Rapid turnkey design and development

- Carbon dioxide/anaesthetic gas monitoring meter
- Less than six months from initial brief to product launch
- Ruggedised design for industrial and demanding usage
- Casework designed to be sealed to IP55
- Resin cast prototypes used for marketing and pre-sales literature
- DCA produced injection moulding tools directly from 3D CAD data
- DCA moulded first six months production of casework components


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DCA was responsible for the visual, mechanical and ergonomic design of this handheld personal monitor and worked closely with our client, Geotechnical Instruments, who developed the carbon dioxide sensor and electronics.

Design work began with sketches, foam models and 2D CAD layouts that quickly allowed the client to evaluate and approve DCA's design proposal. From this information DCA developed detailed 3D CAD models of the casework components and the internal assemblies. The CAD assembly model was used to make the casework as compact as possible without introducing interferences. Sections taken through the assembled models confirmed fits and clearances, whilst rendered views were used to evaluate colour options.

As a final check of component fits, as well as the visual and ergonomic aspects of the design, stereolithography (SLA) parts were made from the 3D data. DCA's prototyping technicians used the SLAs as master patterns to produce replica resin castings from which market research units were assembled. Photographs of the resin cast units were also used in sales literature, which Geotechnical Instruments were able to print ahead of the product launch.

DCA produced the steel injection moulding tools, CNC machining and sparking cavities directly from the 3D CAD data, and then produced the first six months worth of casework, clip and lens components.

The PM1500 personal monitor was launched in April 1997, only six months after the design process began. Over 2,500 products were sold in the first eight months, far exceeding the original prediction of 400 units per year. It has been licensed to other companies in Europe and the USA and is now available in a number of new variants aimed at different market sectors. Variants include a version for the medical sector to detect and measure escaping anaesthetic gases. It was also selected by the Design Council as a Millennium Product.

1. Colour and finish exploration
2. Stereolithography models for geometry checks
3. Tooling produced by DCA
4. Fully assembled production unit

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