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

6 - TEST / ACCEPTANCE SPECIFICATION

Customer:	Alfred Wegener Institut		
Quotation Number:	12485	Date:	29/04/2020
Job Number:	IN1239	Date:	07/08/2020

HS20-22			
Reference Gas Precision (n=5)			
^{13}C	(CO_2)	0.06	0.05‰
^{15}N		0.06	0.02‰
^{18}O	(CO_2)	0.06	0.08‰
^{34}S	(SO_2)	0.1	
^{2}H		0.4	

Reference Gas Linearity			
^{13}C	≤0.02‰/nA	(0.101‰)	0.04‰/nA
^{15}N	≤0.02‰/nA	(0.1826‰)	

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	

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

6 - TEST / ACCEPTANCE SPECIFICATION

Customer:	Alfred Wegener Institut		
Quotation Number:	12485	Date:	29/04/2020
Job Number:	IN1239	Date:	07/08/2020

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_2O	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	

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

6 - TEST / ACCEPTANCE SPECIFICATION

Customer:	Alfred Wegener Institut		
Quotation Number:	12485	Date:	29/04/2020
Job Number:	IN1239	Date:	07/08/2020

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_2O (125ml)	0.4	
^{18}O	Air CO_2 (12ml)	0.15		Air N_2O (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					

NA 11/08/20

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

6 - TEST / ACCEPTANCE SPECIFICATION

Customer:	Alfred Wegener Institut		
Quotation Number:	12485	Date:	29/04/2020
Job Number:	IN1239	Date:	07/08/2020

Geo2			
Internal precision (no change overs)			
^{2}H	200 Bar µl	0.15	
^{13}C	100 Bar µl	0.01	0.003 ‰
^{15}N	100 Bar µl	0.01	
^{18}O	100 Bar µl	0.015	0.012 ‰
^{34}S	100 Bar µl	0.015	
Single cold finger volumes (10 change overs)			
^{13}C	20 Bar µl	0.01	0.01 ‰
^{18}O	20 Bar µl	0.015	0.012 ‰
^{13}C	3 Bar µl	0.02	N/A
^{18}O	3 Bar µl	0.03	N/A
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	

sercon
innovators in isotopes

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

6 - TEST / ACCEPTANCE SPECIFICATION

Customer:	Alfred Wegener Institut		
Quotation Number:	12485	Date:	29/04/2020
Job Number:	IN1239	Date:	07/08/2020

Special tests
^{17}O + ^{18}O specs using O_2 Ref gas.
^{17}O @ 100 mbar = 0.011 ‰
^{18}O @ 100 mbar = 0.006 ‰
^{17}O @ 20 mbar = 0.016 ‰
^{18}O @ 20 mbar = 0.005 ‰

Sales Signature:	Date: .....
Test Signature:	Date: 11 Nov 2020

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

6 - TEST / ACCEPTANCE SPECIFICATION

Customer:	Alfred Wegener Institut		
Quotation Number:	12485	Date:	29/04/2020
Job Number:	IN1239	Date:	07/08/2020

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	

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

6 - TEST / ACCEPTANCE SPECIFICATION

Customer:	Alfred Wegener Institut		
Quotation Number:	12485	Date:	29/04/2020
Job Number:	IN1239	Date:	07/08/2020

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_2O	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	

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

6 - TEST / ACCEPTANCE SPECIFICATION

Customer:	Alfred Wegener Institut		
Quotation Number:	12485	Date:	29/04/2020
Job Number:	IN1239	Date:	07/08/2020

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_2O (125ml)	0.4	
^{18}O	Air CO_2 (12ml)	0.15		Air N_2O (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					

sercon
innovators in isotopes

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

6 - TEST / ACCEPTANCE SPECIFICATION

Customer:	Alfred Wegener Institut		
Quotation Number:	12485	Date:	29/04/2020
Job Number:	IN1239	Date:	07/08/2020

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	

sercon
innovators in isotopes

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

6 - TEST / ACCEPTANCE SPECIFICATION

Customer:	Alfred Wegener Institut		
Quotation Number:	12485	Date:	29/04/2020
Job Number:	IN1239	Date:	07/08/2020

Special tests

Sales Signature:	Date: .....
Test Signature:	Date: .....

sercon
innovators in isotopes

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

7: ASSEMBLY AND TEST RECORD

Client:	Alfred Wegener Institut		
Quotation Number:	12485	Date:	29/04/2020
Job Number:	IN1239	Date:	07/08/2020

PRODUCT: GEO HS2022+HD+EMAG

SERIAL NUMBER: 20402/8-2020/1239

ASSEMBLED: (Name) P. Hayes / D WALKER Date: 6/8/20

PRE-TEST INSPECTION: (Production name) P. Hayes/D WALKER Date: 6/8/20

PRE-TEST INSPECTION: (Test name) S. [signature] Date: 6/8/20

SYSTEM TEST: (Name) S. [signature] Date: 12/11/20

PRE-DESPATCH INSPECTION: (Name) P. Hayes Date: 12/11/20

P.A.T. Test results

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

Earth Continuity 0.074 Ω

Insulation 300 MΩ

Earth Leakage Current 0.30 mA. @ 0.05 kVA.

Tested by: D.W

Date: 6/8/20

Batch Picking List

Works Order Number	WO00995	Sales Order No.	Quantity	DueDate
BOM Reference	20402/4			
BOM Description	HS2022 + Hd Collector + E-Mag + Trap Loop			
Qty Required	1.000			
Qty Outstanding	0.000			
Manuf.Instructions				
Works Order Notes				

20402/4 Booked INTO STOCK 20/12/19
TAKEN OUT OF STOCK 7/9/20
TURNED INTO 20402/8- Booked BACK IN 7/9/20

Drawings

Reference/Description	Valid From	ValidTo	Revision Number	Date

Required By

Works Order No.	BOM Reference	Quantity

Seq	Product Code	Qty Required	Qty Allocated	Qty Issued	To Issue	Bin Location/UOM
10.00	20102 HS Source Assy	1.000	0.000	1.000	1.000	MARKS OFFICE Each
20.00	20301 Standard Collector Assy	1.000	0.000	1.000	1.000	MARKS OFFICE Each
30.00	20501 Hd Collector Assy	1.000	0.000	1.000	1.000	MARKS OFFICE Each
40.00	41902 Single channel 100G amp assy	1.000	0.000	1.000	1.000	D-U1 Each
50.00	41903 Three channel 100M/5G/5G amp assy	1.000	0.000	1.000	1.000	D-U1 Each
60.00	70101/11 20-22 Head Amp Inverter PCB Cable	1.000	0.000	1.000	1.000	B-H1 Each
70.00	70101/12 20-22 Source Cable	1.000	0.000	1.000	1.000	B-H1 Each
80.00	70101/13 Standard Head Amp Cable	1.000	0.000	1.000	1.000	B-H1 Each
90.00	70201-1 Analyser spares kit - Included	1.000	0.000	1.000	1.000	Z Each
100.0(	SI0005 20-20 H/D Flight Tube Assembly	1.000	0.000	1.000	1.000	D-Z Each
110.0(	SI0022 Capillary Crimp Parts A & B	6.000	0.000	6.000	6.000	B-I4 Each
120.0(	SI0049 Big Magnet Adjusting Foot	1.000	0.000	1.000	1.000	B-I3 Each
130.0(	SI0050 Magnet Foot	2.000	0.000	2.000	2.000	B-I3 Each
140.0(	SI0086 Ref Gas Bracket	4.000	0.000	4.000	4.000	D-W3 Each

150.0(	SI0155 Windows 7 based data system	1.000	0.000	1.000	1.000	Each
160.0(	SI0196 Reducing Union 1/4 x 1/16 SS	2.000	0.000	2.000	2.000	B-J7 Each
170.0(	SI0197 Reducing Union 3/16 OD x 1/16 OD SS	4.000	0.000	4.000	4.000	B-J7 Each
180.0(	SI0198 Tee Union 1/16 SS	1.000	0.000	1.000	1.000	B-J7 Each
190.0(	SI0204 Bulkhead Union 1/16 SS	2.000	0.000	2.000	2.000	B-J7 Each
200.0(	SI0205 Bulkhead Union 1/8 SS	5.000	0.000	5.000	5.000	B-J7 Each
210.0(	SI0344 2P red illum round rocker swithc, 10A	4.000	0.000	4.000	4.000	B-H5 Each
220.0(	SI0346 SPCO Relay - 24V DC	3.000	0.000	3.000	3.000	B-H3 Each
230.0(	SI0347 SPCO Relay Base	3.000	0.000	3.000	3.000	B-H3 Each
240.0(	SI0355 DPCO Relay - 24V DC	1.000	0.000	1.000	1.000	B-H3 Each
250.0(	SI0366 Flow Meter AWM3100V	1.000	0.000	1.000	1.000	B-J3 Each
260.0(	SI0373 34 Way IDC Header DIN Rail Terminal	1.000	0.000	1.000	1.000	B-H9 Each
270.0(	SI0374 Terminal Block Section	8.000	0.000	8.000	8.000	B-H6 Each
280.0(	SI0375 Terminal Block End Plate	2.000	0.000	2.000	2.000	B-H6 Each
290.0(	SI0376 DPCO Relay Base	1.000	0.000	1.000	1.000	B-H3 Each
300.0(	SI0387 9 Way Machine Cont Straight D Plug, 750Vac	1.000	0.000	1.000	1.000	D-X4 Each
310.0(	SI0388 9 Way Machine Cont Straight D Skt, 750Vac	1.000	0.000	1.000	1.000	D-X4 Each
320.0(	SI0508 24V PSU	1.000	0.000	1.000	1.000	B-H9 Each
330.0(	SI0534 3307 Telescopic Slide 457mm L 483mm	1.000	0.000	1.000	1.000	B-H9 Each
340.0(	SI0570 15 way Solder Contact ZD skt 5A 400 Vac	3.000	0.000	3.000	3.000	D-X4 Each
350.0(	SI0620 IEC Insulatated Cover	1.000	0.000	1.000	1.000	B-H4 Each

360.0(	SI0630 80mm Fan Guard	6.000	0.000	6.000	6.000	B-H7 Each
370.0(	SI0631 9 Way D Hood	2.000	0.000	2.000	2.000	D-X4 Each
380.0(	SI0632 15 Way D Hood	2.000	0.000	2.000	2.000	D-X4 Each
390.0(	SI0685 20-20 ElectroMagnet Assembly	1.000	0.000	1.000	1.000	D-V4 Each
400.0(	SI0697 MOVPT-1-50 Pneumatic Valve	3.000	0.000	3.000	3.000	B-K3 Each
410.0(	SI0701 1/4" PTFE Ferrules Pk/1	2.000	0.000	2.000	2.000	B-J7 Each
420.0(	SI0703 1/8-1/16" PTFE Reducing Ferrule Pk/1	7.000	0.000	7.000	7.000	B-J5 Each
430.0(	SI0710 VALCO Tee - 1/16	3.000	0.000	3.000	3.000	B-J9 Each
440.0(	SI0777 Nylon Pillars Male-Female M4x25mm	6.000	0.000	6.000	6.000	D-W3 Each
450.0(	SI0793 80mm DC Fan	6.000	0.000	6.000	6.000	B-H7 Each
460.0(	SI0794 Female NiPt D Screwlock assembly, 13mm	4.000	0.000	4.000	4.000	D-X Each
470.0(	SI0847 IEC Cord - Socket	2.000	0.000	2.000	2.000	B-I2 Each
480.0(	SI0895 Blue Cat5e UTP patch lead, 2m	1.000	0.000	1.000	1.000	B-H1 Each
490.0(	SI0896 Yellow Cat5e UTP patch lead, 2m	1.000	0.000	1.000	1.000	B-H1 Each
500.0(	SI0903 I.E.C Socket Mount	1.000	0.000	1.000	1.000	B-H5 Each
510.0(	SI0960 IEC Cord - Plug	1.000	0.000	1.000	1.000	B-I2 Each
520.0(	SI0960 IEC Cord - Plug	1.000	0.000	1.000	1.000	B-I2 Each
530.0(	SI0961 System Controller - Electronics Box	1.000	0.000	1.000	1.000	D-V3 Each
540.0(	SI1004 Right-Angled Bracket 25mm	2.000	0.000	2.000	2.000	D-W3 Each
550.0(	SI1196 Female NiPt D screwlock assembly, 8mm	12.000	0.000	12.000	12.000	D-X Each
560.0(	SI1236 Levelling Foot - M10x38mm	5.000	0.000	5.000	5.000	B-H8 Each

570.0(	SI1241 3 Way Solenoid Valve	2.000	0.000	2.000	2.000	B-J4 Each
580.0(	SI1244 Seal Kit	1.000	0.000	1.000	1.000	B-J3 Each
590.0(	SI1245 SOL Cable	9.000	0.000	9.000	9.000	B-J3 Each
600.0(	SI1248 6-Station Manifold - M5	1.000	0.000	1.000	1.000	B-J2 Each
610.0(	SI1255 M5 Plug	2.000	0.000	2.000	2.000	B-J3 Each
620.0(	SI1328 Mains Filter	1.000	0.000	1.000	1.000	B-H4 Each
630.0(	SI1329 24Vdc Power Supply, Switchmode, 2x4inch	1.000	0.000	1.000	1.000	B-H5 Each
640.0(	SI1330 Cover Kit for 2x4inch Power Supplies	1.000	0.000	1.000	1.000	B-H5 Each
650.0(	SI1331 PSU Connector Kit	1.000	0.000	1.000	1.000	B-H5 Each
660.0(	SI1344 IEC Connector Clamp Kit	1.000	0.000	1.000	1.000	B-H4 Each
670.0(	SI1418 80mm Fan Screen Filter	6.000	0.000	6.000	6.000	B-H7 Each
680.0(	SI1478 Double Flange	1.000	0.000	1.000	1.000	B-H8 Each
690.0(	SI1481 4 WAY REF GAS MANIFOLD	1.000	0.000	1.000	1.000	B-J2 Each
700.0(	SI1482 34 Way IDC Bump Polarised Socket, 1A	1.000	0.000	1.000	1.000	D-X4 Each
710.0(	SI1491 IEC Insulation Cover	2.000	0.000	2.000	2.000	B-H4 Each
720.0(	SI1513 VFC PCB	1.000	0.000	1.000	1.000	B-O3 Each
730.0(	SI1580 Source Mounting Pillar	2.000	0.000	2.000	2.000	D-U2 Each
740.0(	SI1595 37 Way D Plate	4.000	0.000	4.000	4.000	D-U3 Each
750.0(	SI1754 Emag Drive Panel with Cable	1.000	0.000	1.000	1.000	 Each
760.0(	SI1792 Jack Screw Mounting Kit	2.000	0.000	2.000	2.000	D-X4 Each
770.0(	SI1793 37 Way IDC D Hood	2.000	0.000	2.000	2.000	D-X4 Each

780.0(	SI1794 37 Way IDC D Socket - Metal	1.000	0.000	1.000	1.000	D-X4 Each
790.0(	SI1795 37 Way IDC D Plug - Metal	2.000	0.000	2.000	2.000	D-X4 Each
800.0(	SI1797 Fuse Holder Insulation Cover	1.000	0.000	1.000	1.000	B-H6 Each
810.0(	SI1812 E-Mag Screw	3.000	0.000	3.000	3.000	B-I3 Each
820.0(	SI1821 3 Port valve	3.000	0.000	3.000	3.000	B-J3 Each
830.0(	SI1899 1/16 x M5 Fitting	19.000	0.000	19.000	19.000	B-J6 Each
840.0(	SI1900 Dowty Seal - M5	21.000	0.000	21.000	21.000	B-J6 Each
850.0(	SI2285 Mag Terminal Cover Black	4.000	0.000	4.000	4.000	B-I3 Each
860.0(	SI2288 Internal USB 4.5m	1.000	0.000	1.000	1.000	B-H2 Each
870.0(	SI2289 Oil Mist Eliminator	1.000	0.000	1.000	1.000	D-Z6 Each
880.0(	SI2294 NW10 x 3/8" Bsp Adapter	1.000	0.000	1.000	1.000	D-Z5 Each
890.0(	SI2296 Precision Flow Control	1.000	0.000	1.000	1.000	B-J4 Each
900.0(	SI2351 4 Port PCI Express (PCIe) SuperSpeed USB 3.0 Card Adapter	1.000	0.000	1.000	1.000	 Each
910.0(	SI2352 2 Port Native PCI Express RS232 Serial Card with 16950 UAR	1.000	0.000	1.000	1.000	 Each
920.0(	SI2391 PC Monitor	1.000	0.000	1.000	1.000	 Each
930.0(	SI2411 Split cable gland	1.000	0.000	1.000	1.000	B-H2 Each
940.0(	SI2412 Quick Insert Pk 10	1.000	0.000	1.000	1.000	B-H2 Each
950.0(	SI2529 OFFICEJET PRO 6230 Printer	1.000	0.000	1.000	1.000	 Each
960.0(	SI2579 20-22 Cabinet Wave Assy	1.000	0.000	1.000	1.000	C Each
970.0(	SI2614 HS2022 Artwork	1.000	0.000	1.000	1.000	C Each
980.0(	SI2663 nEXT85 HS2022 KIT	1.000	0.000	1.000	1.000	D-Z Each

sercon
innovators in isotopes

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

7: ASSEMBLY AND TEST RECORD

Client:	Alfred Wegener Institut		
Quotation Number:	12485	Date:	29/04/2020
Job Number:	IN1239	Date:	07/08/2020

PRODUCT: GEO 2+E.MAY+HO

SERIAL NUMBER: 21802/3-2020/1239

ASSEMBLED: (Name) P. Hays Date: 7/10/20

PRE-TEST INSPECTION: (Production name) D. WALLOR Date: 7/10/20.

PRE-TEST INSPECTION: (Test name) S. Hays Date: 7/10/20

SYSTEM TEST: (Name) S. Hays Date: 12/11/20

PRE-DESPATCH INSPECTION: (Name) P. Hayes Date: 12/11/20

P.A.T. Test results

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

Earth Continuity 0.080 Ω

Insulation >300 MΩ

Earth Leakage Current 0.80 mA. @ 0.07 kVA.

Tested by: P Hays

Date: 7/10/20

Batch Picking List

Works Order Number	WO01130	Sales Order No.	Quantity	DueDate
BOM Reference	21802/3			
BOM Description	GEO 2 + E-Mag + Hd			
Qty Required	1.000			
Qty Outstanding	1.000			
Manuf.Instructions				
Works Order Notes				

Booked in 16/11/12

Drawings

Reference/Description	Valid From	ValidTo	Revision Number	Date

Required By

Works Order No.	BOM Reference	Quantity

Seq	Product Code	Qty Required	Qty Allocated	Qty Issued	To Issue	Bin Location/UOM
10.00	20402/8 GEO HS 2022 + HD COLLECTOR + E-MAG	1.000	0.000	1.000	1.000	Each
20.00	SI0014 Bellows Large Sub Assy	1.000	0.000	0.000	1.000	Each
30.00	SI0016 Bellows Small Sub Assy	1.000	0.000	0.000	1.000	Each
40.00	SI0025 Cold Finger Kit of Parts	2.000	0.000	0.000	2.000	Each
50.00	SI0027 COV Gen Assy	1.000	0.000	1.000	1.000	B-L6 Each
60.00	SI0038 Gold Seal Assembly	2.000	0.000	0.000	2.000	Each
70.00	SI0051 Manifold	1.000	0.000	0.000	1.000	Each
80.00	SI0058 Penta Block Gen Assy	1.000	0.000	0.000	1.000	Each
90.00	SI0059 Penta Block Gen Assy	1.000	0.000	0.000	1.000	Each
580.0(	SI0061 Pumping Tube (inlet)	1.000	0.000	1.000	1.000	Each
100.0(	SI0074 Turbo Flange	1.000	0.000	0.000	1.000	Each
110.0(	SI0190 SA15A Pressure Sensor 0-15PSIA	1.000	0.000	0.000	1.000	Each
120.0(	SI0210 Manifold Assembly 6-Valve 3/2	3.000	0.000	3.000	3.000	B-L7 Each
130.0(	SI0344 2P red illuminated round rocker switch,10A	5.000	0.000	5.000	5.000	B-H5 Each

Batch Picking List

140.0(	SI0346 SPCO Relay - 24V DC	2.000	0.000	2.000	2.000	B-H3 Each
150.0(	SI0347 SPCO Relay Base	2.000	0.000	2.000	2.000	B-H3 Each
160.0(	SI0355 DPCO Relay - 24V DC	1.000	0.000	1.000	1.000	B-H3 Each
170.0(	SI0373 34 Way IDC Terminal Block	2.000	0.000	2.000	2.000	B-H9 Each
180.0(	SI0374 Terminal Block Section	4.000	0.000	4.000	4.000	B-H6 Each
190.0(	SI0375 Terminal Block End Plate	1.000	0.000	1.000	1.000	B-H6 Each
200.0(	SI0376 DPCO Relay Base	1.000	0.000	1.000	1.000	B-H3 Each
210.0(	SI0508 24V PSU	2.000	0.000	2.000	2.000	B-H9 Each
220.0(	SI0620 IEC Insulatated Cover	4.000	0.000	4.000	4.000	B-H4 Each
230.0(	SI0630 80mm Fan Guard	6.000	0.000	6.000	6.000	B-H7 Each
240.0(	SI0777 Nylon Pillars Male-Female M4x25mm	2.000	0.000	2.000	2.000	D-W3 Each
250.0(	SI0793 80mm DC Fan	6.000	0.000	6.000	6.000	B-H7 Each
260.0(	SI0895 Blue Cat5e UTP patch lead, 2m	1.000	0.000	1.000	1.000	B-H1 Each
270.0(	SI0896 Yellow Cat5e UTP patch lead, 2m	1.000	0.000	1.000	1.000	B-H1 Each
280.0(	SI0903 I.E.C Socket Mount	4.000	0.000	4.000	4.000	B-H5 Each
290.0(	SI0962 Prep system PCB	1.000	0.000	1.000	1.000	B-O3 Each
300.0(	SI1115 Toroidal transformer, 50VA 2x55V o/p	1.000	0.000	1.000	1.000	 Each
310.0(	SI1236 Levelling Foot - M10x38mm	5.000	0.000	5.000	5.000	B-H8 Each
320.0(	SI1259 Bulgin Lead, USB B Type, 5m, IP68 (External)	1.000	0.000	1.000	1.000	B-T2 Each
330.0(	SI1328 Mains Filter	1.000	0.000	1.000	1.000	B-H4 Each
340.0(	SI1344 IEC Connector Clamp Kit	5.000	0.000	5.000	5.000	B-H4 Each

350.0(	SI1351 Bulkhead Union Push-in Fitting - 4mm	10.000	0.000	8.000	10.000	B-K4 Each
360.0(	SI1411 Timing pulley, 25 teeth 6mm W 2.5mm pitch	2.000	0.000	2.000	2.000	B-L8 Each
370.0(	SI1412 Timing pulley, 32 teeth 6mm W 2.5mm pitch	2.000	0.000	2.000	2.000	B-L8 Each
380.0(	SI1416 Inlet Top Plate	1.000	0.000	0.000	1.000	 Each
390.0(	SI1418 80mm Fan Screen Filter	6.000	0.000	6.000	6.000	B-H7 Each
400.0(	SI1478 Double Flange	3.000	0.000	3.000	3.000	B-H8 Each
410.0(	SI1491 IEC Insulation Cover	6.000	0.000	6.000	6.000	B-H4 Each
420.0(	SI1514 Synchroflex(R) timing belt, 182.5L x 6Wmm	2.000	0.000	2.000	2.000	B-L7 Each
430.0(	SI1594 15 Way D Plate	2.000	0.000	2.000	2.000	D-U3 Each
440.0(	SI1595 37 Way D Plate	4.000	0.000	4.000	4.000	D-U3 Each
450.0(	SI1797 Fuse Holder Insulation Cover	4.000	0.000	4.000	4.000	B-H6 Each
460.0(	SI1822 Vacuum Filter	3.000	0.000	0.000	3.000	 Each
470.0(	SI1889 ENS rotary optical encoder, 256cycles/rev	2.000	0.000	2.000	2.000	 Each
480.0(	SI1914 Cryolab Lns Dewar 35L	1.000	0.000	0.000	1.000	 Each
490.0(	SI1921 Honeywell SST Pressure Transducers	1.000	0.000	1.000	1.000	 Each
500.0(	SI2244 Male Elbow 4mm to M5	30.000	0.000	24.000	30.000	B-K4 Each
510.0(	SI2304 Screwdriver bayonetcap fuseholder 5x20mm	4.000	0.000	4.000	4.000	B-H6 Each
520.0(	SI2579 20-22 Cabinet Wave Assy	1.000	0.000	1.000	1.000	C Each
530.0(	SI2580 Stepper motor shaft & gear mod	2.000	0.000	2.000	2.000	 Each
540.0(	SI2612 GEO HS2022 Artwork	1.000	0.000	1.000	1.000	C Each
550.0(	SI2613 GEO Inlet Artwork	1.000	0.000	1.000	1.000	C Each

560.0(	SI2655 Capex V2 24VDC Diaphragm Pump	1.000	0.000	1.000	1.000	Each
570.0(	SI2664 nEXT85 GEO HS2022 KIT	1.000	0.000	1.000	1.000	D-Z Each

sercon
innovators in isotopes

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

7: ASSEMBLY AND TEST RECORD

Client:	Alfred Wegener Institut		
Quotation Number:	12485	Date:	29/04/2020
Job Number:	IN1239	Date:	07/08/2020

PRODUCT: CRYOFLEX(LA)

SERIAL NUMBER: 10802/8-2020/1239

ASSEMBLED: (Name) P. Hayes Date: 20/10/20

PRE-TEST INSPECTION: (Production name) D. Walker Date: 20/10/20

PRE-TEST INSPECTION: (Test name) S. Myers Date: 20/10/20

SYSTEM TEST: (Name) S. Myers Date: 12/11/20

PRE-DESPATCH INSPECTION: (Name) P. Hayes Date: 12/11/20.

P.A.T. Test results

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

Earth Continuity 0.070 Ω

Insulation >300 MΩ

Earth Leakage Current 0.25 mA. @ 0.05 kVA.

Tested by: P. Hayes

Date: 20/10/20.

Batch Picking List

Works Order Number	WO01137
BOM Reference	10802/8
BOM Description	CryoFlex (LA GC Furnace)
Qty Required	1.000
Qty Outstanding	1.000
Manuf.Instructions	
Works Order Notes	

Sales Order No. Quantity DueDate

Booked IN 16/11/20

Drawings

Reference/Description	Valid From	ValidTo	Revision Number	Date

Required By

Works Order No.	BOM Reference	Quantity

Seq	Product Code	Qty Required	Qty Allocated	Qty Issued	To Issue	Bin Location/UOM
690.0(	10202/10 XYZ Gas Sampling Control Box X FH.	1.000	0.000	0.000	1.000	Each
690.0(	11801 Sercon XYZ Gas Autosampler	1.000	0.000	0.000	1.000	Each
20.00	SI0198 Tee Union 1/16 SS	1.000	0.000	0.000	1.000	B-J7 Each
30.00	SI0219 VacSeal 3L, all s/steel dewer w/ handle & Lid	1.000	0.000	0.000	1.000	Each
50.00	SI0344 2P red illum round rocker swithc, 10A	1.000	0.000	0.000	1.000	B-H5 Each
60.00	SI0345 SSR Safety Cover	1.000	0.000	0.000	1.000	B-I5 Each
70.00	SI0366 Flow Meter	1.000	0.000	0.000	1.000	B-J3 Each
80.00	SI0373 34 Way IDC Terminal Block	1.000	0.000	0.000	1.000	B-H9 Each
90.00	SI0374 Terminal Block Section	14.000	0.000	0.000	14.000	B-H6 Each
100.0(	SI0375 Terminal Block End Plate	3.000	0.000	0.000	3.000	B-H6 Each
110.0(	SI0406 Push-on Fan Guard, 120mm H x 120mm W	3.000	0.000	0.000	3.000	B-T4 Each
120.0(	SI0508 24V PSU	1.000	0.000	0.000	1.000	B-H9 Each
130.0(	SI0559 Solid State Relay 10A rms 24-280 Vac	1.000	0.000	0.000	1.000	B-I5 Each
140.0(	SI0620 IEC Insulatated Cover	1.000	0.000	0.000	1.000	B-H4 Each

Batch Picking List

150.0(	SI0629 120mm Fan Guard	3.000	0.000	0.000	3.000	B-T4 Each
160.0(	SI0630 80mm Fan Guard	2.000	0.000	0.000	2.000	B-H7 Each
170.0(	SI0701 1/4" PTFE Ferrules	8.000	0.000	0.000	8.000	B-J7 Each
180.0(	SI0703 1/8-1/16" PTFE Reducing Ferrule	2.000	0.000	0.000	2.000	B-J5 Each
190.0(	SI0708 SSUE 16/16 Stainless Steel Union	9.000	0.000	0.000	9.000	B-J9 Each
200.0(	SI0730 115V Strip Heater	2.000	0.000	0.000	2.000	B-I6 Each
210.0(	SI0731 Ceramic Terminal Covers	2.000	0.000	0.000	2.000	B-I6 Each
220.0(	SI0767 6 Way VALCO	1.000	0.000	0.000	1.000	B-K6 Each
230.0(	SI0807 Thermostat	1.000	0.000	0.000	1.000	B-I6 Each
240.0(	SI0837 Nafion Dryer	1.000	0.000	0.000	1.000	B-K3 Each
320.0(	SI1024 Black straight IEC C13-plug lead, 3m 10A	1.000	0.000	0.000	1.000	 Each
330.0(	SI1052 3 Way MOLEX Clip	1.000	0.000	0.000	1.000	B-J2 Each
340.0(	SI1198 Rt-Q-BOND PLOT Column 30m, 0.53mm ID, 20um	1.000	0.000	0.000	1.000	B-L1 Each
350.0(	SI1241 3 Way Solenoid Valve	1.000	0.000	0.000	1.000	B-J4 Each
360.0(	SI1242 2 Way Solenoid Valve	3.000	0.000	0.000	3.000	B-J4 Each
370.0(	SI1255 M5 Plug	2.000	0.000	0.000	2.000	B-J3 Each
380.0(	SI1328 Mains Filter	1.000	0.000	0.000	1.000	B-H4 Each
390.0(	SI1344 IEC Connector Clamp Kit	1.000	0.000	0.000	1.000	B-H4 Each
450.0(	SI1595 37 Way D Plate	1.000	0.000	0.000	1.000	D-U3 Each
460.0(	SI1602 Speed Controller (5mm)	4.000	0.000	0.000	4.000	B-K5 Each
470.0(	SI1603 Bulkhead Fitting 4mm - 1/8	1.000	0.000	0.000	1.000	B-K5 Each

Batch Picking List

480.0(	SI1604 Male Connctor 1/8 UNION 1/8	1.000	0.000	0.000	1.000	B-K5 Each
490.0(	SI1628 6 Way Manifold Assy	1.000	0.000	0.000	1.000	 Each
500.0(	SI1727 8mm Plug	1.000	0.000	0.000	1.000	B-K4 Each
510.0(	SI1737 B/bearing axial fan, 119sqx25mm 24V med	3.000	0.000	0.000	3.000	B-T4 Each
520.0(	SI1797 Fuse Holder Insulation Cover	1.000	0.000	0.000	1.000	B-H6 Each
530.0(	SI1799 Type K insulated thermocouple, 1.5x150mm	1.000	0.000	0.000	1.000	B-I8 Each
550.0(	SI1899 1/16 x M5 Fitting	10.000	0.000	0.000	10.000	B-J6 Each
560.0(	SI1900 Dowty Seal - M5	10.000	0.000	0.000	10.000	B-J6 Each
580.0(	SI2244 Male Elbow 4mm to M5	6.000	0.000	0.000	6.000	B-K4 Each
590.0(	SI2288 Internal USB 4.5m	1.000	0.000	0.000	1.000	B-H2 Each
600.0(	SI2296 Precision Flow Control	2.000	0.000	0.000	2.000	B-J4 Each
610.0(	SI2304 Screwdriver bayonetcap fuseholder 5x20mm	1.000	0.000	0.000	1.000	B-H6 Each
630.0(	SI2411 Split cable gland	1.000	0.000	0.000	1.000	B-H2 Each
640.0(	SI2412 Quick Insert Pk 10	0.100	0.000	0.000	0.100	B-H2 Each
650.0(	SI2413 Pneumatic Straight Tube Adapter, Plug In 4mm-8mm	1.000	0.000	0.000	1.000	B-K4 Each
320.0(	SI2435 Electronic Pressure Regulator	1.000	0.000	0.000	1.000	B-N2 Each
400.0(	SI2557 MAGNETICALLY COUPLED RODLESS	2.000	0.000	0.000	2.000	 Each
320.0(	SI2569 VICI Tubing 1/16" OD, .015"/.38mm ID	10.000	0.000	0.000	10.000	 Each
670.0(	SI2578 Cryoprep Cabinet Assemble	1.000	0.000	0.000	1.000	C Each
310.0(	SI2582 EArth System PCB	1.000	0.000	0.000	1.000	B-O3 Each
680.0(	SI2656 Snap fit Bushe 38x3.2x27 Black	1.000	0.000	0.000	1.000	 Each

ate: 16/11/2020
ime: 08:35:55

Sercon Limited

Batch Picking List

Works Order Number	WO01138
BOM Reference	11801
BOM Description	Sercon XYZ Gas Autosampler
Qty Required	1.000
Qty Outstanding	1.000
Manuf.Instructions	
Works Order Notes	

Sales Order No. **Quantity** **DueDate**

Boxed in 16/11/20

Drawings

Reference/Description	Valid From	ValidTo	Revision Number	Date

Required By

Works Order No.	BOM Reference	Quantity

Seq	Product Code	Qty Required	Qty Allocated	Qty Issued	To Issue	Bin Location/UOM
10.00	SI0708 SSUE 16/16 Stainless Steel Union	2.000	0.000	2.000	2.000	B-J9 Each
20.00	SI0967 Bottle Rack Shelf Set - 16mm Diameter	1.000	0.000	1.000	1.000	B-M4 Each
30.00	SI1390 Frame	1.000	0.000	1.000	1.000	B-M5 Each
40.00	SI1718 ASX-7400HR SerCon version autosampler	1.000	0.000	1.000	1.000	C Each
50.00	SI1757 EXE-12 Needle For CTAC	1.000	0.000	1.000	1.000	A-G1 Each
60.00	SI1765 CTAC Autosampler Base	1.000	0.000	1.000	1.000	D-V2 Each

sercon
innovators in isotopes

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

8 - Serial Numbers Record Document

Client:	Alfred Wegener Institut		
Quotation Number:	12485	Date:	29/04/2020
Job Number:	IN1239	Date:	07/08/2020

Units	S/N
MS/ABCA	
Integra 2	
Prep Unit 1	
Prep Unit 2/Misc	
Electronics Upgrade	
CETAC	032013A7400HR
Gas Box	
Autosampler	03
BCR	
Dual Heater Block	

Pump Kit and Optics	S/N
Turbo pump S	200000567
Turbo pump A	190649992
Rotary Pump	190657531
Voltage	110 / 240
Gauge S	190535003
Gauge A	190564516
Source	20102HS-188
Collector 1	20301-090.
Collector 2	20501-037
Magnet	#119.

Parts	S/N
Fan PSU	/
24V PSU	/

PCBs	S/N
Electronics Box	20190022
Prep PCB	GRYO 20190020 / GEO 20200001
VFC PCB	/ filted
Watchdog PCB	/
Head Amp PCB 1	2011
Head Amp PCB 2	/ 41901/1/001
Electromagnet RP	19007

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

PC	S/N
PC	BPRMBX2
Monitor	DN2T7Q2
Printer	/

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:

TURBO GEO - 200115008.
INLET.

ROTARY SMALL 200437192
ROTARY BIG - 200424585

Record

of the scheduled acceptance of

GEO HS20-22 + E-Mag + Hd Dual inlet and continuous flow IRMS system incl. spares kit

pursuant to AWI order no. 12/0045135048/NB of 06.08.2020.

☐ The above-mentioned device/system was fully delivered/installed, i.e., all the specific components of the above order are available and in perfect condition. In addition, all features were tested after installation and first operation. Thus, this is accepted in compliance with § 13 of the VOL/B.

- ☐ **No** defects have been identified
- ☐ The **following** defects have been identified (if necessary, create an annex to the acceptance record):

  _____

  _____

  _____

  The contractor will remedy the identified defects immediately or by the _____ at the latest.

☐ The above-mentioned device/system has ***substantial*** defects. This is **not** accepted in compliance with § 13 para. 2 no. 1 of the VOL/B.
Reason (if necessary, create an annex to the acceptance record):

_____

_____

_____

- ☐ An extension for acceptance until the _____ has been granted.
- ☐ An extension has not been granted, because it is a fixed date.

This record has been witnessed by representatives of the contracting party and the contractor.

Place: Potsdam, Germany sw Date: .....

....

(Contracting party's signature) (Contractor's signature)

sercon
innovators in isotopes

Invoice

Invoice to:

Alfred Wegener Institut (GBP)
Für Polar-und Meeresforschung
Geschäftszimmer/Gebäude E
Am Handelshafen 12
27570 Bremerhaven

VAT Reg No: DE 114707273

Invoice No.	13785
Invoice/Tax Date	12/11/2020
Due Date	12/12/2020
Account No.	ALF001

Customer Order No. 12/ 0045135377

Job Number 14563
IN1239

Quantity	Product Code	Product Description	Unit Price £	Net Amount £	VAT Rate %	VAT Amount £
		CryoFlex System for LAIRMS				
1	10802/8	CryoFlex (LA) - Modified for bespoke sample introduction	42,400.00	42,400.00	0.00	0.00
1	71001-1	Cryoprep Spares Kit	1,600.00	1,600.00	0.00	0.00
1	WARR2	2 year warranty				

Delivery address:
Andreas Marent
Zentr. f . Polar- u. Meeresforschung
Hanno Meyer +49-331-288-2115 / Lutz Schonicke
Building A45, Room 022
Telegrafenburg A 45 14473 Potsdam, Germany

This invoice is issued in: Pound Sterling

Total Net Amount	£	**44,000.00**
Total VAT Amount	£	**0.00**
Invoice Total	£	**44,000.00**

Payment Details:-
Payment is required within 30 DAYS of invoice date by bank transfer.
All bank transfer charges are the responsibility of the customer.
Bank transfer to be made to the relevant IBAN number.

Intra-community supply, subject to VAT in the country of acquisition

Sercon Bank Details:-
National Westminster Bank, 36 High Street
Nantwich, Cheshire CW5 5GA U.K.

IBAN: GB74NWBK54101736755133
SWIFT/BIC: NWBKGB2LXXX

sercon

Sercon Limited
Unit 3B Crewe Trade Park
Gateway, Crewe
CW1 6JT U.K.
Company Registration No.: 4290072

Phone: +44 (0) 1270 580008
Fax: +44 (0) 1270 252310
E-mail: accounts@sercongroup.com
www.sercongroup.com
VAT No.: 771 1100 74

sercon
innovators in isotopes

Invoice

Invoice to:

Alfred Wegener Institut (GBP)
Für Polar-und Meeresforschung
Geschäftszimmer/Gebäude E
Am Handelshafen 12
27570 Bremerhaven
Germany

VAT Reg No: DE 114707273

Invoice No.	13786
Invoice/Tax Date	12/11/2020
Due Date	12/12/2020
Account No.	ALF001

Customer Order No. 12/0045135048

Job Number 12485
IN1239

Quantity	Product Code	Product Description	Unit Price £	Net Amount £	VAT Rate %	VAT Amount £
		GEO HS20-22				
1	21802/3	GEO HS2022 + E-Mag + Hd Modified with bellows transducers	97,000.00	97,000.00	0.00	0.00
1	70301-3E	Comprehensive GEO 20-22 spares kit	10,000.00	10,000.00	0.00	0.00
1	WARR2	2 year warranty				
1	INST	Installation and start up training at Customer's site	9,750.00	9,750.00	0.00	0.00
1	CIP	Estimated CIP - Destination Airport	1,500.00	1,500.00	0.00	0.00
		Service Contract				
1	SCONTRACT	Maintenance Service Contract - 2 years Contract to consist of 1visit of 5 days on-site per annum	13,000.00	13,000.00	0.00	0.00

Delivery address:
Andreas Marent
Zentr. f . Polar- u. Meeresforschung
Hanno Meyer +49-331-288-2115 / Lutz Schonicke -
Building A45, Room 022
Telegrafenburg A 45 14473 Potsdam, Germany

This invoice is issued in: Pound Sterling

Total Net Amount	**£ 131,250.00**
Total VAT Amount	**£ 0.00**
Invoice Total	**£ 131,250.00**

Payment Details:-
Payment is required within 30 DAYS of invoice date by bank transfer.
All bank transfer charges are the responsibility of the customer.
Bank transfer to be made to the relevant IBAN number.

Intra-community supply, subject to VAT in the country of acquisition

Sercon Bank Details:-
National Westminster Bank, 36 High Street
Nantwich, Cheshire CW5 5GA U.K.

IBAN: GB74NWBK54101736755133
SWIFT/BIC: NWBKGB2LXXX

sercon

Sercon Limited
Unit 3B Crewe Trade Park
Gateway, Crewe
CW1 6JT U.K.
Company Registration No.: 4290072

Phone: +44 (0) 1270 580008
Fax: +44 (0) 1270 252310
E-mail: accounts@sercongroup.com
www.sercongroup.com
VAT No.: 771 1100 74

Date 08/12/2020 **Sercon L**

Time 14:21:50

Pick

W/O Number WO01110

BOM Reference 70301-3E

Comprehensive GEO20-22 spares kit for 5yrs operation Edwards

Required	Part No.	Description
1.0	SI1190	Europa Gold Rings 6.35mm Pk/10
6.0	SI2099	Gold Gasket 20mm dia Pk/5
5.0	SI0909	Tubing SS 1/16" (5 thou ID) 1m
30.0	SI1643	Europa Kel-F Seat Pk/1
30.0	SI1831	Europa Inlet Diaphram
30.0	SI1832	Disc spring Pk/1
0.3	SI0855	Traceable hex skt cap head screw M5x12mm pk/10
5.0	SC0064	Edwards Rotary Pump Oil - Ultra grade 19 - 1L
10.0	SC0032A	Copper Gasket DN63CF Pk/1
10.0	SC0033A	Copper Gasket DN40CF Pk/1
1.0	SI0014	Bellows Large Sub Assy
1.0	SI0016	Bellows Small Sub Assy
1.0	SI1921	Honeywell SST Pressure Transducers
1.0	SI0110	FL20K Foreline Trap
5.0	SC0028	Filament, 20-20 Pk/1
1.0	SI0141	Source Mounting Pillar
1.0	SI2105	Source Ceramics (1 Set)
2.0	SI2854	Geo Transducer Union
15.0	SI2069	Solenoid Valve for 6 way manifold

All items picked and packed as marked: Date / / Signed

.imitedWO01110

ing List JW

IN1239

0

Stock: Allocated

Date 08/12/2020
Time 14:13:57

Sercon Limited

Picking List JW

IN1239

W/O Number WO01158
BOM Reference 71001-1
Cryoprep Spares Kit

Required	Part No.	Description
5.0	SI0700	1/16" PTFE Ferrules
1.0	SI0762	PSR16-16 PTFE Sealing Rings Pk/20
5.0	SI0712	Tubing SS 1/16" ODX 0.75mm ID pk/1M
1.0	SI0691	GVF 16-16 Vespel Ferrule Pk/10
2.0	SI0769A	Peek Tubing 1M
1.0	SI1757	EXE-12 Needle For CTAC
1.0	SI1800	WES Needle For CTAC
1.0	SC0140	Amber Glass Bottles for TG 1oz (approx 30ml) Pk/24
1.0	SC0141	Amber Glass Bottles for TG 2oz (approx 60ml) Pk/24
1.0	SC0142	Amber Glass Bottles for TG 4oz (approx 120ml) Pk/24
2.0	SC0143	Amber Glass Bottles for TG 8oz (Approx. 240ml) Pk/12
1.0	SC0144	Septrseal Teflon/Silicone Septa 11/16" for 1oz&2oz Pk/50
1.0	SC0145	Septrseal Telfon/Silicone Septra 3/4" for 4oz
1.0	SC0146	Septrseal/Silicone Septa 27/32" for 8oz Pk/50
1.0	SC0121	Platinum Wire (1m)
1.0	SC0088	Copper Wire (10m)
1.0	SC0089	Nickel Wire (10m)
2.0	SC0068A	Exetainers 12ml pk/100
2.0	SC0091	Alumina Tubes 1.6 x 0.8 x 400mm
4.0	SC0236	EMASorb A Granular 0.8-1.6mm, 14-25 mesh CO2 Absorbant 25g
3.0	SC9791	Schutze Reagent 30g Oxidising Solid Corrosive N.O.S. (Io
1.0	SC0006	Quartz Wool Very Fine (10g)

Date 08/12/2020
Time 14:13:57

Sercon Limited

Picking List JW

WO01158

IN1239

1.0	SC1410	O Ring Schott Silicone Pk/10
2.0	SC2495	Scrubber Tube 220mm
2.0	SI0708	SSUE 16/16 Stainless Steel Union
1.0	SI1405	GVF Ferrule 16-008, PK/10
1.0	SI2072	Capillary Ceramic Tube Cutter Pk/3
1.0	SI0707	SSNE-16 Stainless Steel Nut pk/5

All items picked and packed as marked:

Date ____/____/____ Signed _____

Stock: Allocated
Issued
Order: Completed

Date ____/____/____ Signed _____

ALFRED-WEGENER-INSTITUT
HELMHOLTZ-ZENTRUM FÜR POLAR- UND MEERESFORSCHUNG

Alfred-Wegener-Institut
Helmholtz-Zentrum für
Polar- und Meeresforschung
BREMERHAVEN
Am Handelshafen 12 • 27570 Bremerhaven
Telefon 0471 4831-0
www. awi.de
Stiftung des öffentlichen Rechts

Alfred-Wegener-Institut, Postfach 12 01 61, 27515 Bremerhaven

SERCON Limited
Unit 3B Crewe Trade Park
GATEWAY, CREWE
CW1 6JT
UNITED KINGDOM

Purchase order

Please state:
PO number/date
12/ 0045135377 /NB / 20.08.2020

Buyer/Phone
Mrs. S. Witt/047148311350
Our Fax-No. 0471/48311580
E-Mail Silke.Witt@awi.de
UST-Idn-No.: DE 114 707 273

Creditor-No.
15423

Your offer/date
12485J/05.08.2020

Delivery address:
Alfred-Wegener-Institut
Zentr. f. Polar- u. Meeresforschung
Hanno Meyer / Lutz Schönicke
Building A45, Room 022
Telegrafenberg A 45
14473 Potsdam

Delivery date: **Day 23.11.2020**

Invoice address:
Alfred Wegener Institut
Helmholtz-Zentrum für Polar- und
Meeresforschung
Geschäftszimmer/Gebäude E
Am Handelshafen 12
27570 Bremerhaven

We order according to our current General Purchasing Terms and Conditions athttp://www.awi.de/ueber-uns/organisation/einkauf.html

Terms of Delivery.: CIP Insured freight-free Potsdam.
Terms of Payment.: within 30 days Due net Valuta GBP

Order of the options stated in our purchase order 12/0045135048/NB
your quote 12485J

Item	Qty.	Unit	Material	Price/Unit			T-Price
1.	1	items	CryoFlex	42,400.00	/	1	42,400.00

Cryoflex System for LAIRMS
CryoFlex (LA) - Modified for bespoke sample introduction
Trace gas analyser optimised for connection to peripherals
which require a cryogenic focussing module.
Includes liquid nitrogen based trapping system, gas
chromatography and a micro-combustion stage.
Includes XYZ Gas Autosampler.

ALFRED-WEGENER-INSTITUT
HELMHOLTZ-ZENTRUM FÜR POLAR- UND MEERESFORSCHUNG

Alfred-Wegener-Institut
Helmholtz-Zentrum für
Polar- und Meeresforschung
BREMERHAVEN
Am Handelshafen 12 • 27570 Bremerhaven
Telefon 0471 4831-0
www. awi.de
Stiftung des öffentlichen Rechts

Alfred-Wegener-Institut, Postfach 12 01 61, 27515 Bremerhaven

Item	Qty.	Unit	Material	Price/Unit	T-Price
# 10802/8					
2.	1	items	Cryoprep Spares Kit # 71001-1	1,600.00 / 1	1,600.00
			Total excl. VAT	GBP	44,000.00

Terms of delivery:
Delivery and installation together with our Purchase Order No. 12/0045135048/NB.

Warranties:
2 years

Other contractual stipulations:
In the case of deliveries and services on the site and in the premises of the AWI, its safety and order regulations must be observed, which at the same time form an integral part of the contract between the AWI (client) and the external company (contractor).

In particular, the contractor shall be responsible for ensuring compliance with the "Guidelines for External companies# (#Richtlinie für Fremdfirmen#) and for the preparation of risk assessments before the start of the work.
(PDF Download " Richtlinie für Fremdfirmen ": https://www.awi.de/fileadmin/user_upload/AWI/Ueber_uns/Organisation/Einkauf/Daten/Richtlinie_für_Fremdfirmen_2018-08-04.pdf)

Please contact in due time at the following e-mail address hanno.meyer@awi.de
the person responsible for this order (in german: "Auftragsverantwortlicher").

Corona infection control measures:
We have linked two documents on the AWI website:
Please refer to
"https://www.awi.de/en/about-us/organisation/purchasing.html>Conditions

HELMHOLTZ

ALFRED-WEGENER-INSTITUT
HELMHOLTZ-ZENTRUM FÜR POLAR- UND MEERESFORSCHUNG

Alfred-Wegener-Institut
Helmholtz-Zentrum für
Polar- und Meeresforschung
BREMERHAVEN
Am Handelshafen 12 • 27570 Bremerhaven
Telefon 0471 4831-0
www. awi.de
Stiftung des öffentlichen Rechts

Alfred-Wegener-Institut, Postfach 12 01 61, 27515 Bremerhaven

of Purchase>During the Corona Pandemic"
firstly, to find out about "Preventive measures for external companies and guests" and
secondly, to fill out the "Confirmation form" before entering an AWI premises.
The completed confirmation form must be handed over to the person responsible for the order (in german: #Auftragsverantwortlicher#).

Scientific success of the AWI is based on good relationship to its business partners - a relationship which is characterized by integrity, confidence and fairness. In pursuing these goals, the AWI will not be influenced by the interests of third parties.
Corruption is a criminal offence. Assist us in the prevention of corruption. This will facilitate the cooperation between both sides.
Please refrain from sending any gifts, promotional items, invitations etc., which could influence the allocation of contracts in your favour.
Corruption is disadvantageous to you and others and you are at the risk of nott being considered by further tenders.

Please note, that invoices which are not issued to the following address, can not be accepted.

Alfred-Wegener-Institut
Helmholtz-Zentrum fuer Polar und Meeresforschung
Geschaeftszimmer/Gebaeude E
Am Handelshafen 12
27570 Bremerhaven
Germany

Please furthermore note, that it also possible to send your invoices electronically. Therefore please use exclusively the following email-address: rechnungseingang@awi.de
Please consider that it will not be accepted if you send your invoice to another email-address.

Best regards

i.A.

Alfred Wegener Institute
Helmholtz Centre for Polar and Marine Research

Record

of the scheduled acceptance of

GEO HS20-22 + E-Mag + Hd Dual inlet and continuous flow IRMS system incl. spares kit

pursuant to AWI order no. 12/0045135048/NB of 06.08.2020.

☒ The above-mentioned device/system was fully delivered/installed, i.e., all the specific components of the above order are available and in perfect condition. In addition, all features were tested after installation and first operation. Thus, this is accepted in compliance with § 13 of the VOL/B.

- ☐ **No** defects have been identified
- ☒ The **following** defects have been identified (if necessary, create an annex to the acceptance record):

  see Annex

  The contractor will remedy the identified defects immediately or by the _____ at the latest.

☐ The above-mentioned device/system has ***substantial*** defects. This is **not** accepted in compliance with § 13 para. 2 no. 1 of the VOL/B.
Reason (if necessary, create an annex to the acceptance record):

- ☐ An extension for acceptance until the _____ has been granted.
- ☐ An extension has not been granted, because it is a fixed date.

This record has been witnessed by representatives of the contracting party and the contractor.

Place: Potsdam, Germany sw Date: 14. December 2020

.....
(Contracting party's signature)

.....
(Contractor's signature)

Annex to the Installation Report of a Sercon 20-22 IRMS plus Dual Inlet and CryoFlex Option

Dave Harris (Sercon), Hanno Meyer, Andreas Marent (AWI)

1. Micro combustion stage of the CryoFlex option has not been delivered
2. A printer has not been delivered
3. As shown during installation, the Penta block in the Dual Inlet is critical for shearing of the small connection thread for the capillary and is requested by the AWI to be part of the spare kit.
4. The solution found for the additional pressure transducers is not tot he satisfaction of the customer (see details below)
5. The interface to Labview does not allow to read/set the following parameters correctly: Inlet Pressure, EV, Focus and EMagnet. Sercon will help AWI to solve this problem.

Connection of the pressure gauges to the bellows

We ordered two additional pressure gauges to measure the pressure in each of the bellows. Sercon has mounted two pressure gauges between the valves SV/SM and RM/RV, respectively. On the sample side, the connection of the cold-finger was used for that.
The implemented solution has some disadvantage:

- There is no possibility to use the Nupro-connection at valve "RI" on the reference side, as the installed pressure gauge blocks the Nupro-plug. With the currently installed Penta block the pressure gauge can not be mounted



- On the sample-side there is a 90°-elbow tube fitting on the port of the valve "SI". After the elbow there is a connection tube to the pressure transducer. This solution is better than on the reference side, as the connection of the inlet is possible without dismounting the pressure gauge. Nevertheless, there is a lot of volume in the tubes and elbows.





Changes required:

- A solution for the reference side to mount the pressure gauge by keeping access to the port on valve "RI" without dismounting the pressure gauge.
- A better solution on the sample side, so that the dead-volume is reduced and there is still access to the port on valve "SI" without dismounting the pressure gauge

sercon
innovators in isotopes

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

11 – Installation Report

Client:	Alfred Wegener Institut		
Quotation Number:	12485	Date:	29/04/2020
Job Number:	IN1239	Date:	07/08/2020

Contact:	Hanno Meyer		
Date of Visit:	30th Nov – 4th Dec 2020	No. of Days:	5
Engineer:	D Harris		

Details of visit:

- Arrived on site and unboxed instrument with the assistance of on-site engineer Andreas Marent.
- Set up HS20-22 and Geo Dual inlet on desk top.
- New oil added to pumps.
- All pump down – OK
- HS20-22 over-night vac achieved = 2.4e-08mBar (vac @ 1.0e-08mBar after 2 days pumping) – OK
- Switched on Source & HT – OK
- Fitted helium, nitrogen and Oxygen gases. Leak check - OK
- Set up PC – Established comms to instruments. - OK.
- Readbacks all OK. Valves all respond - OK.
- Helium flows set. 10ml/min for Ref Gas carrier flow - OK
- Set emag position & tuned on N2 and O2 ref gas. All OK.

Ran N2 & O2 ref gas tests in continuous flow mode (Ref gas pulses).
All Peak shapes – OK
All Stabilities - OK
N2 Precision = 0.019‰ S.D
N2 Linearity = 0.073‰ S.D
17O2 Precision = 0.053‰ S.D
18O2 Precision = 0.005‰ S.D

- Set up Geo Dual inlet.
- Software -OK
- All readbacks respond – OK
- Customers bespoke transducers readback but not calibrated.
- Calibrate Honeywell transducer - OK
- System pumps down OK initially but small leak found at pentablock junction with capillaries on Ref side.
- Attempt to fix but screw connection shears off. Part damaged beyond repair.
- New Pentablock sent out from Sercon. Strip down old Pentablock for actuation valves and rebuild.
- Matching issue with new part. Have to remake link tube to bellows, remake OK. However customers bespoke pressure transducer (ref side) can no longer be fitted. Cold finger fitted for now.
- Leaks across most valves present. Add additional spring/O-ring to all valves. Now all OK except valve RI
- Remove and replace diaphragm & gold O-ring. Still leaks across.
- Take parts from original pentablock to repair. Suspect damage on holding block on new pentablock.
- New rebuild fixes leak.
- Leak present on Ref side capillary line. Replaced capillary for new. All OK.

sercon
innovators in isotopes

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

11 – Installation Report

Client:	Alfred Wegener Institut		
Quotation Number:	12485	Date:	29/04/2020
Job Number:	IN1239	Date:	07/08/2020

Ran tests on Geo Dual inlet

O2 ref gas 2/1 & 3/1 Peak shapes - OK
O2 2/1 & 3/1 Stability – OK

17O Precision (100mBar)COV locked [Ref side only] =0.005‰ S.D
18O Precision (100mBar)COV locked [Ref side only] =0.003 ‰ S.D

18O Precision(100mBar) COV locked [Sample side only] = 0.005‰ S.D
17O Precision(100mBar) COV locked [Sample side only] = 0.007‰ S.D

17O Precision (100mBar)COV active =0.022 ‰ S.D
18O Precision(100mBar) COV active = 0.002‰ S.D
17O Precision(40mBar) COV active = 0.160‰ S.D
18O Precision(40mBar) COV active = 0.046‰ S.D

- Set up CryoPrep & CETAC autosampler on push table.
- Their instruments have yet to have a determined project.
- Checked Comms – All OK
- Readbacks - All OK
- CETAC arm moves & injects – OK
- GC oven on CryoFLex heats up – OK
- No furnace attached (non delivered)
- Cannot fit air to check pneumatic valves.
- Cannot attach helium to check flows.
- Advise remote set up when their roles are decided.
- Printer not delivered
- Micro combustion stage not delivered

Recommendations:

Advise remote set up of CryoFlex & CETAC when their roles are decided.

Faults and Shortages:

Ref Side Pentablock damaged during install – Part replaced by Sercon. Part received and fitted by D Harris.

Follow up:

Customer is designing bespoke software in conjunction with their laser instrumentation. Transfer of coding values and other settings to be coordinated with Andrew Park.

Engineer: DAVID HARRIS Date: 04 Dec 2020

Signed:

sercon
innovators in isotopes

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

11 – Installation Report

Client:	Alfred Wegener Institut		
Quotation Number:	12485	Date:	29/04/2020
Job Number:	IN1239	Date:	07/08/2020

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:	Alfred Wegener Institut		
Quotation Number:	12485	Date:	29/04/2020
Job Number:	IN1239	Date:	07/08/2020

Contact:	Hanno Meyer
System:	HS20-22, Geo Dual Inlet, CryoFlex, CETAC autosampler
Software:	Geo v30.0.12. Callisto v40.0.11
Engineer:	David Harris
Installation Date:	04 Dec 2020

Warranty commences:	05 Dec 2020
Warranty Expires:	04 Dec 2022

Customer Acceptance:

Name: HANNO MEYER

Signature:

Date: 4 Dec 2020

Engineer's Signature:
On behalf of Sercon Limited

Name: DAVID HARRIS

Signature:

Date: 04 Dec 2020

Notes: See Annex of Installation Report

ALFRED-WEGENER-INSTITUT
HELMHOLTZ-ZENTRUM FÜR POLAR- UND MEERESFORSCHUNG

Alfred-Wegener-Institut
Helmholtz-Zentrum für
Polar- und Meeresforschung
BREMERHAVEN
Am Handelshafen 12 • 27570 Bremerhaven
Telefon 0471 4831-0
www. awi.de
Stiftung des öffentlichen Rechts

Alfred-Wegener-Institut, Postfach 12 01 61, 27515 Bremerhaven

SERCON Limited
Unit 3B Crewe Trade Park
GATEWAY, CREWE
CW1 6JT
UNITED KINGDOM

Purchase order

Please state:
PO number/date
12/ 0045135048 /NB / 06.08.2020

Buyer/Phone
Mrs. S. Witt/047148311350
Our Fax-No. 0471/48311580
E-Mail Silke.Witt@awi.de
UST-Idn-No.: DE 114 707 273

Creditor-No.
15423

Your offer/date
12485J/05.08.2020

Delivery address:
Alfred-Wegener-Institut
Zentr. f. Polar- u. Meeresforschung
Hanno Meyer / Lutz Schönicke
Building A45, Room 022
Telegrafenberg A 45
14473 Potsdam

Delivery date:

Invoice address:
Alfred Wegener Institut
Helmholtz-Zentrum für Polar- und
Meeresforschung
Geschäftszimmer/Gebäude E
Am Handelshafen 12
27570 Bremerhaven

We order according to our current General Purchasing Terms and Conditions athttp://www.awi.de/ueber-uns/organisation/einkauf.html

Terms of Delivery.: CIP Insured freight-free Potsdam.
Terms of Payment.: within 30 days Due net Valuta GBP

Item	Qty.	Unit	Material	Price/Unit	T-Price
1.	1	items	GEO HS20-22 + E-Mag + Hd Dual inlet	97,000.00 / 1	97,000.00

Delivery Day 23.11.2020

and continuous flow IRMS system for light isotopes
m/z 2 to 66 amu.
Includes high sensitivity source, electromagnet and HD collector.
Vacuum system inlcuding turbo and rotary pumps
Automatic dual inlet module with sample and reference bellows, pressure transducer and changeover valve
GEO HS2022 start up consumables kit includes tubing, gold rings, kel-f seat, inlet diaphram, disc spring and screws
Windows based data system and printer.
Modified with bellows transducers

ALFRED-WEGENER-INSTITUT
HELMHOLTZ-ZENTRUM FÜR POLAR- UND MEERESFORSCHUNG

Alfred-Wegener-Institut
Helmholtz-Zentrum für
Polar- und Meeresforschung
BREMERHAVEN
Am Handelshafen 12 • 27570 Bremerhaven
Telefon 0471 4831-0
www. awi.de
Stiftung des öffentlichen Rechts

Alfred-Wegener-Institut, Postfach 12 01 61, 27515 Bremerhaven

Item	Qty.	Unit	Material	Price/Unit			T-Price
# 21802/3							
2.	1	items	Comprehensive Geo 20-22 spares kit	10,000.00	/	1	10,000.00
	Delivery Day 23.11.2020						
for 5 years operation # 70301-3E							
3.	1	items	installation and start up training	9,750.00	/	1	9,750.00
	Delivery Day 23.11.2020						
at Customer's site in Potsdam, Germany							
4.	2	items	maintenance service contract	13,000.00	/	2	13,000.00
	Delivery Day 23.11.2021						
2 years (contract start in 2021) Contract to consist of 1 visit of 5 days on-site per annum. Contract start one year after installation. Accounting in 2021.							
5.	1	items	transport CIP-Potdam	1,500.00	/	1	1,500.00
	Delivery Day 23.11.2020						
Transport und Puffer							
			Total excl. VAT		GBP		131,250.00

Terms of delivery:
Please find enclosed an acceptance protocol (record).
The protocol is to be filled out during installation
(technical acceptance).
Please send the protocol signed by both parties
back to us together with your final invoice.
Only after presentation of the complete acceptance protocol
your invoice can be paid.

ALFRED-WEGENER-INSTITUT
HELMHOLTZ-ZENTRUM FÜR POLAR- UND MEERESFORSCHUNG

Alfred-Wegener-Institut
Helmholtz-Zentrum für
Polar- und Meeresforschung
BREMERHAVEN
Am Handelshafen 12 • 27570 Bremerhaven
Telefon 0471 4831-0
www. awi.de
Stiftung des öffentlichen Rechts

Alfred-Wegener-Institut, Postfach 12 01 61, 27515 Bremerhaven

Warranties:
2 years

Contract riders (clauses):
We reserve the right to order the options listed in the offer (Cryoflex System and Cryoprep Spares Kit) at the prices offered later this year.

10802/8
CryoFlex (LA) - Modified for bespoke sample introduction
Trace gas analyser optimised for connection to peripherals which require a cryogenic focussing module.
Includes liquid nitrogen based trapping system, gas chromatography and a micro-combustion stage.
Includes XYZ Gas Autosampler.
GBP 42.400,00

71001-1 Cryoprep Spares Kit
GBP 1.600,00

Other contractual stipulations:
In the case of deliveries and services on the site and in the premises of the AWI, its safety and order regulations must be observed, which at the same time form an integral part of the contract between the AWI (client) and the external company (contractor).

In particular, the contractor shall be responsible for ensuring compliance with the "Guidelines for External companies# (#Richtlinie für Fremdfirmen#) and for the preparation of risk assessments before the start of the work.
(PDF Download " Richtlinie für Fremdfirmen ": https://www.awi.de/fileadmin/user_upload/AWI/Ueber_uns/Organisation/Einkauf/Daten/Richtlinie_für_Fremdfirmen_2018-08-04.pdf)

Please contact in due time at the following e-mail address
hanno.meyer@awi.de
the person responsible for this order (in german: "Auftragsverantwortlicher").

Corona infection control measures:
We have linked two documents on the AWI website:
Please refer to
"https://www.awi.de/en/about-us/organisation/purchasing.html>Conditions of Purchase>During the Corona Pandemic"
firstly, to find out about "Preventive measures for external companies

ALFRED-WEGENER-INSTITUT
HELMHOLTZ-ZENTRUM FÜR POLAR- UND MEERESFORSCHUNG

Alfred-Wegener-Institut
Helmholtz-Zentrum für
Polar- und Meeresforschung
BREMERHAVEN
Am Handelshafen 12 • 27570 Bremerhaven
Telefon 0471 4831-0
www. awi.de
Stiftung des öffentlichen Rechts

Alfred-Wegener-Institut, Postfach 12 01 61, 27515 Bremerhaven

and guests" and
secondly, to fill out the "Confirmation form" before entering an AWI premises.
The completed confirmation form must be handed over to the person responsible for the order (in german: #Auftragsverantwortlicher#).

Scientific success of the AWI is based on good relationship to its business partners - a relationship which is characterized by integrity, confidence and fairness. In pursuing these goals, the AWI will not be influenced by the interests of third parties.
Corruption is a criminal offence. Assist us in the prevention of corruption. This will facilitate the cooperation between both sides.
Please refrain from sending any gifts, promotional items, invitations etc., which could influence the allocation of contracts in your favour.
Corruption is disadvantageous to you and others and you are at the risk of nott being considered by further tenders.

Please note, that invoices which are not issued to the following address, can not be accepted.

Alfred-Wegener-Institut
Helmholtz-Zentrum fuer Polar und Meeresforschung
Geschaeftszimmer/Gebaeude E
Am Handelshafen 12
27570 Bremerhaven
Germany

Please furthermore note, that it also possible to send your invoices electronically. Therefore please use exclusively the following email-address: rechnungseingang@awi.de
Please consider that it will not be accepted if you send your invoice to another email-address.

Best regards

i.x.

Alfred Wegener Institute
Helmholtz Centre for Polar and Marine Research

sercon
innovators in isotopes

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:	Alfred Wegener Institut		
Quotation Number:	12485	Date:	29/04/2020
Job Number:	IN1239	Date:	07/08/2020

Contact:	Hanno Meyer
System:	HS20-22, Geo Dual Inlet, CryoFlex, CETAC autosampler
Software:	Geo v30.0.12. Callisto v40.0.11
Engineer:	David Harris
Installation Date:	04 Dec 2020

Warranty commences:	05 Dec 2020
Warranty Expires:	04 Dec 2022

Customer Acceptance:

Name: HANNO MEYER

Signature:

Date: 4 DEC 2020

Engineer's Signature:
On behalf of Sercon Limited

Name: DAVID HARRIS

Signature:

Date: 04 Dec 2020

Notes:

See Annex of Installation Report

sercon
innovators in isotopes

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

11 – Installation Report

Client:	Alfred Wegener Institut		
Quotation Number:	12485	Date:	29/04/2020
Job Number:	IN1239	Date:	07/08/2020

Contact:	Hanno Meyer		
Date of Visit:	30th Nov – 4th Dec 2020	No. of Days:	5
Engineer:	D Harris		

Details of visit:

- Arrived on site and unboxed instrument with the assistance of on-site engineer Andreas Marent.
- Set up HS20-22 and Geo Dual inlet on desk top.
- New oil added to pumps.
- All pump down – OK
- HS20-22 over-night vac achieved = 2.4e-08mBar (vac @ 1.0e-08mBar after 2 days pumping) – OK
- Switched on Source & HT – OK
- Fitted helium, nitrogen and Oxygen gases. Leak check - OK
- Set up PC – Established comms to instruments. - OK.
- Readbacks all OK. Valves all respond - OK.
- Helium flows set. 10ml/min for Ref Gas carrier flow - OK
- Set emag position & tuned on N2 and O2 ref gas. All OK.

Ran N2 & O2 ref gas tests in continuous flow mode (Ref gas pulses).
All Peak shapes – OK
All Stabilities - OK
N2 Precision = 0.019‰ S.D
N2 Linearity = 0.073‰ S.D
17O2 Precision = 0.053‰ S.D
18O2 Precision = 0.005‰ S.D

- Set up Geo Dual inlet.
- Software -OK
- All readbacks respond – OK
- Customers bespoke transducers readback but not calibrated.
- Calibrate Honeywell transducer - OK
- System pumps down OK initially but small leak found at pentablock junction with capillaries on Ref side.
- Attempt to fix but screw connection shears off. Part damaged beyond repair.
- New Pentablock sent out from Sercon. Strip down old Pentablock for actuation valves and rebuild.
- Matching issue with new part. Have to remake link tube to bellows, remake OK. However customers bespoke pressure transducer (ref side) can no longer be fitted. Cold finger fitted for now.
- Leaks across most valves present. Add additional spring/O-ring to all valves. Now all OK except valve RI
- Remove and replace diaphragm & gold O-ring. Still leaks across.
- Take parts from original pentablock to repair. Suspect damage on holding block on new pentablock.
- New rebuild fixes leak.
- Leak present on Ref side capillary line. Replaced capillary for new. All OK.

sercon
innovators in isotopes

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

11 – Installation Report

Client:	Alfred Wegener Institut		
Quotation Number:	12485	Date:	29/04/2020
Job Number:	IN1239	Date:	07/08/2020

Ran tests on Geo Dual inlet

O2 ref gas 2/1 & 3/1 Peak shapes - OK
O2 2/1 & 3/1 Stability – OK

17O Precision (100mBar)COV locked [Ref side only] =0.005‰ S.D
18O Precision (100mBar)COV locked [Ref side only] =0.003 ‰ S.D

18O Precision(100mBar) COV locked [Sample side only] = 0.005‰ S.D
17O Precision(100mBar) COV locked [Sample side only] = 0.007‰ S.D

17O Precision (100mBar)COV active =0.022 ‰ S.D
18O Precision(100mBar) COV active = 0.002‰ S.D
17O Precision(40mBar) COV active = 0.160‰ S.D
18O Precision(40mBar) COV active = 0.046‰ S.D

- Set up CryoPrep & CETAC autosampler on push table.
- Their instruments have yet to have a determined project.
- Checked Comms – All OK
- Readbacks - All OK
- CETAC arm moves & injects – OK
- GC oven on CryoFLex heats up – OK
- No furnace attached (non delivered)
- Cannot fit air to check pneumatic valves.
- Cannot attach helium to check flows.
- Advise remote set up when their roles are decided.
- Printer not delivered
- Micro combustion stage not delivered

Recommendations:

Advise remote set up of CryoFlex & CETAC when their roles are decided.

Faults and Shortages:

Ref Side Pentablock damaged during install – Part replaced by Sercon. Part received and fitted by D Harris.

Follow up:

Customer is designing bespoke software in conjunction with their laser instrumentation. Transfer of coding values and other settings to be coordinated with Andrew Park.

Engineer: DAVID HARRIS Date: 04 Dec 2020

Signed:

sercon
innovators in isotopes

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

11 – Installation Report

Client:	Alfred Wegener Institut		
Quotation Number:	12485	Date:	29/04/2020
Job Number:	IN1239	Date:	07/08/2020

Annex to the Installation Report of a Sercon 20-22 IRMS plus Dual Inlet and CryoFlex Option

Dave Harris (Sercon), Hanno Meyer, Andreas Marent (AWI)

1. Micro combustion stage of the CryoFlex option has not been delivered
2. A printer has not been delivered
3. As shown during installation, the Penta block in the Dual Inlet is critical for shearing of the small connection thread for the capillary and is requested by the AWI to be part of the spare kit.
4. The solution found for the additional pressure transducers is not tot he satisfaction of the customer (see details below)
5. The interface to Labview does not allow to read/set the following parameters correctly: Inlet Pressure, EV, Focus and EMagnet. Sercon will help AWI to solve this problem.

Connection of the pressure gauges to the bellows

We ordered two additional pressure gauges to measure the pressure in each of the bellows. Sercon has mounted two pressure gauges between the valves SV/SM and RM/RV, respectively. On the sample side, the connection of the cold-finger was used for that. The implemented solution has some disadvantage:

- There is no possibility to use the Nupro-connection at valve "RI" on the reference side, as the installed pressure gauge blocks the Nupro-plug. With the currently installed Penta block the pressure gauge can not be mounted



- On the sample-side there is a 90°-elbow tube fitting on the port of the valve "SI". After the elbow there is a connection tube to the pressure transducer. This solution is better than on the reference side, as the connection of the inlet is possible without dismounting the pressure gauge. Nevertheless, there is a lot of volume in the tubes and elbows.





Changes required:

- A solution for the reference side to mount the pressure gauge by keeping access to the port on valve "RI" without dismounting the pressure gauge.
- A better solution on the sample side, so that the dead-volume is reduced and there is still access to the port on valve "SI" without dismounting the pressure gauge

sercon
innovators in isotopes

12485
IN1239

Order Acknowledgement

Order Date	11/08/2020
Order Ref.	12485
Cust. Ref.	12/0045135048
Account Ref.	ALF001

Invoice address
Alfred Wegener Institut (GBP)
Für Polar-und Meeresforschung
Geschäftszimmer/Gebäude E
Am Handelshafen 12
27570 Bremerhaven
Germany

VAT No. 114707273

Delivery address
Alfred Wegener Institut
Zentr. f . Polar- u. Meeresforschung
Hanno Meyer /Lutz Schonicke
Building A45, Room 022
Telegrafenburg A 45
14473 Potsdam, Germany

Contact:
Tel: 471 4831 0

Quantity Ordered	Product Code	Product Description	Unit Price £	Net Price £
		GEO HS20-22		
1	21802/3	GEO HS2022 + E-Mag + Hd Dual inlet and continuous flow IRMS system for light isotopes m/z 2 to 66 amu. Includes high sensitivity source, electromagnet and HD collector. Vacuum system inlcuding turbo and rotary pumps Automatic dual inlet module with sample and reference bellows, pressure transducer and changeover valve GEO HS2022 start up consumables kit includes tubing, gold rings, kel-f seat, inlet diaphram, disc spring and screws Windows based data system and printer. Modified with bellows transducers	97,000.00	97,000.00
1	70301-3E	Comprehensive GEO 20-22 spares kit for 5 years operation	10,000.00	10,000.00
1	WARR2	2 year warranty	0.00	0.00
1	INST	Installation and start up training at Customer's site	9,750.00	9,750.00
1	CIP	Estimated CIP - Destination Airport	1,500.00	1,500.00
		Service Contract		
1	SCONTRACT	Maintenance Service Contract - 2 years Contract to consist of 1visit of 5 days on-site per annum	13,000.00	13,000.00

Total Net Amount	£	131,250.00
Total VAT Amount	£	0.00
Order Total	£	131,250.00

sercon

Sercon Limited
Unit 3B Crewe Trade Park
Gateway, Crewe
CW1 6JT U.K.
Company Registration No.: 4290072

Phone: +44 (0) 1270 580008
Fax: +44 (0) 1270 252310
sales@sercongroup.com
www.sercongroup.com
VAT No.: GB 771 1100 74

COMMERCIAL INVOICE

Date: 13/11/2020

Customer Reference: 12/0045135048

Shipper / Exporter:

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

Contact: Joanne O'Connor
Tel: +44 (0) 1270 580008
Invoice Reference: 12485 IN1239

Delivery Address:

Alfred Wegener Institut
Zentr. f . Polar- u. Meeresforschung
Hanno Meyer +49-331-288-2115 / Lutz Sc
Building A45, Room 022
Telegrafenburg A 45
14473 Potsdam, Germany

Contact Name: Andreas Marent
Cust Tel Number: +49-331-288-20130

Country of Export: UK
Country of Manufacture: UK
Country of Destination: DE Germany

Shipping Marks /

6 BOXES

UK Commodity Code: 90273000

Quantity	Product Code	Product Description	Amount £
		GEO HS20-22	
1	21802/3	GEO HS2022 + E-Mag + Hd Modified with bellows transducers	97,000.00
1	70301-3E	Comprehensive GEO 20-22 spares kit	10,000.00
1	WARR2	2 year warranty	0.00
1	INST	Installation and start up training at Customer's site	9,750.00
1	CIP	Estimated CIP - Destination Airport	1,500.00
		Service Contract	
1	SCONTRACT	Maintenance Service Contract - 2 years Contract to consist of 1visit of 5 days on-site per annum	13,000.00

None of the goods contained in this consignment are restricted by IATA or shipping regulations

Total Invoice Value: **£ 131,250.00**

Signed ..... J O'Connor .....

Sercon Limited
Unit 3B Crewe Trade Park
Gateway, Crewe
CW1 6JT U.K.
Company Registration No.: 4290072

Phone: +44 (0) 1270 580008
Fax: +44 (0) 1270 252310

www.sercongroup.com
VAT No.: 771 1100 74

COMMERCIAL INVOICE

Date: 12/11/2020

Customer Reference: 12/ 0045135377

Shipper / Exporter:

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

Contact: Joanne O'Connor
Tel: +44 (0) 1270 580008
Invoice Reference: 14563 IN1239

Delivery Address:

Alfred Wegener Institut
Zentr. f . Polar- u. Meeresforschung
Hanno Meyer +49-331-288-2115 / Lutz Sc
Building A45, Room 022
Telegrafenburg A 45
14473 Potsdam, Germany

Contact Name: Andreas Marent
Cust Tel Number: +49-331-288-20130

Country of Export: UK
Country of Manufacture: UK
Country of Destination: DE Germany

Shipping Marks /

6 Boxes

UK Commodity Code: 90273000

Quantity	Product Code	Product Description	Amount £
		CryoFlex System for LAIRMS	
1	10802/8	CryoFlex (LA) - Modified for bespoke sample introduction	42,400.00
1	71001-1	Cryoprep Spares Kit	1,600.00
1	WARR2	2 year warranty	0.00

None of the goods contained in this consignment are restricted by IATA or shipping regulations

Total Invoice Value: £ 44,000.00

Signed ..... J. O'Connor .....

Sercon Limited
Unit 3B Crewe Trade Park
Gateway, Crewe
CW1 6JT U.K.
Company Registration No.: 4290072

Phone: +44 (0) 1270 580008
Fax: +44 (0) 1270 252310

www.sercongroup.com
VAT No.: 771 1100 74

sercon
innovators in isotopes

14563
IN1239

Order Acknowledgement

Order Date	20/08/2020
Order Ref.	14563
Cust. Ref.	12/ 0045135377
Account Ref.	ALF001

Invoice address

Alfred Wegener Institut (GBP)
Für Polar-und Meeresforschung
Geschäftszimmer/Gebäude E
Am Handelshafen 12
27570 Bremerhaven

VAT No. 114707273

Delivery address

Alfred Wegener Institut
Zentr. f . Polar- u. Meeresforschung
Hanno Meyer /Lutz Schonicke
Building A45, Room 022
Telegrafenburg A 45
14473 Potsdam, Germany

Contact:
Tel: 471 4831 0

Quantity Ordered	Product Code	Product Description	Unit Price £	Net Price £
		CryoFlex System for LAIRMS		
1	10802/8	CryoFlex (LA) - Modified for bespoke sample introduction Trace gas analyser optimised for connection to peripherals which require a cryogenic focussing module. Includes liquid nitrogen based trapping system, gas chromatography and a micro-combustion stage. Includes XYZ Gas Autosampler.	42,400.00	42,400.00
1	71001-1	Cryoprep Spares Kit	1,600.00	1,600.00
1	WARR2	2 year warranty	0.00	0.00

Total Net Amount	£	44,000.00
Total VAT Amount	£	0.00
Order Total	£	44,000.00

sercon

Sercon Limited
Unit 3B Crewe Trade Park
Gateway, Crewe
CW1 6JT U.K.
Company Registration No.: 4290072

Phone: +44 (0) 1270 580008
Fax: +44 (0) 1270 252310
sales@sercongroup.com
www.sercongroup.com
VAT No.: GB 771 1100 74

sercon
innovators in isotopes

Packing List

Customer Reference: 12/0045135048
12/0045135377

Shipper / Exporter:

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

Tel: +44 (0)1270 580008
Reference: IN1166_11373 & IN1171

Consignee:

Alfred Wegener Institut
Zentr. f . Polar- u. Meeresforschung
Hanno Meyer /Lutz Schonicke
Building A45, Room 022
Telegrafenburg A 45
14473 Potsdam, Germany

Contact Name: Hanno Meyer /Lutz Schonicke
Contact Tel Number: +49-331-288-2115

BOX: 3

Quantity	Product Code	Product Description	Serial Number: *if available*
☑ 1		CRYOFLEX (LA)	10802/8-2020/1239
☑ 1		PC MONITOR	DN2T7QZ
☑ 1	SI1765	AUTOSAMPLER BASE	
☑ 1	SI1390 SI0967	FRAME + 16MM BOTTLE RACK SHELF SET	
☑ 1	70201-1	ANALYSER SPARES KIT	

Packed by: P. Mayo
Date: 12/11/20

Claims for damage or shortages must be made within 3 days

Sercon Limited
Unit 3B Crewe Trade Park
Gateway, Crewe
CW1 6JT U.K.
Company Registration No.: 4290072

Phone: +44 (0) 1270 580008
Fax: +44 (0) 1270 252310
sales@sercongroup.com
www.sercongroup.com
VAT No.: 771 1100 74

sercon
innovators in isotopes

Packing List

Customer Reference: 12/0045135048

Shipper / Exporter:

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

Tel: +44 (0)1270 580008
Reference: IN1166_11373 & IN1171

Consignee:

Alfred Wegener Institut
Zentr. f . Polar- u. Meeresforschung
Hanno Meyer /Lutz Schonicke
Building A45, Room 022
Telegrafenburg A 45
14473 Potsdam, Germany

Contact Name: Hanno Meyer /Lutz Schonicke
Contact Tel Number: +49-331-288-2115

BOX: 2

Quantity	Product Code	Product Description	Serial Number: *if available*
☑ 1		GEO HS2022+HD+EMAG	20402/8-2020/1239

Packed by: P. Hayes

Date: 12/11/20

Claims for damage or shortages must be made within 3 days

Sercon Limited
Unit 3B Crewe Trade Park
Gateway, Crewe
CW1 6JT U.K.
Company Registration No.: 4290072

Phone: +44 (0) 1270 580008
Fax: +44 (0) 1270 252310
sales@sercongroup.com
www.sercongroup.com
VAT No.: 771 1100 74

sercon
innovators in isotopes

Packing List

Customer Reference: 12/0045135048

Shipper / Exporter:

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

Tel: +44 (0)1270 580008
Reference: IN1166_11373 & IN1171

Consignee:

Alfred Wegener Institut
Zentr. f . Polar- u. Meeresforschung
Hanno Meyer /Lutz Schonicke
Building A45, Room 022
Telegrafenburg A 45
14473 Potsdam, Germany

Contact Name: Hanno Meyer /Lutz Schonicke
Contact Tel Number: +49-331-288-2115

BOX: 1

Quantity	Product Code	Product Description	Serial Number: *if available*
☑ 1		GEO INLET	21802/3-2020/1239

Packed by: P. Mayeo

Date: 12/11/20

Claims for damage or shortages must be made within 3 days

Sercon Limited
Unit 3B Crewe Trade Park
Gateway, Crewe
CW1 6JT U.K.
Company Registration No.: 4290072

Phone: +44 (0) 1270 580008
Fax: +44 (0) 1270 252310
sales@sercongroup.com
www.sercongroup.com
VAT No.: 771 1100 74

sercon
innovators in isotopes

Packing List

Customer Reference: 12/0045135048

Shipper / Exporter:

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

Tel: +44 (0)1270 580008
Reference: IN1166_11373 & IN1171

Consignee:

Alfred Wegener Institut
Zentr. f . Polar- u. Meeresforschung
Hanno Meyer /Lutz Schonicke
Building A45, Room 022
Telegrafenburg A 45
14473 Potsdam, Germany

Contact Name: Hanno Meyer /Lutz Schonicke
Contact Tel Number: +49-331-288-2115

BOX: 5

Quantity	Product Code	Product Description	Serial Number: *if available*
☑ 1	SI1718	CETAC	032013A7400HR

Packed by: P. Hayes

Date: 12/11/20

Claims for damage or shortages must be made within 3 days

Sercon Limited
Unit 3B Crewe Trade Park
Gateway, Crewe
CW1 6JT U.K.
Company Registration No.: 4290072

Phone: +44 (0) 1270 580008
Fax: +44 (0) 1270 252310
sales@sercongroup.com
www.sercongroup.com
VAT No.: 771 1100 74

sercon
innovators in isotopes

Packing List

Customer Reference: 12/0045135048

Shipper / Exporter:

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

Tel: +44 (0)1270 580008
Reference: IN1166_11373 & IN1171

Consignee:

Alfred Wegener Institut
Zentr. f . Polar- u. Meeresforschung
Hanno Meyer /Lutz Schonicke
Building A45, Room 022
Telegrafenburg A 45
14473 Potsdam, Germany

Contact Name: Hanno Meyer /Lutz Schonicke
Contact Tel Number: +49-331-288-2115

BOX: 4

Quantity	Product Code	Product Description	Serial Number: *if available*
☑ 1	SI0103	SMALL ROTARY INLET	200437192
☑ 1	SI0106	BIG ROTARY INLET	200424585
☑ 1	SI0103	SMALL ROTARY HS2022	190657531
☑ 1	SI0685	MAGNET (EMAG) WITH FEET	119
☑ 1	SI0219	DEWER	
☑ 1	SI0155	PC	BPRMBX2
☑ 1		SOFTWARE	
☑ 1		BACK UP	
☑ 1	70301-3E	GEO SPARES KIT (5 YEARS)	
☑ 7	SI2523	EURO MAINS LEADS	
☑ 4	SI2512	UK MAINS LEADS	
☑		CONNECTION TUBES/PIPES (PACKED BY DH)	

Packed by: P Mayer
Date: 12/11/20

Claims for damage or shortages must be made within 3 days

Sercon Limited
Unit 3B Crewe Trade Park
Gateway, Crewe
CW1 6JT U.K.
Company Registration No.: 4290072

Phone: +44 (0) 1270 580008
Fax: +44 (0) 1270 252310
sales@sercongroup.com
www.sercongroup.com
VAT No.: 771 1100 74

12485

Quotation

To: Alfred Wegener Institut (GBP)
Für Polar-und Meeresforschung
Geschäftszimmer/Gebäude E
Am Handelshafen 12
27570 Bremerhaven

VAT Reg No: DE 114707273

Quotation Date:	29/04/2020
Quotation Reference:	12485
Customer Ref:	Hanno Meyer
Account Ref.	ALF001
Quotation Validity:	29/09/2020

Quantity	Product Code	Product Description	Unit Price £	Net Price £
		GEO HS20-22		
1	21802/3	GEO HS2022 + E-Mag + Hd Dual inlet and continuous flow IRMS system for light isotopes m/z 2 to 66 amu. Includes high sensitivity source, electromagnet and HD collector. Vacuum system inlcuding turbo and rotary pumps Automatic dual inlet module with sample and reference bellows, pressure transducer and changeover valve GEO HS2022 start up consumables kit includes tubing, gold rings, kel-f seat, inlet diaphram, disc spring and screws Windows based data system and printer. Modified with bellows transducers	97,000.00	97,000.00
1	70301-3E	Comprehensive GEO 20-22 spares kit for 5 years operation	10,000.00	10,000.00
1	WARR2	2 year warranty		
1	INST	Installation and start up training at Customer's site	9,750.00	9,750.00
1	CIP	Estimated CIP - Destination Airport	1,500.00	1,500.00
		Service Contract		
1	SCONTRACT	Maintenance Service Contract - 2 years Contract to consist of 1visit of 5 days on-site per annum	13,000.00	13,000.00
		OPTION		
		Cryoflex System for LAIRMS		

12485

Quotation

To: Alfred Wegener Institut (GBP)
Für Polar-und Meeresforschung
Geschäftszimmer/Gebäude E
Am Handelshafen 12
27570 Bremerhaven

VAT Reg No: DE 114707273

Quotation Date:	29/04/2020
Quotation Reference:	12485
Customer Ref:	Hanno Meyer
Account Ref.	ALF001
Quotation Validity:	29/09/2020

Quantity	Product Code	Product Description	Unit Price £	Net Price £
1	10802/8	CryoFlex (LA) - Modified for bespoke sample introduction Trace gas analyser optimised for connection to peripherals which require a cryogenic focussing module. Includes liquid nitrogen based trapping system, gas chromatography and a micro-combustion stage. Includes XYZ Gas Autosampler.	42,400.00	42,400.00
1	71001-1	Cryoprep Spares Kit	1,600.00	1,600.00
1	WARR2	2 year warranty		

This quotation is issued in **Pound Sterling**

Total Net Amount	£	175,250.00
Total VAT Amount	£	0.00
Order Total	£	175,250.00

*** The price quoted does not include any local taxes or duties**
See separate document for terms and conditions

Delivery: within 90 days of receipt of order

Payment Details:-
100% on Delivery
Payment is required within 30 DAYS of invoice date by bank transfer.
All bank transfer charges are the responsibility of the customer.
Intra-community supply, subject to VAT in the country of acquisition.

Sercon Bank Details:-
National Westminster Bank, 36 High Street,
Nantwich, Cheshire CW5 5GA U.K.

IBAN: GB74NWBK54101736755133
SWIFT/BIC: NWBKGB2LXXX

Sercon Limited
Unit 3B Crewe Trade Park
Gateway, Crewe
CW1 6JT U.K.
Company Registration No.: 4290072

Phone: +44 (0) 1270 580008
Fax: +44 (0) 1270 252310

www.sercongroup.com
VAT No.: 771 1100 74

ALFRED-WEGENER-INSTITUT
HELMHOLTZ-ZENTRUM FÜR POLAR- UND MEERESFORSCHUNG

Alfred-Wegener-Institut, Telegrafenberg A45, 14473 Potsdam

Sercon Limited
Unit 3B Crewe Trade Park
Gateway, Crewe

CW1 6JT U.K.

Prof. Dr. Bernhard Diekmann

Head of AWI Potsdam
Telegrafenberg A45
14473 Potsdam
+49-(0)331-288-2100
Bernhard.Diekmann@awi.de

Alfred-Wegener-Institut
Helmholtz-Zentrum für
Polar- und Meeresforschung

POTSDAM

Telegrafenberg A45
14473 Potsdam
Telefon 0331 288-2100
Telefax 0331 288-2137
www.awi.de

Stiftung des öffentlichen Rechts

Sitz der Stiftung:
Am Handelshafen 12
27570 Bremerhaven
Telefon 0471 4831-0
Telefax 0471 4831-1149
www.awi.de

Vorsitzender des Kuratoriums:
MinDir Volker Rieke
Direktorium:
Prof. Dr. Antje Boetius
(Direktorin)
Dr. Karsten Wurr
(Verwaltungsdirektor)
Dr. Uwe Nixdorf
(Stellvertretender Direktor)
Prof. Dr. Karen H. Wiltshire
(Stellvertretende Direktorin)

Bankverbindung:
Commerzbank AG,
Bremerhaven
BIC COBADEFFXXX
IBAN DE12292400240349192500
UST-Id-Nr. DE 114707273

Potsdam, November 23, 2020

Business travel for a Sercon engineer in Covid-19 times

To whom it may concern,

The Sercon engineer, who carries this letter, is on his way to the Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research in Potsdam for an absolutely necessary business issue, which concerns the installation of a Sercon mass spectrometer plus periphery, starting on November 30, 2020.

This installation date has been agreed on in summer 2020. This instrument is urgently needed for a scientific project dedicated to climate studies in Arctic lakes, which is running out in 2021. Therefore, a timely installation is mandatory for the scientific success of the project and hence a delay takes at risk the reputation of the Alfred Wegener Institute. Moreover, the substantial funds granted for this investment are not transferable to the next year and therefore the installation date can not be postponed.

We therefore refer to an exception to § 1 paragraph 1 sentence 1 of the state of Brandenburg Corona regulations. It applies in case of compliance with appropriate protection and hygiene concepts for people who are absolutely necessary, professionally motivated, including the cases of installation and training for professional purposes. The isolation according to § 1 paragraph 1 sentence 1 is suspended for the period required to carry out a test.

Sincerely



Prof. Dr. Bernhard Diekmann

HELMHOLTZ

ALFRED-WEGENER-INSTITUT
HELMHOLTZ-ZENTRUM FÜR POLAR- UND MEERESFORSCHUNG

Alfred-Wegener-Institut, Telegrafenberg A45, 14473 Potsdam

Sercon Limited
Unit 3B Crewe Trade Park
Gateway, Crewe

CW1 6JT U.K.

Prof. Dr. Bernhard Diekmann

Forschungsstellenleiter
AWI Potsdam
Telegrafenberg A45
14473 Potsdam
+49-(0)331-288-2100
Bernhard.Diekmann@awi.de

Alfred-Wegener-Institut
Helmholtz-Zentrum für
Polar- und Meeresforschung
POTSDAM

Telegrafenberg A45
14473 Potsdam
Telefon 0331 288-2100
Telefax 0331 288-2137
www.awi.de

Stiftung des öffentlichen Rechts

Sitz der Stiftung:
Am Handelshafen 12
27570 Bremerhaven
Telefon 0471 4831-0
Telefax 0471 4831-1149
www.awi.de

Vorsitzender des Kuratoriums:
MinDir Volker Rieke
Direktorium:
Prof. Dr. Antje Boetius
(Direktorin)
Dr. Karsten Wurr
(Verwaltungsdirektor)
Dr. Uwe Nixdorf
(Stellvertretender Direktor)
Prof. Dr. Karen H. Wiltshire
(Stellvertretende Direktorin)

Bankverbindung:
Commerzbank AG,
Bremerhaven
BIC COBADEFFXXX
IBAN DE12292400240349192500
UST-Id-Nr. DE 114707273

Potsdam, 23. November 2020

Geschäftsreise eines Ingenieurs der Firma Sercon Ltd. in Covid-19-Zeiten

Sehr geehrte Damen und Herren,

Der Sercon-Ingenieur, der diesen Brief bei sich trägt, reist zum Helmholtz-Zentrum für Polar- und Meeresforschung des Alfred-Wegener-Instituts in Potsdam, um ein unbedingt notwendiges und unaufschiebbares geschäftliches Anliegen durchzuführen, in diesem Falle die Installation eines Sercon-20-22 Massenspektrometers plus Peripherie ab dem 30. November 2020.

Dieser Installationstermin wurde bereits im Sommer 2020 vereinbart. Das zu installierende Instrument wird dringend für ein wissenschaftliches Projekt benötigt, das sich mit Klimastudien in arktischen Seen befasst und das 2021 ausläuft. Daher ist eine sofortige Installation für den wissenschaftlichen Erfolg des Projekts zwingend. Bei Nichtdurchführung wäre der wissenschaftliche Ruf des Alfred-Wegener-Instituts gefährdet. Darüber hinaus sind die für diese Investition gewährten substantiellen finanziellen Mittel nicht ins nächste Jahr übertragbar, weshalb der Installationstermin nicht verschoben werden kann.

Wir verweisen daher auf eine Ausnahme von § 1 Abs. 1 Satz 1 der brandenburgischen Corona-Verordnung im Falle der Einhaltung geeigneter Schutz- und Hygienekonzepte für Personen, die absolut notwendig, beruflich motiviert, inkl. Installation und Schulung für berufliche Zwecke. Die Isolierung nach § 1 Abs. 1 Satz 1 soll für die zur Durchführung einer Prüfung erforderliche Frist ausgesetzt werden.

Mit freundlichen Grüßen



Prof. Dr. Bernhard Diekmann

HELMHOLTZ

SurveyMethods
ASK. ANALYZE. IMPROVE.

Analyze Survey Results - Individual Results

Survey: Sercon Limited Customer Survey

Respondent Information	
Respondent Type:	Accessed Survey On Web
Email:	No Email Available
Response Status:	Completed FULL Survey
Began Survey On:	09/24/2021
Time Began:	08:39:23 AM
Time Spent:	00:11:12 (HH:MM:SS)
Points:	No Points Questions used in this survey.

Custom Fields

1. Based on your most recent interaction with Sercon please describe the level of service you received.

Below Average

Additional Comments: Good start, weaker when problems arise.

2. In thinking about your overall satisfaction with the service that you received, on a scale of 1-10 (1 being Extremely Dissatisfied and 10 being Extremely Satisfied), please rate your overall satisfaction based of the following criterion:

	1	2	3	4	5	6	7	8	9	10
Product Knowledge:								✓		
Solving the Problem:		✓								
Overall Service Process:		✓								
Responsive to Questions:						✓				
Satisfaction with Engineer:					✓					
Quality of Service Visit:								✓		

3. How likely are you to recommend Sercon to your friends and colleagues?

	1	2	3	4	5	6	7	8	9	10
1 being Extremeley Unlikely and 10 being Extremeley Likely:			✓							

4. How satisfied are you with the speed and quality or our responses to any contact you make via email or telephone?

The answers per email and phone are fast, but the solutions take months.

5. Were you happy with the response given?

Not always.

6. How easy was it for you to organise the visit and resolve any issues?

Difficult due to Covid-19, but it worked out. The engineer did what he could during the visit and faced problems that were doicumented in a protocol. Since then, the solution of the problems took way too long

**7. Please give a brief description of the type of visit that you received, for example:
Was it a service visit, if there was a fault with your instrument was this fault resolved?
Was the visit to install a new instrument, did the installation provide the training and support you required?**

The installation of a new instrument was done properly including a sufficient training, but the issues with the device remains unsolved for almost a year now.

8. Please provide any additional information about the service that you received or anything that we could have done to improve the service that you received.

Either provide a functional device since the beginning or solve the problems related to it asap.

9. Any additional comments or issues you would like to raise:

Yes, Sercon has been selected because of the good communication and the openness to share source codes to implement the IRMS into a custom-made software. Since the installation, all required steps take way too long and this makes it impossible to place the next order with Sercon, unfortunately.

10. Please provide your contact details below:

First Name: Hanno
Last Name: Meyer
Company Name: AWI Potsdam
Country: Germany
Email Address: hanno.meyer@awi.de