system.