# ALPHACAM macro ensures unique fonts on war grave headstones
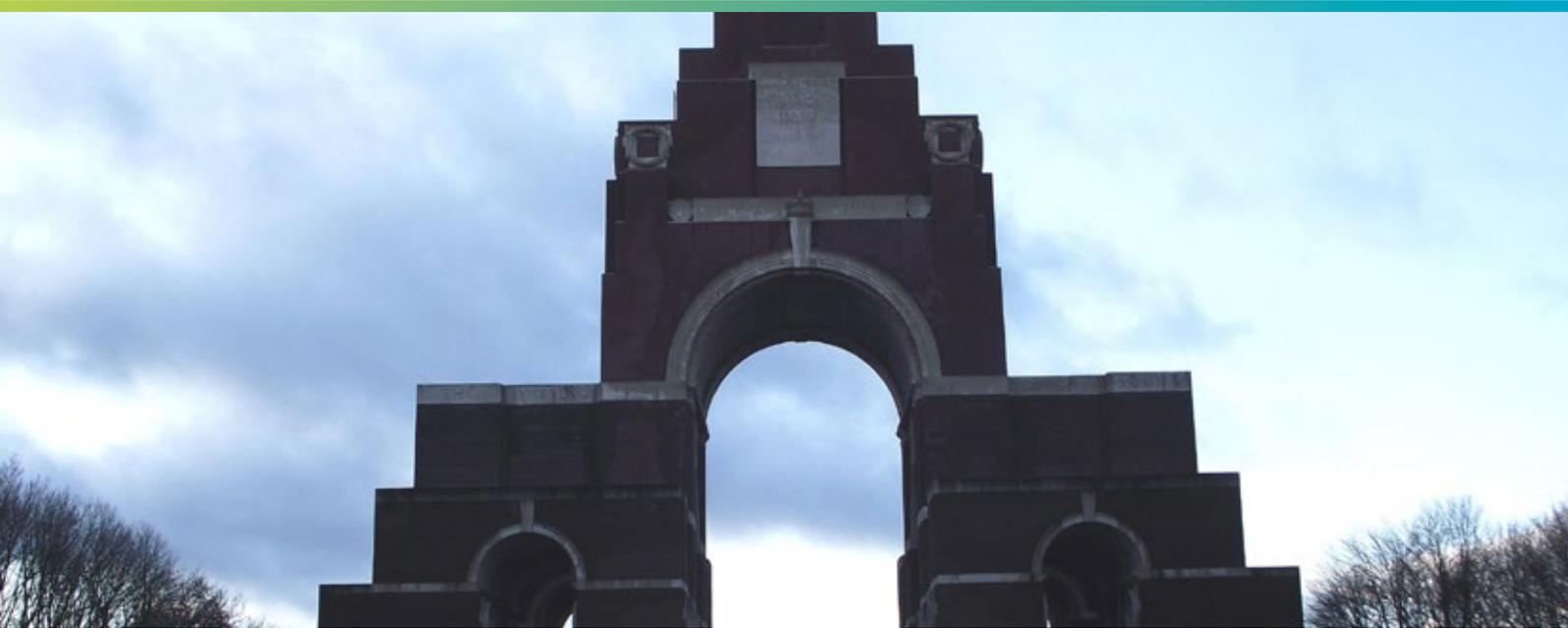
Commonwealth War Graves Commission

The Commonwealth War Graves Commission uses a special macro from ALPHACAM as part of its responsibility for ensuring that 1.7 million men and women of the Commonwealth armed forces who died in both world wars, are remembered through headstones and stone memorial panels.

Its principles are that each of the dead is commemorated by name on a permanent headstone or memorial. Also, headstones should be uniform, and there should be no distinction made on account of military rank, race or creed.

Individual graves are marked by uniform headstones, differentiated only by their inscriptions. The national emblem or regimental badge, rank, name, unit, date of death and age of each casualty is inscribed above an appropriate religious symbol and a more personal dedication chosen by relatives...all machined using CNC code generated by ALPHACAM, from Hexagon.

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Commonwealth War Graves Commission uses ALPHACAM for all the engraving, including the emblems and badges.

To maintain the required uniformity, a bespoke ALPHACAM macro guarantees that two unique fonts are accurately routed onto the headstones every time. Those specialist World War l and World War ll fonts of well-balanced serif letters were designed by Macdonald Gill. Taking into account how each character is spaced relative to its neighbour, there are over 4,000 possible combinations, but using a dedicated macro created by ALPHACAM engineers means it only takes around five minutes to produce CNC programs for ten headstones.

The Commission's surveyor Chris McLean says they are responsible for more than 23,000 locations in over 150 countries. "Of those, approximately 2,500 are dedicated war cemeteries with a Cross of Sacrifice, a Stone of Remembrance and individual headstones. The other sites are where there may be small groupings of headstones in identifiable plots, or isolated headstones scattered throughout the cemetery. In the UK there are war graves at more than 13,000 locations."

Of the 1.7 million war dead, 1.1 million are remembered with graves and a headstone, either by name, or as an unidentified soldier. But the Commission (CWGC) is also responsible for maintaining large commemorative memorials around the world, containing approximately 600,000 names where there are no remains or known graves. "Our largest cemeteries and memorials are Tyne Cot Cemetery in Belgium where over 11,000 casualties are buried; Étaples Military Cemetery, south of Calais on the French coast; Menin Gate, in Ieper, Belgium, with over 54,000 names on the memorial; and the Thiepval Memorial near Arras, France which has over 72,000 names."

The Commission purchases its headstones already cut to size and shape, direct from quarries, and uses ALPHACAM for all the engraving, including the emblems and badges. "While most of them are Portland Limestone, we also have headstones for different countries based on local stone availability. For instance, in Ireland we use Irish Limestone, in Scotland, Canada and South Africa it is Granite, and headstones in Mediterranean, African and Indian countries are produced from Italian Botticino Limestone," says Chris McLean.

But whatever the material type, every headstone and memorial panel is engraved on one of five CNC machine tools, programmed with ALPHACAM, at the Commission's Headstone Production Unit in Beaurains, just outside Arras in Northern France. Three Incimar machines are used for Portland and Botticino, with two water-cooled Scandinvent machines routing the Granite stones.

Matt Wolsey heads up the drawing office based at the CWGC's global headquarters, at Maidenhead, in Berkshire. He explains that much of their engraving work with ALPHACAM comes about where existing headstones fall into disrepair and become illegible. "Once a cemetery inspection identifies the need for new headstones the Records Department generates a text file for the new order. ALPHACAM then communicates with our CRM software, working with that text file. The macro opens all the data, including the fonts, library of badges, emblems and layouts, linking everything together, creating the CNC file which is loaded on to the relevant machine extremely quickly and efficiently."
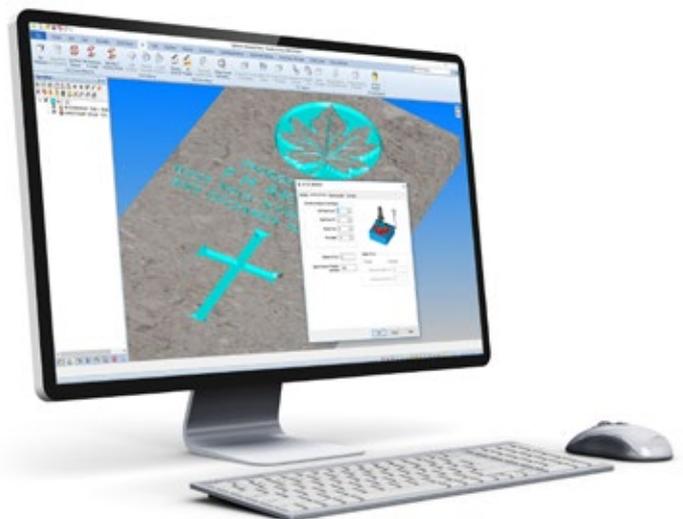
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He says in order for the process to work, each letter exists as a block, and the system contains a setting file that goes with it, also including the relationship of one letter to another. "ALPHACAM carries out calculations for the 4,000 different combinations of letters and spacings in the background. Basically the macro means that when ALPHACAM takes in the CAD file and creates the toolpaths, the lettering in the engraving is machined in our unique font, with the appropriate spacing.

"There's a code line in the text file's order of headstones which is the key to creating the layout. It contains the badge number, the full layout and the religious emblem such as the Cross or Star of David. And there's also information within the text file that the macro uses to determine which font to use – either World War l or World War ll – on a particular headstone."

Before investing in ALPHACAM, he says creating each headstone layout required considerable manual input, which meant there was more room for error. "ALPHACAM not only saves us time, but also guarantees that everything is 100 per cent accurate."

In the past, the Commission was producing around 24,000 headstones a year, with their five CNC machine tools running at capacity 24 hours a day. The Commission now have a more conservation-minded approach to the maintenance of their Estate and headstones are treated as historic fabric. Headstone legibility is carefully considered against detailed guidance and so are not replaced as frequently, with approximately 5,000 now being replaced on an annual basis.

The headstones have two different classifications, which they call Runners and Strangers. Runners have a standard layout, and the text file is sent straight to France where the CAM program is quickly created in one of the CWGC's four seats of Standard ALPHACAM Stone. But Matt Wolsey personally produces the Strangers, which he says are more complex layouts, and are built manually. For these, he uses Advanced ALPHACAM Stone, so he can manipulate the macro. "The macro means the text aspect is created automatically, so again, it saves considerable time. I drag a layout in, along with the badge and text, and the macro ensures the wording will be engraved in the correct font with the correct spacing."

The final word goes to Chris McLean. "Overall, ALPHACAM is a key element in setting out the headstones and automating much of the process, making it less prone to human error. And the bespoke macro, produced exclusively for us by ALPHACAM's engineers, saves a lot of time, while guaranteeing that we achieve our values and aims, which were laid out in 1917, and are as relevant now as they were 100 years ago."

About the company

Name: Commonwealth War Graves Commission

Website: www.cwgc.org

Business: Headstones and memorial panels

Benefits achieved:

- ALPHACAM takes in the CAD file and creates the toolpaths

- Saves time and guarantees 100% accuracy

- Carries out calculations for 4,000 different combinations of letters and spacings

- Communicates with CRM software

- Creates the CNC file which is loaded on to the relevant machine extremely quickly and efficiently

> ❝ ALPHACAM not only saves us time, but also guarantees that everything is 100 % accurate."

Matt Wolsey,
Drawing Office Supervisor

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