

Designing a more ergonomic fire extinguisher

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ABOUT THE AUTHOR

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A fire extinguisher is one of those products that we hope we will never have to use, though industry surveys suggest up to 3% of workplaces across Europe experience a fire every year. Despite fire extinguishers having a clear presence in our workplaces, public spaces and sometimes homes, most people pay little, if any, attention to them until facing a potential crisis.

From a usability perspective, the fact that a user rarely or potentially never engages with a product provides a real challenge, as users are required to intuitively understand how they function. This is particularly pertinent in the case of fire extinguishers, as they are to be used in highly stressful, time-pressured situations.

At first glance all fire extinguishers look alike, and the importance of design is not always recognised. However, given the safety critical nature of use, design is important. Fire extinguishers need to be intuitive, efficient to use and ergonomic. The mode of operation is deliberately simple:

1. Assess risk (fires should only be tackled with a fire extinguisher if it is safe to do so)
2. Locate extinguisher
3. Confirm suitability (correct suppressant, in usable condition)
4. Move extinguisher to location of fire
5. Prime device (remove safety clip)
6. Discharge contents to tackle fire

With the exception of the first task step, the ergonomic performance of the extinguisher has a role to play in improving performance in each task. Once the user finds it, he or she needs to quickly confirm that it is suitable for the fire at hand, and that the extinguisher is fully functional. The handle should be designed to support both carrying and handling the

product. Priming the device should be simple and intuitive, providing a consistent actuation force regardless of whether the user is left- or right-handed. When tackling the fire, the handle should also support a range of different hand sizes to comfortably actuate the extinguisher.

Chubb Fire & Security Limited, a leader in firefighting technologies and a part of UTC Building & Industrial Systems, sought external expertise on ergonomic product design when embarking on an

extinguisher New Product Development programme. DCA were asked to help them manage these challenges by developing a new range of fire extinguishers, now called the Chubb FX range. Chubb identified usability as a market differentiator and central to the design.

An iterative design process led to the development of the extinguisher shown below. It looks very much like many of the products that have come before it, but this is no accident. The basic form follows accepted conventions to ensure that it is easily recognised and that the mode of operation is familiar. Perhaps the most obvious difference to conventional extinguishers is the large yellow safety clip between the handles. The clip, along with the green disc, which a service technician will replace with a different colour each year to indicate that the product has been serviced, replaces the traditional metal pin. It serves two purposes: to prevent the device from being inadvertently operated and to communicate the product is ready for use. When the ring is pulled, the green disc falls away replacing the word 'OK' with the word 'USED'.

The new yellow safety clip is designed to make it easier to use the product irrespective of which hand it is held in. The bright colour and salience of the component is designed to communicate to the user the need to remove the component before use. The chevrons in the moulding and the ring are designed to help communicate the direction of required force.

The traditional metal handle and lever have been replaced with specially selected high-performance glass-filled polymers. This allows for a more contoured design that distributes the load more evenly. The use of tactile over-moulding (grey area) allows a textured high-grip surface to be applied to the handle. Combined with other weight savings, this results in a 10% lighter product.

As for user suitability, this can be simplified by ensuring that all extinguishers are properly serviced and fitted with the correct components. One concern with third-party service contracts is that substitute safety pins are used with incorrect and potentially dangerously high break forces. This product has been designed to accept only the correct components.

The product specification and approach has explicitly considered the user experience, intuitiveness and efficiency from the outset. This has resulted in a product that is differentiated from its competitors by its class-leading usability and ergonomics.

