Examining the Alignment on the Obverse & Reverse of an Embossed Seal
While secure identity documents are becoming more and more sophisticated in their methods of personalisation, it is important to remember that an examiner may still be presented with less sophisticated “donor” documents for examination.

These may be old versions of national identity documents, or even internal application forms or paper documents, not normally presented at border controls, but still accepted to obtain more secure documents.

One such example would be a paper document that has a dry embossing seal covering both a photograph and the page; sometimes even through the laminate as well. This brief application note will show us how we can do this effectively with the VSC systems.

In the example shown left, the holder’s photograph has been stuck to the passport page, sealed in a security laminate, and then all the layers have been embossed.

This means the same embossed design should be present and orientated the same way in all 4 layers (laminate, photograph and page on the obverse; page and laminate on the reverse).

If a forger were to remove the original photograph and replace it with a new one, they might also attempt to conceal the substitution by making a fake impression on the new photograph. So the obverse, or front, will no longer match the reverse.

**Figure 1** An identity document with embossed stamp across the photograph
Let’s start by activating a side light and looking at the reverse of the page (fig.2). The direction of the side light we choose will depend on which gives the clearest image on our chosen document. In our example here, the better image comes by using a side light from the left. Take care to ensure that the impression of the photograph can be seen, particularly the corners, adjusting the magnification if required.

In some cases, this may also be improved using IR lighting techniques to remove background print and produce a monochrome image (fig.3).

We can also adjust the camera settings if necessary.

Once we have obtained the best possible image, we now flip the image vertically to give us a mirror image (fig.4). This will be a better match for the image on the other side of the page.

To do this, we use the Flip Horizontally button, found in the top left corner of the image frame.
Having captured a horizontally flipped image of the embossed seal viewed under IR illumination, we can send this flipped image to the Recent Image Gallery (fig.5) using the (1>2) button.

With this done, we now press the Flip Vertically button again, to return to a normal view.

Next, we turn the page over, so that we can now look at the obverse of the photograph and the embossed area.

Try to position the document as best as possible, so that the same area can be seen as in our stored image.

Again, find the sidelight that gives you the best image, most likely the opposite to the one used on the reverse.

In this case, we will use the righthand side light (fig.6)

With this now done, we can open the Image Modes tab on the right of the screen (fig.7)

The buttons on the bottom row allow us to mix our live image with a stored image. For the purposes of this example, we will use the Red/Green Mix function.

Using the Reposition Image feature, we can align the corners of the photograph from our stored image with the impressions of the corners from our second (live) image.

With these points properly aligned, we can now see if the features from the embossing seal correspond between obverse and reverse (fig.8).
Figure 9 The aligned image reveals no evidence of tampering or photo substitution

Alternatively, we could use the “Align” function from the Image menu. In the VSC8000, this is found by clicking on the “More” dropdown menu.

Activating this will automatically change the display mode to Live+Stored, and you will be instructed to click on 3 points on Image 1, and then click on the same corresponding 3 points in the same order on Image 2. When asked to do this, click on 3 of the (same) corners of the holder’s photograph in both images, and then use the mix functions as above.

Any obvious differences between to two images will indicate the photograph has been substituted.