

AMERICAN
CRS
EQUIPMENT

WST

PULSE PLATING
SYSTEMS FOR
ELECTROPLATING

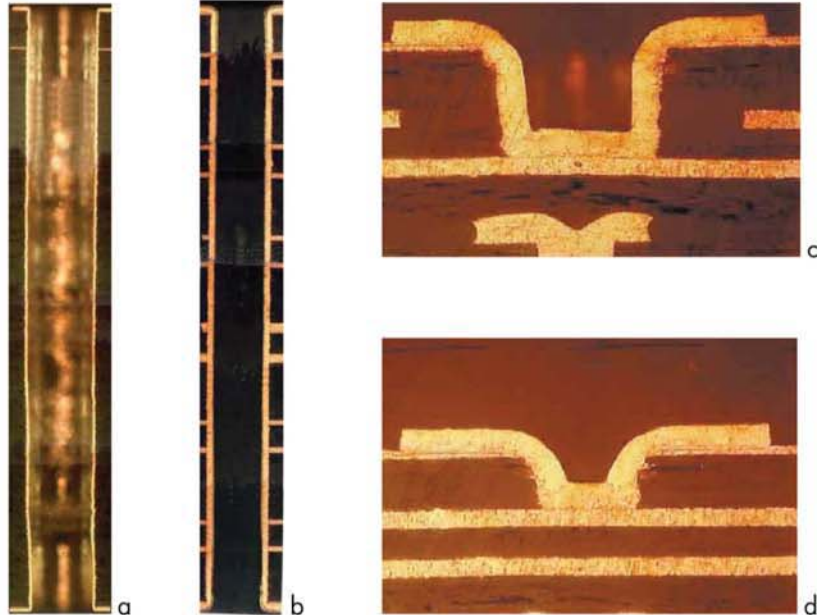
- **Higher throughput, decreased cycle times:** faster metal deposition rate
- **Substantial improvement in throwing power and surface distribution at higher current densities**
- **Capital equipment savings:** enhanced throughput of existing equipment
- **Reduced process engineering:** concurrent multiple frequencies provide wider operating window virtually eliminating ongoing process engineering
- **5-Year Warranty**



1918 Don Lee Place
Escondido, CA 92029
760.489.0669
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www.AmericanCRS.com

Pulse Plating made simple.

Varying thicknesses, aspect ratios, surface features (line widths and spaces)
ALL run with an identical waveform (recipe)! Can your system do that?



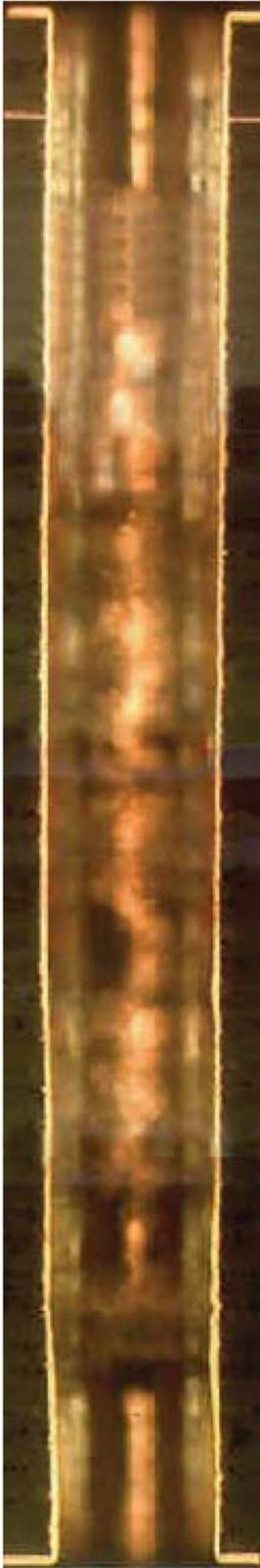
a: .0247" thick, 29ml hole
b: .0145" thick, 10ml hole
c: 9ml diameter, 9ml deep
d: 6ml diameter, 4ml deep

WST System Specifications

- Standard single or dual output systems from 100A to 1000A/output (side).
- Customized sizes for higher currents or multiple synchronized outputs.
- Input voltages for worldwide compatibility, in the range of 100VAC – 480VAC, 50/60Hz, single or 3-phase, depending on output power rating.
- Control interface: Via RS-232/RS485 and analog I/O: Full local or remote.
- Control mode: Constant current, constant voltage with auto crossover.
- Onboard computer stores downloaded recipes in the event of power failure.
- Recipe readback enables user to verify recipe presently in operation.
- Cooling: Water or air cooled with standard operating temperatures 0°C – 40°C

WST System Benefits

- Ability to save \$ by purchasing DC units first and adding pulse later.
- Pulse Process Engineering Support.
- Enhanced physical properties, i.e. ductility, elongation and tensile strength.
- Lower total installation costs, no need for coaxial cabling, etc.
- Manufactured at ISO9001:1994 Certified Factory.
- Five (5) Year Factory Warranty.
- Regional service centers worldwide.



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Multi-Frequency Pulse System

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0.247" (6.3 mm) Panel Thickness

0.029" (0.74 mm) Hole Diameter

8.5:1 Aspect Ratio

1:1 surface/hole ratio

2 mil (51 μ m) copper (hole center)

+/- 0.0002" (5 μ m) Thickness Tolerance

Plated for 180 minutes at 20 ASF (2 ASD)

This and other complex panel types:

- Processed concurrently 24/7 on older PAL line
- >90% of panel types run with a single multifrequency recipe
- Eight (8) Panels Across (18"x24") (460 mm x 610 mm)
- Mild Air Agitation
- 1.5" (38 mm) Total Horizontal Mechanical Agitation Stroke
- Floating Panel Shields

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Multi-Frequency Pulse System

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- 0.145" (3.68 mm) panel thickness
- ..1.1 mil (28 μm) copper deposit
- ...Plated for 150 minutes at 15 ASF

- 0.010" Hole Diameter (0.25 mm)
- 14.5:1 Aspect Ratio
- 1:1 surface/hole ratio

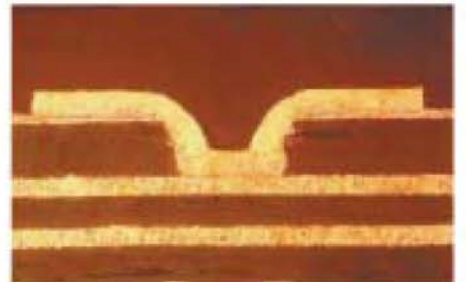
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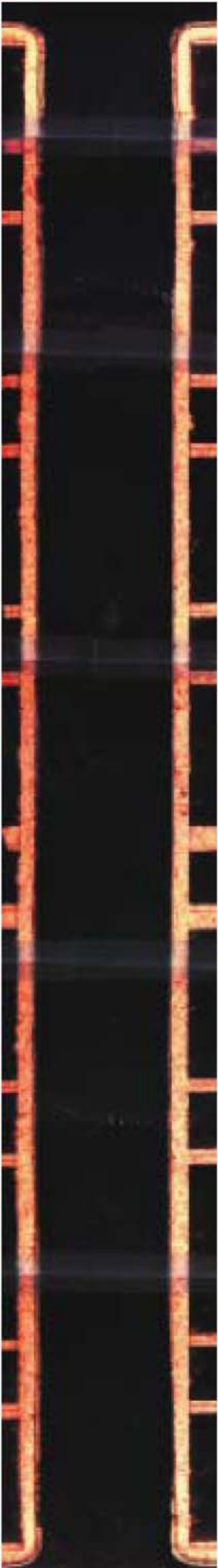
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0.009" x 0.009" blind via (230 x 230 μm)



0.006" x 0.004" blind via (150 x 100 μm)





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0.334" (8.5 mm) Panel Thickness

0.022" (0.56 mm) Hole Diameter

15:1 Aspect Ratio

1.5 mil (38 μm) copper (surface)

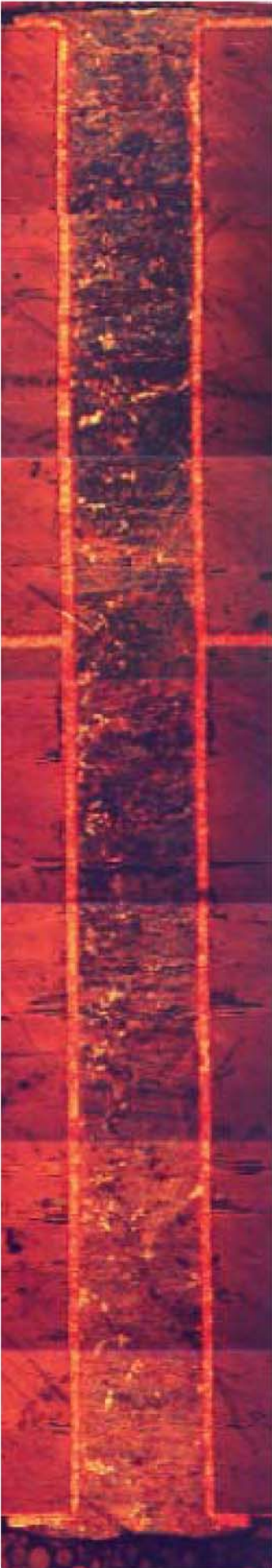
1.4 mil (36 μm) copper (hole center)**

1.1:1 surface/hole ratio

Plated for 180 minutes at 18 ASF (1.8 ASD)

**Approx. 130 minutes for 1 mil (25 μm) in hole center

- Basic copper plating cell design (NOT optimized for pulse plate!)
- Mild Air Agitation
- 1.5" (38 mm) total horizontal stroke
- No airless/eductor agitation



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0.153" (3.89 mm) Panel Thickness

0.014" (0.36 mm) Hole Diameter

11:1 Aspect Ratio

0.75 mil (19 μm) copper (surface)

0.9 mil (23 μm) copper (hole center)

0.9:1 surface/hole ratio

Plated for 75 minutes at 20 ASF (2 ASD)

- Basic copper plating cell design (NOT optimized for pulse plate!)
- Airless eductor agitation
- 1.5" (38 mm) total horizontal stroke,
- Solution turnover, no filtration
- 7" (180 mm) anode-cathode spacing (face to face)