Client	Vandagraph	
Project	Oxygen Analyser	www.smallfry.com

VANDAGRAPH - Oxygen Analyser

Background

Vandagraph have developed a new, easy-to-use and accurate Oxygen Analyser to replace their VN202 model. The New Model can be offered directly up to the end of the diving cylinder's outlet valve, as opposed to being attached to it via a DIN kit, as with the VN202. This makes the whole process far quicker but without losing accuracy. Also Vandagaph would like to wall mount the Analyser, so that it can test multiple cylinders.

When testing multiple cylinders the analyser will need to be wall mounted in some way.

The unit will be used in wet and salty conditions that are associated with driving. As such it will want to be water resistant.

All components are "off the shelf" to reduce costs and has a target retail price of $99 in the US, £99.50 in the UK. The new Analyser exists as a working prototype and a CAD image.

Objective

Take the design in its existing form and developed 3D CAD data for production tooling.

Work Programme	Smallfry Design Budget	Estimated Man days	Target Completion Date
Oxygen Analyser - Design Evaluation - Source component details - Design Development - 3D CAD files > Review	£10,000	20 man days	

We would recommend that a rapid prototype is produce to fully evaluate the new design before sending CAD data for tooling and that is should be budgeted for. We estimate that this will cost about £500/£800

Notes

Project time scales are estimated in good faith dependent on convening the appropriate meetings and prompt decision making. If the project demands, the time scales shown can often be shortened by increasing the resources used.

This work will be subject to our current Terms of Business (January 2003) a copy of which is attached. All fees are subject to VAT at the current rate. Payment shall be made within 30 days of the date of each invoice.

Oxygen Analyser Time Schedule

Work Programme	Smallfry Design Budget	Estimated Stage Duration
Stage 1 : Set Up & Produce 1st off CAD **Project Set Up** Design Evaluation 3D model components **Produce 1st off CAD** - External form. - Component layout > Vandagraph CAD review (possibly via email / web meeting) **Deliver** – Cad visuals of Analyser showing External from and component layout.	£3,500	2 weeks
Stage 2 : Design Detail for manufacture - Implement feed back from review - Design detail plastic components for manufacture - Address sealing, battery access and wall mounting issues - Component mounting. - Review of CAD data. Note: This would be an ideal time to arrange for a rapid prototype for full evaluation of the CAD data. **Deliver** – Final CAD design for approval.	£6,500	4 weeks
Total budget	**£ 10,000** plus on-going design support as required	

We also offer on-going Design Support
- Prototype assessment
- On-going design troubleshooting
- Arrange for tooling and unit cost quotations.

Project time scales are estimated in good faith dependent on the timely receipt of information, convening the appropriate meeting and prompt decision making.

Smallfry can commence work on receipt of a purchase order, or written confirmation of intent to proceed, for the first stage.

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QUOTATION

Customer
Smallfry Industrial Design
School Street, Wolston
Coventry
CV8 3HG
UK
Att.: Steve May-Russell

LM projects aps
Vedelsgade 7, Plan 2
DK-4180 Sorø
Tel. +45 7020 5032
Fax.+45 7020 5932
info@lmprojects.dk

Quotation no. 060814/2

Material	Drawing no.	Description	Qty.	USD	Delivery time
		Bottom_cover			
		1-cavity injection mould	1	4800	5 weeks
ABS, black		Part price (etched surface)	1	0,247	FOB
		Front_cover_4			
		1-cavity injection mould	1	6250	5 weeks
ABS, black		Part price (etched surface)	1	0,213	FOB
		Internal_chaises_4			
		1-cavity injection mould	1	7250	5 weeks
ABS, black		Part price (etched surface)	1	0,393	FOB
		PC_Lens			
		2-cavity injection mould	1	1350	5 weeks
PC, clear		Part price (polished surface)	1	0,143	FOB
		Shell_left_3 + Shell_right_3			
		1+1-cavity injection mould	1	6050	5 weeks
		Part price (polished surface) per set	1	0,281	FOB

Part prices are for MOQ 1000 pcs

Based on: Drawings received by e-mail

Valid until: 30-09-2006

Delivery terms: FOB Taichung (Taiwan)

Payment terms: Moulds: 50% on order, 50% on approval of parts
Parts: 14 days net

Jesper Kolind Lassen

Client	Vandagraph	
Project	Oxygen Analyser	www.smallfry.com

VANDAGRAPH - Oxygen Analyser Prototype

Work Programme	Smallfry Design Budget	Estimated Man days
Oxygen Analyser - SLA Rapid prototype - Finishing and assembly - Tool for prototype seals - Seals **> Review Meeting**	x1 off £685 x2 off £880 £200 3 @ £12 each	1-2 weeks
	Total for 1 Prototype = **£921** **Total** for 2 Prototype = **£1152**	

Notes

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Client	Vandagraph	
Project	Oxygen Analyser	www.smallfry.com

VANDAGRAPH – Oxygen Analyser CAD modification and Prototype

Work Programme	Smallfry Design Budget	Estimated Stage Duration
CAD Design modifications - Add more clearance around PCB - Extend body by 10mm - Remove valve in base - Make room for nut on sensor connection jack.	1,250	1 week
Oxygen Analyser Prototype - SLA Rapid prototype - Finishing and assembly - Tool for prototype seals - Seals	£890	1-2 weeks
Oxygen Analyser Prototype (optional) - Finishing, priming and spraying. colour and finish TBC	£500	

Notes

Project time scales are estimated in good faith dependent on convening the appropriate meetings and prompt decision making. If the project demands, the time scales shown can often be shortened by increasing the resources used.

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Subject : Fw: Oxygen analyser - Update
Date : Mon, 18 Dec 2006 12:35:00 +0000
Linked to : Daniel Bartram
From : "Daniel Bartram" <daniel@smallfry.com> (By way of catchall@viamed.co.uk)
To : JSLAMB (John Lamb) <GoldMine User>

Hi John,
I've received an update quotation for the Oxygen Analyser the other day, I would of sent it though sooner be I've been of sick.

I supplied them with samples of all the components you supplied me with inclueding the PCB and cable samples. He does ask a few questions so I've attached the emial blow.

I have told them that you are keen to place the order asap.

Many thanks,

Daniel.
----- Original Message -----
From: Henrik Madsen
To: Daniel Bartram
Cc: steve@smallfry.com
Sent: Tuesday, December 12, 2006 2:11 PM
Subject: RE: Oxygen analyser - Update

Dear Daniel

Regarding the quotation for the PCB w/ components and potentiometer the quotation is still valid, if there have been no changes to the component list.

The last price I gave you was 31.50 USD.

Now I can offer you a more complete price of 37.25 USD. This price includes:

- PCB with all components mounted
- LC-display
- Potentiometer w/ knob
- Switch w/sealing
- Cable-part of connectors (7 pole + 9 pole)

The wires and the cost of assembling the cable-harness is not included.

Will the customer be able to supply us with a complete prototype of the entire device? If not, some drawings or sketches showing the internal wiring would be very useful.

If you want us to supply the entire product, we also need to know if any other parts are needed except from this? I'm thinking about how to handle the logistics about the sensor? (I expect the customer wants to supply this??)

Are there any other components that need attention? Or maybe the customer just want's us to supply a subassembly without the sensor?

In order for us to understand the product completely and what the customer expects from us it might be a good idea for us to meet the customer and discuss these things with him directly, before we make the total quotation. I would be pleased to offer my presence at a meeting in the UK.

Would you consider this useful? If yes, when do you think such a meeting should take place?

Best Regards

Discussed Daniel 12/12/07

Should have been in original quotation

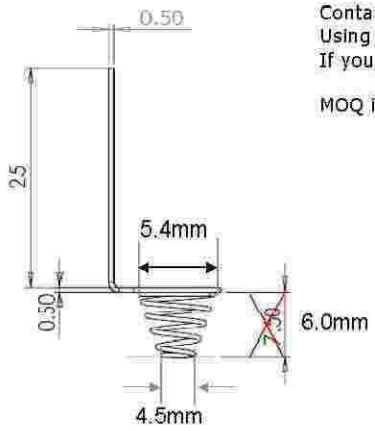
QUOTATION

LM projects aps
Vedelsgade 7, Plan 2
DK-1180 Sorø
Tel. +45 7020 5032
Fax.+45 7020 5932
info@lmprojects.dk

Customer
Smallfry Industrial Design
School Street, Wolston
Coventry
CV8 3HG
UK
Att.: Steve May-Russell

Quotation no. 071207/1 **Blue Ox spring parts**

Material	Drawing no.	Description	Qty.	USD	Delivery time
		Bottom cover stamping tool	1	1440	4 weeks
		Contact 1 stamping tool	1	1440	4 weeks
		Contact 2 stamping tool	1	1440	4 weeks
		Unit prices			
Bronze, nickel plated		Bottom cover	1	0,113	
Bronze, nickel plated Coil is stainless steel		Contact 1	1	0,203	
Bronze, nickel plated Coil is stainless steel		Contact 2	1	0,203	



Contact 1 and 2 will be with a standard coil and assembled with rivets
Using a standard coil means that dim 7.50 will change to 6.0 - hope this is OK?
If you want your own coil dimension the MOQ will be 20.000pcs

MOQ if you can use a standard coil is 1000pcs

needs spring and plate at each end

Black		M2x5 screw	need number used per enclosure 1	0,033	
Black		M2x10 screw	need number used per enclosure 1	0,053	

What happened to photo screw thread

Based on: Drawings received by e-mail

Valid until: 31-12-2007

Delivery terms: FOB Taichung (Taiwan)

Payment terms: Moulds: 50% on order, 50% on approval of parts
Parts: 14 days net

Jesper Kolind Lassen