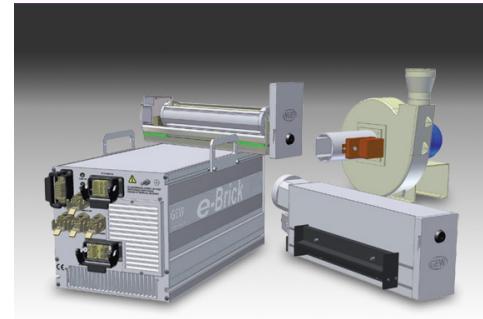


Advanced Networked Power Supply for Ink Curing in the Printing Industry

Written by The Hitex Design Group

GEW (EC) Limited design and manufacture UV curing systems for a wide range of printing and coating applications. The company has taken a world-leading position in both UV curing technology and the label printing market, with literally thousands of installations across the globe. Part of GEW's product range includes intelligent networked power supplies, capable of safely powering and controlling many kiloWatts of Ultra-Violet (UV) energy for curing ink in printing systems.

As part of ongoing product development, GEW had a requirement for a new generation of such intelligent power supplies which would use a microcontroller-based system in place of a PLC for the communications and control. As microcontroller programming is not a core area of expertise at GEW, the decision was made to call upon an external company to fulfil this requirement - and this is where Hitex fitted the bill perfectly. A GEW engineer had already worked with Hitex in the past and so the joint project began.



Working with GEW to set the specification, Hitex proposed the Infineon XC161 microcontroller as an ideal platform for implementation, based on its peripheral set, level of on-chip integration and our experience of its usage in industrial applications. Hitex then took over responsibility for the embedded software, managing modifications to the requirements as they occurred and working to deliver fully tested software on time. GEW were also able to take advantage of Hitex's hardware and system integration experience to expedite their hardware design and reduce the chance of needing modifications once production began.



Initial development work was carried out using Phytac's Phycore XC161 Module which allowed for proving the software algorithms and general control and communications without requiring final hardware. Meanwhile, a custom board was designed by GEW to accommodate the XC161 and the necessary power circuitry, thus facilitating parallel development and allowing GEW to concentrate on their developments without needing deep knowledge of the XC161 itself.

The software required development of serial and CAN communications protocols between the Human-Machine Interface (HMI) and the power supply and also for networked communications between up to sixteen power supplies in a system. Closed loop PID controllers were implemented to control various aspects of the application, requiring efficient device drivers for analogue, digital i/o and high-speed serial buses. As the system controls such large power outputs, safety has been built into the design from the outset.

As time has gone on, the project has continued to flourish, with new functionality being added to the specification resulting in further software development by Hitex.