

Putting the cap on it

At Ceramicx a major new improvement was recently incorporated into the end cap of one of the quartz cassette ranges produced by the company.

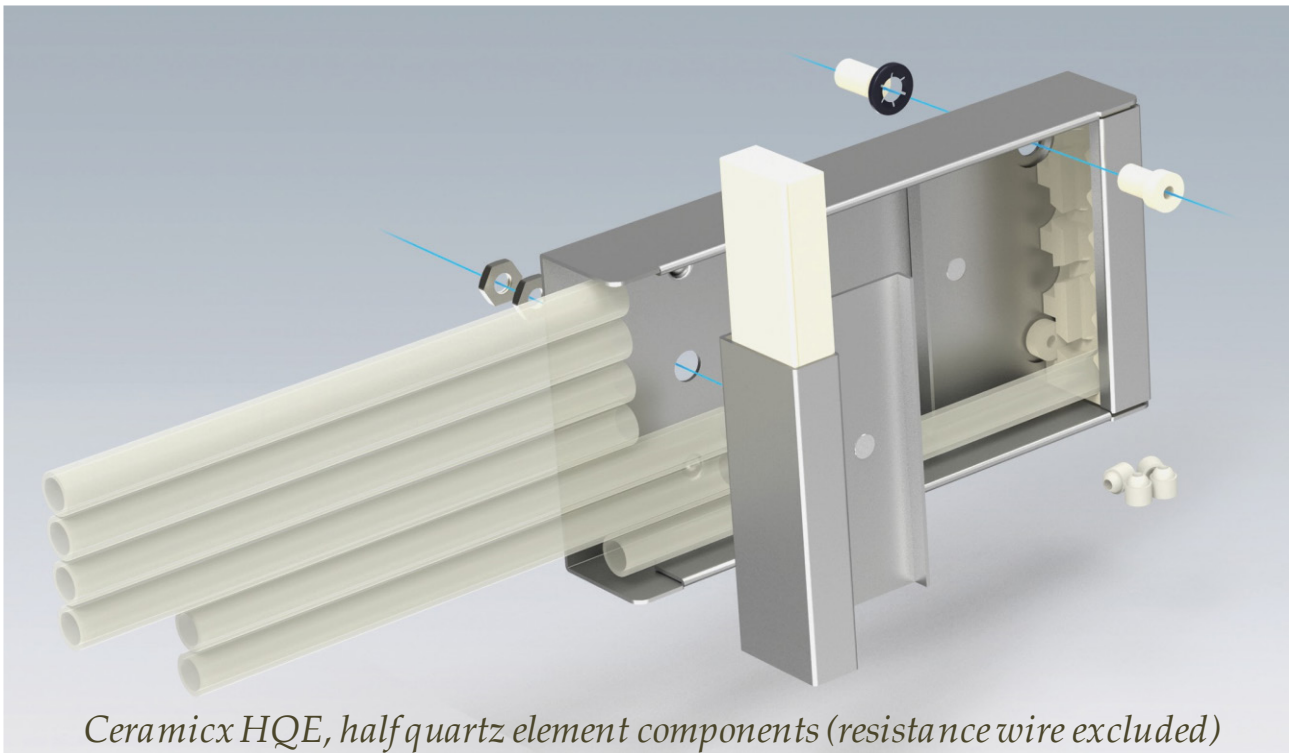
The brand new component is now a one piece “flat bridge” that eliminates four other components per cassette end, thus a total reduction of 8 pieces per part.

Despite the proper performance of these components, further improvements were still sought at the end of last year in several areas as Ceramicx owner Frank Wilson saw an opportunity to penetrate a number of new markets with the technology.

The present component utilised fibre insulation matting, which could sometimes be of concern in medical or food applications due to possible contamination via loose fibre migration. Eliminating the fibre issue would thus open up opportunities for users manufacturing to FDA guidelines or similar. The product redesign also offered an opportunity to consolidate the bill of materials for the part.

These five pieces have now been integrated into one new ceramic component. The one piece part was envisaged by Frank Wilson and Marcin Milczarczyk, Engineering Manager. A steatite dust pressed component was identified as a possible vehicle for the entire application. Not only would the new part have to fit in the existing cassette with minimal redesign, it would also have to fulfil the demands of wiring, tube location, tube security, thermal insulation, and electrical insulation.

The new dust press production capacity was identified as an ideal way to manufacture and supply the part; falling into line with the supply of dust press parts for various other components



A taskforce was assembled and the improvements were spearheaded by Ceramicx Production Manager, Patrick Wilson. Regular and quality collaboration between various Ceramicx departments - Quartz Production, Engineering, and Management - helped obtain a winning result.

The old construction involved using five separate pieces,
1 Flat ceramic insert, 2 Bridge, 3 Bridge holder, 4 Rivet and 5 Insulation wool.

throughout the Ceramicx business.

Ceramicx Engineering Manager Marcin Milczarczyk worked on the new design and created several prototypes for the new end cap. Initially a general mock-up design was dust pressed on prototyped tooling, and modifications such as removal of material, or creating wiring cut outs were performed after pressing, but before firing while the component was still “green”.

This procedure enabled a low cost evaluation of several designs. In addition, problem areas could be highlighted as changes in component features or material removal can cause shrinkage and warping during firing. In this way, a general shape of the new component could be made at low cost with minimal investment in expensive tooling.

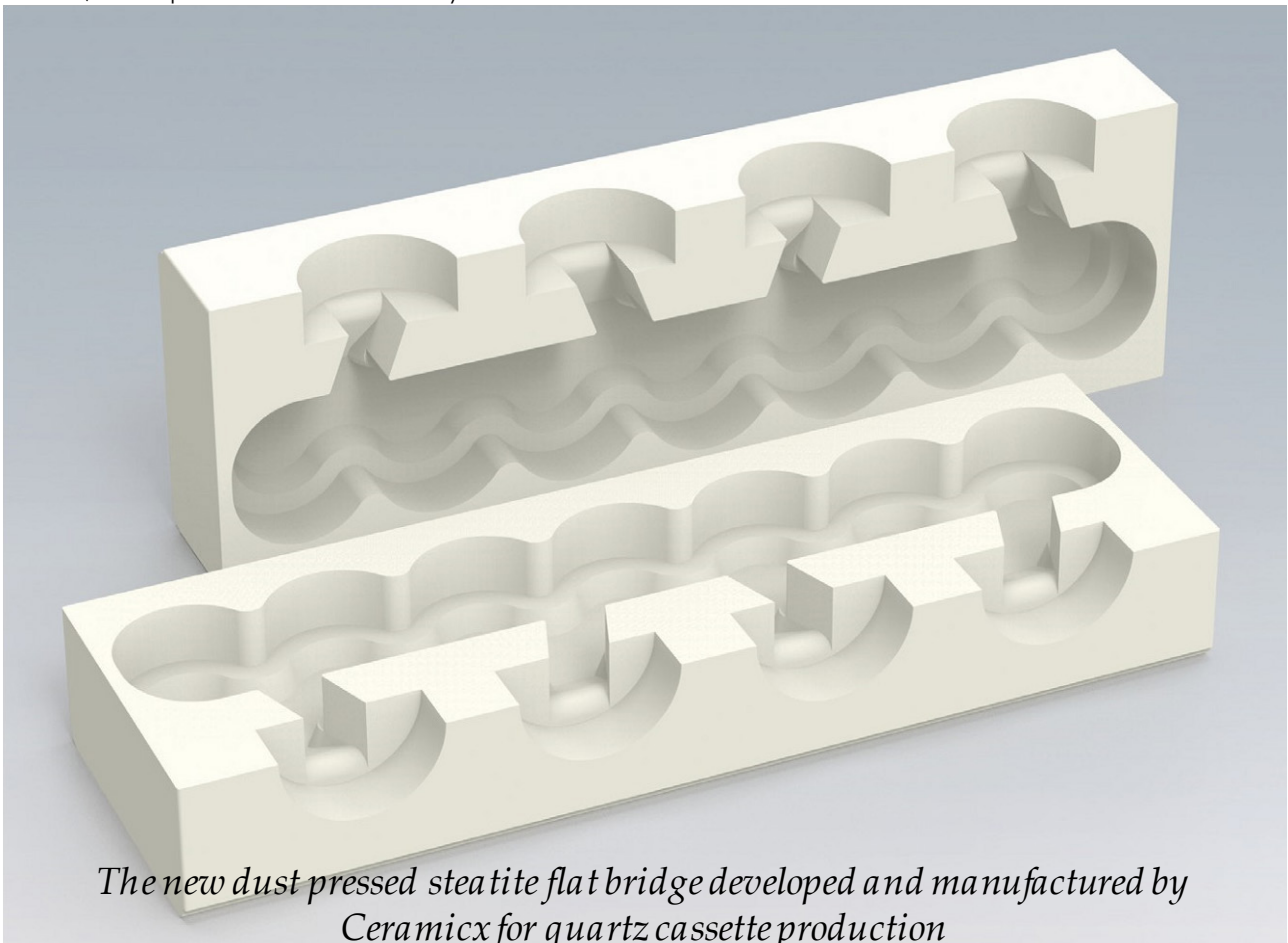
Each one of these prototypes was evaluated by Patrick Wilson in consultation with staff in the quartz assembly area. After final selection of a suitable design, the completed proposal was presented by Patrick to management staff for discussion, modification and then production trialling.

The selected component was then declared fit for evaluation in the new Herschel test facility. Says Dr Gerard, 'compared to the creativity and hard

introduced and Ceramicx began shipping out the new design to customers.

In summary the new steatite part

1. Eliminates the possibility of loose fibre migration
2. Reduced the Bill of Materials, one new component replaces five components.
3. May be considered more suitable for medical and food uses
4. Performs to equivalent high standards of replaced components
5. Simplifies assembly work
6. Is aesthetically improved
7. Capitalises on the 2013 investment in dust press technology



work shown at the head of the project the contribution of the Herschel to the whole project was relatively slight. However, its input was essential: Via Herschel we were able to directly measure and compare the actual performance in situ of the new cassette construction against the old cassette construction.

Dr Gerard says that 'once it was confirmed that this new modification did not affect performance - the road was clear for introduction.'

The new dust press tooling was then ordered and production began as soon as it was delivered. In November 2013, the new component was

Frank Wilson, Ceramicx founder and director notes that 'this part, while small, in many ways represents what we do best at Ceramicx, namely identify and deliver a great solution that has benefit of all disciplines such as engineering, production, research and development, and marketing.

Wilson adds that 'as well as opening up new markets such as medical and food, we hope that the redesign gives yet more service and value to all our distributors and customers; highlighting that Ceramicx competes against the best on the world stage of infrared heat know-how and technology.