In order to maintain sufficient line conductivity with the reduced finger line volume, the time/temperature sintering characteristics of standard pastes need to be altered significantly. These images show paste development via screen printing test patterns in order to improve line conductivity when printed by PTP™.

Pattern Transfer Printing (PTP™) is a printing method developed and commercialized by Utlilight. It is an alternative printing process that shows very promising results via consistent ultra fine lines down to 20µm after firing and is mass production proven. However, using any standard, commercially available silver paste gives poor results due to substantial increases in series resistance and printability issues. The general process and results of silver paste developed by Heraeus for PTP™ are shown here.

In this work, both the inorganic and organic paste components were either modified or entirely replaced in order to satisfy the demands of a new technology; Heraeus is fully committed to the development of novel paste platforms for all promising metallization and cell technologies.

Contact resistivity of PTP™ versus a screen printed reference after significant paste and glass modifications, we are able to achieve even lower rhoC values than that of the reference. The transition from state-of-the-art screen printing pastes to PTP™ is not a plug-and-play solution in regards to printability.

These images show modifications to the organic on screen printed test patterns with busbars (to make the effect more clear) in order to mitigate paste splashing issues when transferred to PTP™.