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Quotation Number:	18519	Date:	02/10/2024
Job Number:	IN1347	Date:	07/10/2024

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ADDITIONAL:

Payment Terms:
 50% / 40% / 10%
Other: please specify _____

Penalty Clause Yes / No

Please specify: _____

Blue Book Completion:

Signed		Date	8/5/25
Verified		Date	8/5/25

3 - MACHINE SPECIFICATION

Client:	BARNAS, Lithuania		
Quotation Number:	18519	Date:	02/10/2024
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Ref No.	Product Description	Required
HS2022 (continuous flow)		
20402/1	HS2022 Ref Gas + P Mag	
20402/2	HS2022 Ref Gas + E-Mag	
20402/3	HS2022 Ref Gas + Hd Collector + E-Mag	
20402/4	HS2022 Ref Gas + Hd Collector+E-Mag+Trap Loop	
20501	Hd Collector Assy ***	
50101/2	Trapping Loop Assy	
70201-1	70201-1 Analyser spares kit – Included	
EA Units		
10202/11	iso-EArth	
10202/13	iso-EArth+	
10202/14	iso-Earth HT Furnace Upgrade	
10202/15	Iso-Earth (Without Autosampler)	
11802/1	Earth+PC	
11802/2	EArth+Clarity+PC	
70501-1	Consumables for C and N for Combustion Only	
70501-11	Simultaneous CNS Consumables Kit (approx. 10000 analysis)	
70501-3	Sample Prep Kit (Inc.)	
70501-4	GSL Combustion and Gas C & N Start Up Kit	
70501-5	Simultaneous NCS Consumables Kit	
70501-6	C&N Combustion Only Consumables Kit (approx. 5000 samples)	
70501-8	Simultaneous CNS Consumables Kit (approx. 5000 samples)	
70601-1	Sulphur Start Up Kit (Inc. with Sercon EA Systems)	
70601-2	Sulphur Consumables Kit for 1000 Samples	
70601-4	Sulphur Consumables Kit (approx. 5000 Samples)	
70801-2	Pyrolysis Consumables Kit-Low temp for Solids	
71701-1	Sub Microgram Nitrogen Analysis Start Up Kit	
SI2040	PN150 Pneumatic Autosampler with one no.50 pos, carousel	
SI2345	ME Micro Balance	
SI2737/A	Sercon 50 Position Autosampler Assy	
SI2789	Extra 50 Position Carousel	
SI2744	Automatic Liquid Sampler 15 Position	
SI2743	Liquid Sampler Mounting Plate	
Headspace Equilibration		
10202/10	XYZ Gas Sampling Control Box	
10302/1	Aqua System	
11103	µCarbs for CF	
11103-1	µCarbs for DI	
11601	200 Place Dual Heated Block 240 Volt	
11801	Sercon XYZ Gas Autosampler	
71107-1	CF oxygen-18 equilibration kit	
71107-2	DI Oxygen-18 Equilibration kit	
71201-1	CF deuterium equilibration kit	
71201-2	DI Deuterium Equilibration kit	
71801-1	WES-DI start up kit (Inc. with WES-DI)	
GC Units		
10402/2	Orchid module 1500C (Will run Hd 70901-1 C Spares Kit Inc)	
10901	Nitrogen Option (71301-1 N Spares kit Included)	
HP7890/1	Agilent 7890B GC System	
HP7890/2	Agilent 7890B GC with Auto Injector	
HP7890/3	Agilent 7890B GC + Auto Injector + 150 Vial Sample Tray	
SI2561	Nexis GC 2010 Plus	

3 - MACHINE SPECIFICATION

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Ref No.	Product Description	Required
GC Units <i>continued</i>		
SI2564	Nexis GC-2030	
70901-3	GC Pyrolysis H and O Start Up Kit	
70901-4	GC Pyrolysis H Spares Kit	
70901-5	GC Combustion C Spares Kit (approx. 5000 samples)	
70901-6	GC Pyrolysis h Start Up Kit (approx. 5000 samples)	
71301-1	GC N Spares kit	
ABCA2 Units		
10502/1	ABCA2 Sercon XYZ Autosampler	
10602	ABCA2 Gas Box	
20602	Complete Sercon ABCA2 system	
20603	ABCA IR Analyser	
70101-1	ABCA2 spares kit (Inc. With ABCA2)	
70101-2	ABCA2 Spares Kit for AB Analitica Systems	
70101-3	ABCA2 Autosampler Upgrade Kit	
SI1767	CVL505 – Barcode Reader	
SC9973	13C Urea breath test kit for Helicobacter pylori infection	
SC9974	Helicobacter Test kit for children age 3-11 (45mg)	
Integra2 Units		
20802/4	Integra2	
70201-2	Integra2 analyser spares kit - Included	
70401-1	Integra-2 consumables (Inc. With Integra2)	
Trace Gas Systems		
10802/4	CryoPrep	
10802/5	Automated LN refiller	
10802/6	CryoFlex (TOC)	
10802/7	CryoGas	
10802/8	CryoFlex (LA)	
SI2533	Silicon Carbide Vertical Furnace	
SI2731	213nm Laser Ablation System	
SI2733	isoScell 100 sampler chamber	
71001-1	Cryoprep Spares Kit	
71001-5	CryoGas Consumables Kit	
TOC Units		
14001	Thermalox Environmental TOC-IRMS	
14002	Thermalox Environmental TOC-Standalone	
14003	Thermalox Environmental TOC-Standalone No Sampler	
SI2772	CO2 detector, High sensitivity Option	
SI2773	NOx detector Option	
SI2774	Vacuum pump Option	
SI2775	Stirred Vial rack Option	
72101-1	TOC Start Up Kit	
72101-2	TOC Chem Pack	
72101-3	TOC & TN Instrument with heavy usage - one year	
72101-4	TOC only - economy holding	
GEO 20-22 (dual inlet)		
10702	GEO 20-22 Water Equilibration System (D & 180)	
21802/1	GEO 20-22	
21802/2	GEO 20-22 + E-Mag	

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21802/3	GEO 20-22 + E-Mag +Hd	
21802/4	GEO 20-22 Inlet	
70301-1	GEO start up kit - Included	
70301-3E	Comprehensive GEO 20-22 spares kit for 5 years operation	
HT-EA		
11501/4	HT-EA (With Autosampler)	
11501/5	HT-EA With Liquid Option	
11501/6	HT-EA Stand Alone	
11501/7	HT-EA (Without Autosampler)	
SI2622	CTC PAL3-LSI-L-S	
SI2624	CTC PAL3-Kit-Standalone	
70801-1	Pyrolysis Consumables Kit-High Temp for Solids	
71501-1	HT-EA Pyrolysis Start Up kit O and H	
71501-2	HT-EA Pyrolysis Kit for Water injections	
71501-3	HT-EA Sensitivity Start Up Kit for O & H in small samples	
71501-4	HT-EA Sensitivity Consumables Kit for O & H in small samples	
71501-5	HT-EA Sensitivity Kit for O&H in Small Samples (5000 samples)	
71501-7	HT-EA Kit for Room Temp Equilibration	
71501-8	HT-EA Pyrolysis Kit for Water injections (approx. 1 year kit)	

Ref No.	Product Description	Required
Upgrades		
12101	Evacuation System ***	
12102	2 Ref Gas+ Dilutor Box ***	
20101	Standard Source Assy ***	
20102	HS Source Assy ***	
20301	Standard Collector Assy ***	
30202/1	System Control Upgrade (Pmag) installation not included	Edwards Or Pfeiffer
30202/2	System Controller Upgrade (Emag) installation not included	Edwards Or Pfeiffer
10202/7	Preparation PCB Upgrade	
30202/3	Hijack Box ***	
30302/4	nEXT85 Edwards Pumping System Upgrade Single - installation not included	
30302/5	nEXT85 Edwards Pumping System Upgrade Dual - installation not included	
30302/6	nEXT85 Edwards Pumping System Upgrade Triple- installation not included	
SI2542	ABCA2 Upgrade Kit	
CALLISTOW	Callisto software upgrade ***	
Specials		
11702	LC-I interface	
12202	Leco Interface Unit	
SI2320	Agilent 1260 Series Refractive Index Detection HPLC System	
71401-1	ABCA-G Start Up/Spares Kit	
71401-2	ABCA-G Equilibration Spares Kit - Room temp O only	
71401-3	ABCA-G Equilibration Spares Kit - Room Temp O & H	
71601-1	LC Interface Spares Kit	
ADDITIONS		
PC	Windows 7 based PC System with Callisto Software	
Printer	Printer	
INST1	Installation and start up training at customer's site by Sercon Engineer	
INST2	Installation and start up training at customer's site by Agents Engineer	
WARR	1 year warranty	
WARR2	2 year warranty	
TRAIN	Training in UK for one person for 3 days	
SCONTRACT	Maintenance Service Contract – 1 year	

3 - MACHINE SPECIFICATION

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SPECIFICATION REQUIREMENTS			
Voltage	Volts 50/60Hzs		
Plug Type	SI2510	3 Metre USA/Japan plug to IEC C 13	
	SI2511	2.5 Metre Australian plug to IEC C 13	
	SI2512	3 Metre UK 13 amp Fused plug to IEC C 13	
	SI2523	3metre Schuko (Euro) Plug to IEC C13 Socket	
	SI2514	2.5 metre Chinese mains to IEC C13	
Pallet	Stamped for export heat treated for 30 min @ 56 °C		
	Complies with all Export Requirements		

4 - LOG SHEET

Client:	BARNAS, Lithuania		
Quotation Number:	18519	Date:	02/10/2024
Job Number:	IN1347	Date:	07/10/2024

Date	Action Taken	By Whom
10.12.24	Earth plugged in and Software put on	WM/AD
11.12.24	PC - Swapped out prep board as no thermocouple readbacks (See fault log)	
12.12.24	Plumbed in He - pressures only reading back at half set. - Checked for leaks, none found - direct cons showed correct pressure - external gauges read correct pressure - voltages on EPC correct + jumpers Swapped out prep board for new, pressures now match set	AD
13.12.24	Not all carrier flow coming through. - Set purge crimp to about 60 ml/min - Set both trickle flows on valve 14 to about 10 ml/min - blanked off carrier flow out to auto-sampler to run leak check (Also need to blank off He into liquid side valve 14 after + if not checking whole system) ↳ leak check passed Without liquid side valve 14 there is better carrier flow Made solid side furnace tube, heating to 600°C, GC set to 70°C O ₂ line pressure test passed Cal controller set Baked out GC - leaving over weekend	AD
16.12.24	Flow meter wiring swapped for correct activation. Ceramic tube fitted to liquid side. Solid side furnace temp increased to 1000°C liquid side valve 14 replumbed for He flow Calibrated purge flow meter to 83 ml/min	AD



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S028_v3

4 - LOG SHEET

Client:	BARNAS, Lithuania		
Quotation Number:	18519	Date:	02/10/2024
Job Number:	IN1347	Date:	07/10/2024

Date	Action Taken	By Whom
19.12.24	Solid Side furnace up to temperature. BBOT Sample now has HD peak, and Sulphur peak shows on second scan. Adjusted run time to fit Sulphur in and changed flow to 60 ml/min to test. Flow at 60 ml/min lost Sulphur in final testing back at 80 ml/min. Running a small run of 1 blank, 3 cystines to check before running the BBOT cal - leaving BBOT cal to run overnight.	AD
20.12.24	Run passed for HD and SO ₂ , blank has caused N ₂ to fail and CO ₂ not far off. Looking at blank they have got better after O ₂ purge. Shortened run time from 30 → 18 minutes by increasing GC to 80°C and He flow to 85 ml/min. Running second lot of BBOT cal.	AD
23.12.24	Ran a cystine precision against the new BBOT - results looked okay, unsure whether complete combustion took place. Changed the liner and colder vanadium pentoxide to next precision batch.	AD
24.12.24	Instrument Shut down for break period	AD
2.1.25	Furnace heated to 1050°C, cystine batch ran	AD
3.1.25	Batch of 10 Cystine ran to see if there was a trend causing the std dev to be thrown off. 2mg of cystine too big for BBOT cal range, testing 0.7mg	AD

4 - LOG SHEET

Client:	BARNAS, Lithuania		
Quotation Number:	18519	Date:	02/10/2024
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Date	Action Taken	By Whom
6.1.25	0.7mg Cystine worked better but Sulphur values still slightly out of spec. Ordered a kit from elementar to test compound with closer %'s Heating up Pyrolysis side. Furnace	AD
7.1.25	lost flow out of furnace due to 'solid' side sampler transfer, valves don't need to be changed. Ran a methionine cal and created a calculation method. O ₂ % not great. checked for carry over none present	AD
8.1.25	Ran 5 samples of Methionine, % decrease over each sample. Changed the ceramic tube, heating back up	
9.1.25	Ran samples with blanks and 1 st as a dummy to reduce atmospheric O ₂ looks better but still showing for no reason we have 78mg O ₂ . Order out material in oven over weekend.	AD/HG
13.1.25	Pyrolysis furnace not heating, element failed. Insulation issue. Replaced element, heating now columns	AD
14.1.25	Ran dried out samples, Calibration runs better, but % still off for EMA - increased TCD gain to 10 so the beam is bigger and windows more accurate	AD
15.1.25	O ₂ pyrolysis in spec of +/- 0.4% accuracy. Heated combustion furnace and running CHHS.	AD
16.1.25	NCHS combustion in spec for all species & +/- 0.4% accuracy.	AD

5 - FAULT REPORTING

Client:	BARNAS, Lithuania		
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[illegible]

6 - TEST / ACCEPTANCE SPECIFICATION

Customer:	BARNAS, Lithuania		
Quotation Number:	18519	Date:	02/10/2024
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HS20-22			
Reference Gas Precision (n=5)			
¹³ C	(CO ₂)	0.06	
¹⁵ N		0.06	
¹⁸ O	(CO ₂)	0.06	
³⁴ S	(SO ₂)	0.1	
² H		0.4	

Reference Gas Linearity			
¹³ C	≤0.02‰/nA		
¹⁵ N	≤0.02‰/nA		

IsoEarth & IsoEarth+					
Combustion (n=5)					
¹³ C	100 µg C	0.1		10 µg C	0.8
¹⁵ N	100 µg N	0.15		10 µg N	1.5
³⁴ S	25 µg S	0.3		10 µg S	1.0
Dual	400 µg C	0.1		100 µg N	0.15

Integra2			
¹³ C	100 µg C	0.2	
¹⁵ N	100 µg N	0.3	
Dual	100 µg N & 400 µg C	0.4 & 0.15	
³⁴ S	30 µg S	0.5	
¹⁸ O	100 µg O	0.5	

6 - TEST / ACCEPTANCE SPECIFICATION

Customer:	BARNAS, Lithuania		
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HT-EA			
Pyrolysis (n=5)			
¹⁸ O	100 µg O or 1 µl water	0.3	
² H	200 µg H or 1 µl water	1.0	

Aqua, µCarbs & GasBox					
Equilibrations (n=5)					
¹⁸ O	0.2 ml water	0.1			
² H	0.2 ml water	2.0			
Carbonates (n=5)					
¹³ C	100 µg CaCO ₃	0.08			
¹⁸ O	100 µg CaCO ₃	0.1			
Gas Analysis (n=5)					
¹³ C	5% CO ₂	0.1		Air CO ₂	0.1
¹⁸ O	5% CO ₂	0.1		Air CO ₂	0.2
² H	0.5 ml H ₂	1.5			
¹⁵ N	0.5 ml N ₂	0.1		100 ppm N ₂ O	0.5
¹³ C	Breath (12 ml)	0.1			
DIC (n=5)					
¹³ C	15ppm (0.5ml)	0.15			

LC-I			
(n=5)			
¹³ C		0.2	

6 - TEST / ACCEPTANCE SPECIFICATION

Customer:	BARNAS, Lithuania		
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GC Orchid						
Combustion (n=3 for each analyte)						
¹³ C	3 Alkanes	100 ng C	0.2		10 ng C	0.5
¹⁵ N	2 Amines	100 ng N	0.5		14 ng N	1.5
Pyrolysis (n=3 for each analyte)						
² H	3 Alkanes	250 ng H	3.0		25 ng H	10.0
¹⁸ O	3 FAMES	100 ng O	0.5		20 ng O	2.0
Water pyrolysis (n=5)						
² H	0.1 µl water	3.0				
¹⁸ O	0.1 µl water	0.4				

CryoRange						
(n=5)						
¹³ C	Air CO ₂ (12ml)	0.1		Air CH ₄ (125ml)	0.2	
¹⁵ N	Air N ₂ (1ml)	0.1		Air N ₂ O (125ml)	0.4	
¹⁸ O	Air CO ₂ (12ml)	0.15		Air N ₂ O (125ml)	0.7	
¹⁸ O	Air O ₂ (1ml)	0.1				
² H	Air CH ₄	3.0				
¹³ C	TOC (5ppm)	0.4				
¹³ C	Laser					

6 - TEST / ACCEPTANCE SPECIFICATION

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Geo2			
Internal precision (no change overs)			
² H	200 Bar µl	0.15	
¹³ C	100 Bar µl	0.01	
¹⁵ N	100 Bar µl	0.01	
¹⁸ O	100 Bar µl	0.015	
³⁴ S	100 Bar µl	0.015	
Single cold finger volumes (10 change overs)			
¹³ C	20 Bar µl	0.01	
¹⁸ O	20 Bar µl	0.015	
¹³ C	3 Bar µl	0.02	
¹⁸ O	3 Bar µl	0.03	
CAPS (n=5)			
¹³ C	50 µg CaCO ₃	0.03	
¹⁸ O	50 µg CaCO ₃	0.06	
WES (n=5)			
² H		1.0	
¹⁸ O		0.05	
Manifold (10 tubes)			
² H		0.5	
¹³ C		0.02	
¹⁵ N		0.02	
¹⁸ O		0.03	
³⁴ S		0.03	

6 - TEST / ACCEPTANCE SPECIFICATION

Customer:	BARNAS, Lithuania		
Quotation Number:	18519	Date:	02/10/2024
Job Number:	IN1347	Date:	07/10/2024

Special tests

Sales Signature: 	Date: 31/1/2025
Test Signature: 	Date: 7/1/25

7: ASSEMBLY AND TEST RECORD

Client:	BARNAS, Lithuania		
Quotation Number:	18519	Date:	02/10/2024
Job Number:	IN1347	Date:	07/10/2024

PRODUCT:

EARTH.

SERIAL NUMBER:

10202/15/2024/1347

 ASSEMBLED:
 (Name)

P. Hays

Date:

27/11/24

 PRE-TEST
 INSPECTION:
 (Production name)

P. Hays

Date:

27/11/24

 PRE-TEST
 INSPECTION:
 (Test name)

AS

Date:

28/1/25

 SYSTEM TEST:
 (Name)

AS

Date:

28/1/25

 PRE-DESPATCH
 INSPECTION:
 (Name)

P. Hays

Date:

28/1/25

P.A.T. Test results

 In compliance with Low Voltage directive 73/23/EEC
 To Low Voltage standard EN61010 – 1:1993

Earth Continuity

0.062
 Ω

Insulation

>300
 $M\Omega$

Earth Leakage Current

0.35

mA. @

0.34

kVA.

Tested by:

P. Hays

Date:

19/11/24

8 - Serial Numbers Record Document

Client:	BARNAS, Lithuania		
Quotation Number:	18519	Date:	02/10/2024
Job Number:	IN1347	Date:	07/10/2024

Units	S/N
MS/ABCA	10202/15-2025/1347
Integra 2	
Prep Unit 1	
Prep Unit 2/Misc	
Electronics Upgrade	
CETAC	
Gas Box	
Autosampler	42704
BCR	
Dual Heater Block	

Pump Kit and Optics	S/N
Turbo pump S	
Turbo pump A	
Rotary Pump	
Voltage	110 / 240
Gauge S	
Gauge A	
Source	
Collector 1	
Collector 2	
Magnet	

Parts	S/N
Fan PSU	
24V PSU	

PCBs	S/N
Electronics Box	
Prep PCB	
VFC PCB	
Watchdog PCB	
Head Amp PCB 1	
Head Amp PCB 2	
Electromagnet RP	

Furnaces	S/N
Combustion	
Reduction	
HT-EA	
GC Oven	
Furnace 1	
Furnace 2	

PC	S/N
PC	
Monitor	ST-3V1YJ14
Printer	ST-32NX404

Key

Pumps:	E: Edwards P: Pfeiffer
Furnaces:	V/S: Vecstar E: Elite
Magnet:	E: Electromagnet S: Standard
Turbos & Gauges:	S: Source A: Analyser
Collectors:	Std: Standard S: Sulphur HD: Hydrogen Deuterium

Additional System Info:

Packing List

Customer Reference: 2024/10_05

Shipper / Exporter:

Sercon Limited
Unit 3B Crewe Trade park
Gateway
Crewe
CW1 6JT
UK

Tel: +44 (0)1270 580008
Reference: IN1347

Consignee:

UAB BARNAS
Savanoriu ave 231 Vilnius
LT-02300
Lithuania
Email: info@barnas.it

Contact Name: Julius Paužolis
Contact Tel Number: +370 665 01554

BOX: 1

Quantity	Product Code	Product Description	Serial Number: if available
☒	10202/15	EArth	10202/15-2025/1347

Packed by:

P. Hayes

Date:

28/1/25.

Claims for damage or shortages must be made within 3 days

Packing List

Customer Reference: 2024/10_05

Shipper / Exporter:

Sercon Limited
Unit 3B Crewe Trade park
Gateway
Crewe
CW1 6JT
UK

Tel: +44 (0)1270 580008
Reference: IN1347

Consignee:

UAB BARNAS
Savanoriu ave 231 Vilnius
LT-02300
Lithuania
Email: info@barnas.it

Contact Name: Julius Paužolis
Contact Tel Number: +370 665 01554

BOX: 2

Quantity	Product Code	Product Description	Serial Number: if available
☒ 1		PC	8T-32NXY04
☒ 1		Monitor	8T-3V1YJ14
☒ 1		Window recovery USB drive (In PCB box)	
☒ 1		Software back-up USB drive (In PCB box)	
☒ 1		Electronic Manuals on Software back up drive	
☒ 1	70501-5	Simultaneous CNS Con kit	
☒ 1	70801-1	Pyrolysis Start up kit.	
☒ 1	70501-3	Sample prep kit	
☒ 1		16-amp cable	
☒ 1		USB isolator	
☒ 2		Mains Leads	
☒ 1		HT-EA furnace bottom coupling and scrubber tube fitting	
☒ 1		Autosampler	42704
☒ 1	SC0085	Cap kit	
☒ 1	SC0084	Scrubber tube	
☒ 1	SC0073	Scrubber tube	

Packed by:

P. Hays

Date:

28/1/25

Claims for damage or shortages must be made within 3 days

Packing List

Customer Reference: 2024/10_05

Shipper / Exporter:

Sercon Limited
Unit 3B Crewe Trade park
Gateway
Crewe
CW1 6JT
UK

Tel: +44 (0)1270 580008
Reference: IN1347

Consignee:

UAB BARNAS
Savanoriu ave 231 Vilnius
LT-02300
Lithuania
Email: info@barnas.it

Contact Name: Julius Paužolis
Contact Tel Number: +370 665 01554

BOX: Dimensions and weights

	<u>L</u>		<u>W</u>		<u>H</u>		
Box 1	96	x	86	x	98	cm	gw 125 kg
Box 2	99	x	86	x	107	cm	gw 47 kg
Box 3	_____	x	_____	x	_____	cm	gw _____ kg

IN1347

Box 1 Earth

Box 2

- PC
 - Monitor
 - 70501-5
 - 70801-1
 - 70501-3
 - Auto Sampler.
- 16A Cable, USB isolator, 2 x mains IEC, HT-EA furnace - bottom Coupling and pipe with red cap, SCO085, SCO073, SCO084.

Prep PCB Serial #?

Packing List

Customer Reference: 2024/10_05

Shipper / Exporter:

Sercon Limited
Unit 3B Crewe Trade park
Gateway
Crewe
CW1 6JT
UK

Tel: +44 (0)1270 580008
Reference: IN1347

Consignee:

UAB BARNAS
Savanoriu ave 231 Vilnius
LT-02300
Lithuania
Email: info@barnas.it

Contact Name: Julius Paužolis
Contact Tel Number: +370 665 01554

BOX: Dimensions and weights

	<u>L</u>		<u>W</u>		<u>H</u>		
Box 1	96	x	86	x	98	cm	gw 125 kg
Box 2	99	x	86	x	107	cm	gw 47 kg
Box 3	_____	x	_____	x	_____	cm	gw _____ kg

11 – Installation Report

Client:	UAB Barnas		
Quotation Number:	18519	Date:	02 Nov 24
Job Number:	IN1347	Date:	21 Feb 25

Contact:	Julius Paužolis		
Date of Visit:	17 Feb 25	No. of Days:	5
Engineer:	Henry Connell Cooke		

Details of visit:

Day 1

- Instrument carried into the lab and placed on desk. PC installed
- Customer only has 14A power supply to run instrument, not 16A as required
- He, O2 and compressed air plumbed into the instrument
- Tubes made (and customer taught) and placed into the furnace. Lots of insulation displaced while adding the pyrolysis tube, covering the base of the instrument in dust
- Once both tubes were fitted and tightened, the system passed pressure testing on both He and O2 lines
- Customer introduced to Singularity software
- Heating started, with Combustion, GC and TCD heating up straight away
- Pyro furnace does not start heating, believed to be due to 14 A supply

Day 2

- Arrive to Combustion furnace at full heat, pyro not heated
- Prep board reset and interlock cycled, furnace now starts to heat
- Blank run looks good, very small N2 peak
- First sample dropped had split N2 peak
- Three more blanks ran then another cystine sample, no more split peaks
- Customer taught how to make a sample list
- Cystine calibration ran (3x1 mg, 3x2 mg, 3x3 mg, prepared in Crewe to 0.001 mg precision) along with 5 methionine samples (5x2 mg, prepared on site with inadequate 0.1 mg precision balance)
- Customer taught how to use the Reprocessor, how to make calibrations, and save them in the software

Day 3

- Calibration results R^2 (3dp):
- CO2 = 0.999
- H2O = 0.999
- N2 = 0.999
- SO2 = 0.999
- Methionine samples had very poor precision, with standard deviations ranging from 1.4 to 5.7, due to inadequate precision of balance

11 – Installation Report

Client:	UAB Barnas		
Quotation Number:	18519	Date:	02 Nov 24
Job Number:	IN1347	Date:	21 Feb 25

- Drove over to the other UAB Barnas site, the other side of Vilnius, to use balance of correct precision (0.001 mg) and weighed out all necessary samples for the remainder of the visit
- Drove back to the instrument and ran 5 more Methionine samples

Day 4

- Methionine sample results

Species	Actual % in Methionine	% Result	Difference in %	Standard Deviation %
N2	9.41	8.97	0.44	0.12
CO2	40.25	40.04	0.21	0.51
H2O	7.48	7.21	0.27	0.19
SO2	21.48	21.75	0.27	0.34

- It is likely that standard deviation would be improved by increasing resolution between N2 and CO2, which could be achieved by reducing the He flow or decreasing GC temperature, and this point was made to the customer
- Autosampler switched over to pyrolysis side. System was leak checked and flow was found to drop to 0 when V1 closed, indicating a leak tight system. Full pressure test cannot be ran while pyrolysis furnace is at 1400 degrees
- Blank shown to be very low and run time increased from 5 to 6 minutes after looking at a test sample, to ensure the tail of the O2 peak is full captured
- Dried Methionine calibration ran (3x1 mg, 3x2 mg, 3x3 mg) along with dried EMA P2 samples (5x2 mg)
- Files tidied up so customer only has acquisition/calculation methods that they need
- O2 calibration = 0.995 (3dp) with two sampled changed to dummy
- EMA P2 samples were not at all accurate, giving an average %O2 of 11.3, when the actual value is 19.9. The problem here has been deemed to be sample loss, since a yellow tinge can be seen on some of the remaining samples, suggesting sample has escaped
- No more EMA P2 samples can be made, since there is no time to drive to the balance, so the second batch Methionine calibration samples were used as samples instead
- Second batch of methionine samples shows clear problems, where 3 mg samples are equal or smaller in sample area to 2 mg, and all samples are smaller in area to their comparably weighted samples from the previous calibration. This suggests either a problem with the balance or the pyrolysis tube. After discussing with the customer, they decided the priority was to return to combustion, to link up to the graphitisation system for the final day. Pyrolysis furnace was cooled, since customer has no plans to run pyrolysis any time soon, and will need to run their own, new calibration curve when they do so anyway
- One more combustion calibration and sample set was run overnight, while the pyrolysis furnace was cooling, with a lower He flow rate to try and improve N-C resolution



Sercon Ltd, Unit 3B Crewe Trade Park, Gateway
Crewe, Cheshire CW1 6YY, UK
Tel: +44 (0)1270 580008 Fax: +44 (0)1270 252310
Company Registration No. 4290072 Vat No. 771 1100 74

12 – Installation Acceptance and Warranty Certificate

Client:	UAB Barnas		
Job Number:	IN1347	Date:	21 Feb 25

Contact:	Julius Pauzolis
System:	EArth (standalone)
Software:	Singularity
Engineer:	Henry Cooke
Installation Date:	21 Feb 25

Warranty commences:	21 Feb 25
Warranty Expires:	20 Feb 26

Customer Acceptance:

Name: Julius Pauzolis

Signature: 

Date: 21 Feb 25

Notes:



Engineer's Signature:

On behalf of Sercon Limited

Name: Henry Cooke

Signature: 

Date: 21 Feb 25