

Improve quality, accelerate production, cut costs: in Through Hole Filling

Introducing the innovative solution for precision PCB plating

If you are still plugging vias with a proxy (resin or silver paste), you'll know the work involved – it's a complex and laborious process.

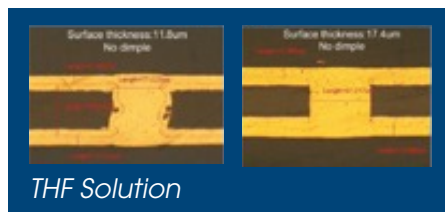
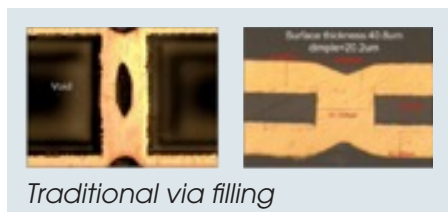
Most manufacturers will agree that using proxy to fill through-holes in PCBs takes many hours and many steps, and the results are not always reliable. It also generates waste.

The success is due to optimizing functions and adjusting parameters – which require multidisciplinary expertise and collaboration.

ModuPulse™ is the periodic pulse reverse (PPR) rectifier that provides forward and reverse current as complex waveforms, with high accuracy and stable output. This is the underlying technology to **achieving precision plating with no voids, and no dimples.**

The huge improvements to production speed mean that you can now deliver more batches per hour, achieving significant savings through the reduction in energy consumption, scrap and labour costs.

Because of improved quality you can now expand your product range to include high-specification PCBs and IC substrate – commanding higher price and better differentiation.



It would be much more efficient if you could use copper to fill the through-hole, without the risk of voids or dimples. The result would be a much more reliable product, as copper is four times more efficient than paste for conductivity and heat dispersal.

With KraftPowercon rectifiers and expertise as enablers, it's possible.

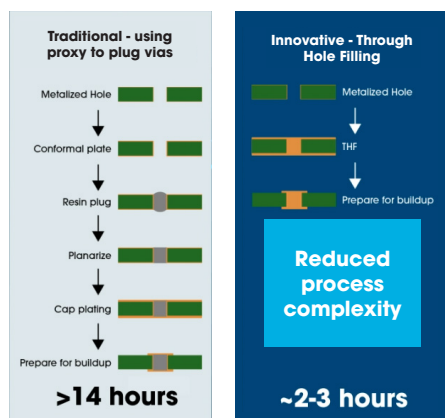
The innovative solution

Consists of:

- suitable plating equipment and auxiliary parts, which can be an upgrade of existing assets
- an engineered chemical formula
- reverse pulse current, applied as complex waveforms

Reduced manufacturing complexity, increased revenue

With such an innovative solution, you can upgrade your current system into a more effective process, with limited investment needed.



5.6 x increase
in production efficiency

Further benefits based on comprehensive testing:

40%
reduction in scrap

2x
increase in potential selling price, due to improved quality

Reduced consumption
of raw materials and energy, and significant savings on labour costs

Project courtesy:
MacDermid and AEL

ModuPulse, the periodic pulse reverse (PPR) rectifier from KraftPowercon enables you to deliver precision plating every time.

For advanced PCBs and IC substrates, you need a sophisticated rectifier such as ModuPulse™.

This PPR rectifier, with complex waveform functionality, has been proven to effectively bridge, and gradually build up the filling in the through holes, while maintaining optimal plating thickness on the surface of the PCB. Within the complex waveform, the ramp time between the different current steps is less than 200µs.

As a result, ModuPulse™ accurately controls the current to even out low and high current density areas and optimises the electrolyte for a copper deposition as desired.

The result is a high-quality, uniform plating, produced in less time, using less energy and removing the need for remediation.

- **Better in-filling**
Phase shift
(90 to 180 degree)
- **Advanced plating options**
Forward/reverse current
(up to 1:10)
- **Precise control, cost saving**
Multiple outputs
(1-24 outputs)

Benefit from our holistic expertise

With over 85 years of experience in rectifier technology, we provide the electronics industry with efficient and effective power supply solutions

You can call on KraftPowercon experts whenever you need help or advice with optimising plating performance and efficiency. We understand your processes, the challenges you face, and the environment and constraints within which you operate.

We're in constant collaboration with leading manufacturers and chemical suppliers, delivering new solutions and innovations that enable you to meet the most demanding of requirements. And our global network ensures you get a swift response and great service from local service engineers.

You can rely on us for a can-do attitude and genuine commitment to your success –
We won't let you down



ModuPulse™ gives you:

- Complex waveforms
- Phase shift
- Flexible output modes
- Small footprint and modular design that facilitates redundancy and is easy to scale
- Easy access for maintenance
- Optimized spare part inventory

PLUS expert support from KraftPowercon as standard.

For more information about KraftPowercon's solutions for PCBs and semiconductors, visit kraftpowercon.com