

Reel-to-Reel (R2R) Electroplating Equipment from Precision Process Equipment



Precision Process Equipment designs, builds, and installs reel-to-reel (R2R) electroplating equipment in a variety of configurations, with a multitude of optional cells, for overall or selective plating. Our engineering team custom designs and builds reel-to-reel (R2R) electroplating equipment for a wide variety of materials and technologies.

Electroplating materials:

- Copper alloy strip and wire
- Bandoliered contacts
- End and center carried contacts
- Steel strip
- Copper and aluminum foils
- Mylar and other plastic strips

Configurations include:

- Single and multi-strand lines
- Straight and U-shaped lines
- Horizontal or vertical transport

Plating-finish options:

- Copper plating (acid/cyanide)
- Nickel plating (woods, sulfamate, watts)
- Gold plating (soft, hard)
- Palladium and Palladium-nickel plating
- Tin plating (bright, matte)
- Tin-lead plating (various alloy compositions)
- Reflow of tin and tin/lead alloys

Options for Reel-to-Reel (R2R) Plating Equipment

Zero-discharge rinse system

The zero-discharge rinse system reduces water consumption at each rinse stage. By using the concept of triple-counter flow rinsing in the lower reservoir, the system allows the amount of fresh incoming water to be balanced with evaporation losses occurring in the preceding chemical process cell (cleaning, plating, etc.).

Each zero-discharge rinse system consists of a series of four rinses, including spray rinses, spray-under-immersion rinses, or a combination of the two. The final stage features an air atomizer, using a combination of air and water to provide a fine rinse mist with minimal water usage.

Selective depth

Whether the application is a simple alkaline soak cleaning, or controlled depth plating, the basic concept of the all-over type process cell is the same. PPE fabricates each cell from a suitable chemical-resistant material, such as polypropylene. An external reservoir feeds fresh solution into a false bottom in the process cell, via a transfer pump. A sparger plate in the cell allows solution to be rapidly and uniformly distributed throughout the cell. Solution overflows the sides of the cell into an outer containment trough, where it eventually drains back to the reservoir. Weir gates at each end of the cell minimize outflow where the strip enters and exits the cell. An air wipe at the exit minimizes dragout.

Applications:

- Soak clean
- Acid activate
- Immersion rinse
- Over-all plate
- Controlled depth plate
- Stripe

Single and multiple stripe widths can be applied to strip product via stripe belt cells. These cells use both inert and soluble anode systems using both fabric backed belt or titanium belt materials. Various belt surface materials include soft and hard neoprene foam, PVC and RTV coatings. Typical stripe widths can be held to +/- .010" over cell distances from 87" to 106" in length. Stripe cell boxes are designed for ease of operator use with all controls available on the front of the units. Stripe head systems are designed for use with gold and tin - tin alloy chemistries.

Bubbler

Our bubbler cells are uniquely fabricated for plating internal recesses of female sockets and clips. The cell buss design allows switchover from center anode, outer anode or both when using this type of selective cell. The various available weir design arrangements in our selective bubbler cells overcome the many type of contact designs which prevent the ability to deposit adequate plating thickness inside connector sockets and eliminate the problems.

Spot

Precision Process has the capability to deposit precious and non-precious metal plating deposits in the form of defined spots on a part or strip. The ability to reduce precious metal consumption is the reason more customers are adapting this technology over standard selective depth and stripe techniques. Our proprietary spot technology can be applied by two types of methods (belt or wheel) with typical spot placement of +/- .005" on location on repeatable progression. We can provide equipment to plate one side or both sides of a part and will work with your Designers to suggest the most appropriate equipment to perform the job.

Spray jet

The spray jet cell is used in applications for selectively plating stamped reel-to-reel (R2R) parts and as an alternative for belt stripe equipment. The spray jet cell system delivers the plating bath chemicals from the plating tank through a high flow/high pressure manifold and into a faceplate machined to the contour of the part. The faceplate serves to fixture the parts through the cell and as a medium for directing the plating to the specific area of the part. The jet cell uses technology developed through years of testing in production applications. Equipment can be setup for single or dual stripes on one side of a part or both sides.

High speed over-all

Many reel-to-reel (R2R) applications require high speed overall cells which allow for faster plating rates, which translate into higher line speeds. Precision Process has designed these cells for increased production capability in single or dual strand designs. Cell accessories include adjustable end weirs, part shields, splash deflectors and high solution flow manifolds.

All-over plating cell

The all-over plating cell is a primary component of Precision Process's reel-to-reel (R2R) plating equipment and is typically used to plate gold or silver over a base metal, such as nickel.

The all-over plating cell is a pass-through system combining a high, continuous flow of plating solution to the strip through a multiple sparger and overflow weir system. The system consists of a polypropylene or acrylic plating cell, anode frame with inert anode, and air wipe. An external solution reservoir with heater, filtration system and transfer pump provide fresh, high metal content plating

solution to the strip material. The all-over plating cell is designed for the continuous plating of strip material, pre-formed connectors, lead frames, and other formed or stamped components.

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Features include:

- High solution impingement to the strip through multiple sparger system
- Close proximity anode basket arrangement allows faster plating speed
- Adjustable side overflow weirs allow uniform solution flow
- Air wipe at the exit of the plating cell removes gross solution, reducing dragout
- Weir gate rollers at each end of the cell help guide the strip and minimize solution outflow

Equipment configuration options

Whether you require a single sided, double sided, "U" shaped, or a multi-strand reel-to-reel (R2R) plating configuration, Precision Process can design, manufacture, and install your ideal system. Precision Process also provides pay-offs, accumulators, helper drives, programmable logic controllers, touch screens, and a variety of other options to meet your needs.

Options include:

- Single sided
- Double sided
- "U"shape
- Multi-strand
- Vertical and horizontal
- Serpentine cell
- Pay-offs and Take-ups
- Accumulators
- Helper drives
- Programmable logic controllers (PLCs)
- Touch screens
- Waste treatment and metal recovery
- Retrofit or turnkey systems

Contact [Precision Process](#) for more information about reel-to-reel (R2R) electroplating equipment.

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