

PPE Manufacture in a Pandemic: The Development of a Reusable Visor

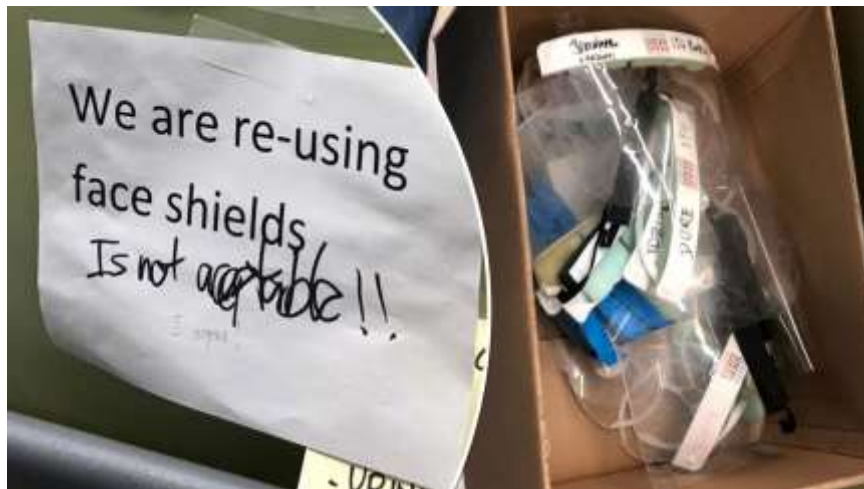
Rachel Jackson

Medical Devices Unit, NHS GG&C



Background

As COVID-19 continued to spread across the UK, an unexpected and unplanned increased usage of disposable PPE resulted in a highly publicised shortage of PPE for medical staff across NHS services.



Background

Medical Devices Unit (MDU) identified a need for a low-cost reusable visor to reduce the pressure in obtaining large volumes of disposable visors.

Funding was granted to NHS Greater Glasgow and Clyde in exchange for quick development and deployment of reusable visors.

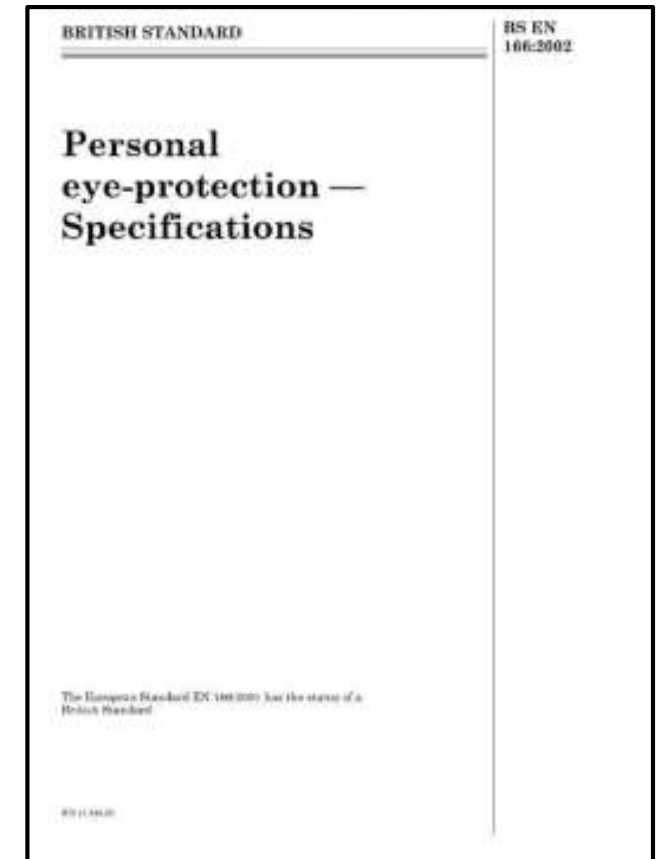


Requirements

MDU visor testing group created URS and SRS for disposable visors used in PPE in line with standards.

Additional requirements created for reusable visors with input from infection control and chief nursing staff:

- Easily assembled and disassembled
- Easily decontaminated
- Could be used daily for over a month



Design

Various companies released open source designs to aid in manufacturing efforts.

A design by Prusa Printers, intended for 3D printing, was being widely and successfully manufactured.

This design was improved upon by engineers within MDU to comply with reusability aspects.

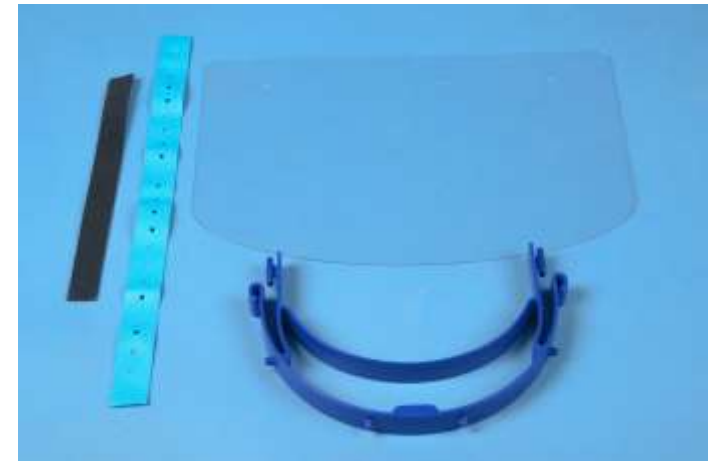
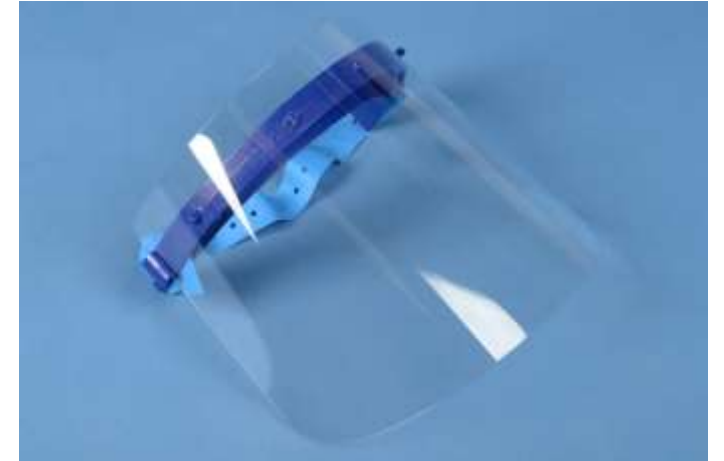


Design

Modifications included:

- Improved side splash protection
- Improved mechanism which attaches visor shield to headband
- Change to recommended manufacturing process and materials

Appropriate risk assessment steps were completed when making design changes.



Testing

A series of design acceptance tests protocols were created, performed and documented on Redmine software including:

- Accelerated decontamination tests
- Accelerated assembly/disassembly tests
- Component inspection

The device was also passed each of the tests required by the in-house quality assurance group.

Manufacture

A production line was set up and within 3 days, around 4000 visors were assembled and packaged to be sent to clinical areas.

A series of different roles were established including assembling, bagging, packaging and documenting on Redmine.



Margaret Connolly, Assistant Chief Nurse, Governance & Regulation, NHS Greater Glasgow and Clyde said:

“We’ve been looking for a more sustainable solution to single-use visors for staff to use that’s safe and reduces plastic waste. The design of the reusable visor used by single members of staff allows easy cleaning of the visors per NHSGGC infection control guidance. Staff can write their names on the front of the visors which is a helpful communicate aid to both staff and patients alike.”



Acknowledgments

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- Thomas Murdoch
- Aimi Philips

Thank you for listening!

Any Questions?