Specification for "Non Oxygen Gases" Analyser required by Thermoseal

Further to a meeting between myself, Mark Hickox (Sales Director) and Nigel Merrick (Technical) of Thermoseal, the following points were made concerning the prototype pump boxes and gas analysers that I presented for discussion.

I demonstrated 2 versions: a Tek-Ox version that allows the Tek-Ox to plug in to the top of the pump box, and a VN202mkII version that allows the analyser to be fixed with Velcro to the pump box.

The initial comments were that the VN202mkII version would be the more appropriate version, as it is more portable. The Tek-Ox version, whilst convenient on a desktop, would not be so easy to use if they have to lift it to measure from a high position.

Further actions regarding the pump box

We need to implement, or at least investigate the viability of the following (**green** = done / **red** = to do):

1) Utilize rechargeable batteries, mounted internally with an external charging socket. This will remove the need for the user to open the unit.

For the first 20, we will use standard AA batteries, but rechargeable ones should be the ultimate aim.

2) Determine the battery life of the pumping box for the specification sheet. We can do this by calculation from the pump and battery specification, or by shorting the switch and timing how long it continues to operate.

Done. I downloaded the spec sheet for the pump (Thomas, p/n 20020215) and found the current draw is 90mA. Durcell Procell AA batteries are rated at 2700mAh and the pump uses 3 in series (connecting in series does not compound mAh ratings). The expected run-time is therefore:

2700 / 90 = **30 hours** (theoretical)

3) We need to implement longer tubing, ideally 60cm. The end user may wish to extend the tube further so we have been asked to perform tests to measure the sampling delay at different lengths, i.e. 1.2m, 90cm and 60cm.

Done: I performed a test with a 5m length of 2.4mm bore tubing and the response time from activating the pump to the reading beginning to rise was just 2.5s. This indicates that the flow rate is 2m/s, allowing calculations to be made for any length of tubing.

Note: all prices quoted in this document are ex VAT.

4) Need to move the button from the bottom to the left-hand side about 40cm from the top, in the centre vertically. This will allow the units to sit on a desktop without the button being in the way, and will still allow right or left handed use with either the thumb or index finger.

5) Button needs to be red or grey.

Done: Decided on grey for both the pumping box and the VN202mkII.

6) Fix a quiver/probe holder to the right hand side of the box to stow the probe when not in use.

SN suggested drilling a small hole in the top of the box and creating a channel using strips of self-adhesive foam under the equipment board inside the unit.

SN to develop this idea.

7) Label on pumping box with Thermoseal branding and a either a serial number of space to allow them to put their own s/n on. This label needs to be sited on the narrow side facing the user.

Done: We have opted to use the Thermoseal version of the VN202mkII back label. Thermoseal will create their own embossed instrument label containing part number and serial number, which they will affix to the base of the pump box.

8) Low Battery LED Indicator. This only needs to be active when the pump button is pressed, ideally a bi-colour or tri-colour indication of battery status but a simple light to indicate that the pump is running would suffice.

Decided to leave this for this version and work on it for next order.
Steve - John suggested the Microstim LED may work for this?

9) Rubber feet on bottom of pump box.

SN has samples and will order some.

10) Black, industrial Velcro to fix the VN202mkII to the pump box.

SN to order.

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11) Replace the internal Molex connector with a 3.5mm jack plug and use an R-17VAN instead of R-22.

SN to order.

12) Need to have 50 sampling chambers manufactured.

Done: SN has ordered from KSJ.

13) Need to order Luer Lok connectors. SN to look for a metal bulkhead Luer Lok, but a plastic one will suffice if that proves problematic.

SN to order.

14) Require a plastic equipment board insert.

SN to order from Pendle Signs.

Further actions regarding the VN202mkII

1) Thermoseal labelling. The device will need 3 labels:

Large front label – grey and red with the curved sweep as used on the front panel of the filler.

Small front label – Thermoseal logo and small % conversion table, in red, grey and blue.

Back label - Thermoseal contact details, logo, CE mark and any other symbols required by legislation. Ideally in red, grey and black.

Done: artwork approved by Thermoseal.

Quotation received from Renlim and passed to Jean. Scanned copy can also be found linked to Renlim in Goldmine.

Jean to order.

2) Display needs to be 'reversed' to display the absence of oxygen.

Done: advised William at Justec.

3) Display needs to show the Thermoseal logo at the top.

Done: advised William and provided an example of the logo.

4) Instrument display bezel needs to read "% NON-OXYGEN GASES".

Jean has ordered 50 instruments with this bezel.

5) Front button needs to be red (alternatively, grey).

Jean has sent 50+ buttons to William.

6) Replace yellow cable with black.

John suggested we may be able to supply a short version as a tidier option. JSL or SN to source.

Note: all prices quoted in this document are ex VAT.

7) Serial number labels. We will need to order a run using the same tooling as the current label but with a new part number.

Steve Nixon has provided the part number: **7910301**

I suggest we also dreat a bespoke run of serial numbers starting with a prefix to identify them as Thermoseal, ie: **TS0001**

Steve – please can you discuss with Jean and/or Renlim and get these ordered?

Further information for consideration

The cost needs to be below £250 for the VN202mkII and pump box combined.

John gave me costings for the prototype of approximately £90.00, which includes a £20.00 labour charge, no sensor. Based on this and to allow a margin, John estimated a distributor price of approximately £120.00.

The VN202mkII distributor price is £110.00, leaving £20.00 to get the pump box to the required spec and finish the unit.

John – please can you update your costings based on the design that Steve N finalises?

Thermoseal are willing to place an order for 20 units right away as they have already got some pre-orders. They have an immediate requirement for 10 units for their reps, subject to the price being under £250.00 complete.

They estimate the market in the UK alone to be in excess of 500 units, but are also making efforts in the US to promote their fillers, and see this instrument as an essential accessory.

They would like delivery of 20 units within 1 month if possible, with a target date of the first or second week in June. They are happy to take the first 10 when they are ready if that would be easier for Viamed, and have asked for confirmation as soon as possible as to whether we can meet that schedule.

I am away on leave until the first week in June; please can Steve Nixon further the project in my absence and have production started on the 20 pump boxes as soon as possible.

If you need to advise Thermoseal of the progress or any delays to meeting their requested delivery date, please contact Mark Hickox in the frist instance, or Nigel Merrick (see Goldmine for contact details).

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