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 **ION**  
RECTIFIERS



## WE MAKE NEXT-GENERATION RECTIFIERS THAT GROW YOUR BOTTOM LINE

- ✓ Next-Generation High-Speed Pulse Rectifiers
- ✓ High-Efficiency DC Plating Rectifiers
- ✓ Pulse Rectifiers for Plating and Anodizing



# OUR MISSION

We exist to empower US-based manufacturers to be competitive in the world market so that manufacturing, an essential tool in the creation of real wealth, can grow in the USA. We believe that the values enshrined in the founding documents of The United States of America should be protected at all costs and that reshoring manufacturing is critical in providing the capacity to do so.

## The PULSE Advantage

### NEXTGEN HIGH-SPEED PULSE PLATING SAVINGS

Forget complicated formulas and configurations. Our high-speed pulse rectifiers are money making machines. These are real world results our customers have experienced by using our pulse rectifiers.

“If you don’t understand and use pulse your competitors undoubtedly will.” –Mark Coleman



Raw Materials Saved



Energy Savings



Reject Reduction



Additive Savings

## What results can you expect from our Pulse Plating Rectifiers?



### Plate Parts Faster

Depending upon your application our High-Speed Pulse Plating technology can double the speed of production. Superior current distribution allows you to plate to the lows faster and increase the power without burning.



### Consistent Results

All of our rectifiers include automatic load adjustment and programable workflows that create consistent results. Once the unit is set, your operators simply press a button and the same thing happens every time.



### Reduced Costs

Depending on the application, it's not uncommon to see an 80% reduction in rejects, a 30% Raw material savings, and up to 80% energy savings over SCR-type rectifiers. Additional savings can be had through additive reduction.



“ When you buy an ION DC rectifier you are buying the best DC rectifier on the market. When you buy an **ION Pulse rectifier** you are becoming the best plater you can be.

**Josue Zazulla**

–Founder, ION Precision Products

## The Worlds Most Advanced Rectifier

### WHY DO THE BEST PLATERS BUY OUR RECTIFIERS?

**Because our Pulse Plating Rectifiers actually work!**

This rectifier has been developed based on 31 years of feedback from surface finishing shop managers and users. These are just a few of the plating problems a quality rectifier can help with.



#### Easy Installation

Say goodbye to your giant loud and heavy dinosaur rectifiers. ION Rectifiers are designed to be easily installed in your shop. They DO NOT require process changes or special chemistry to work. Our remote control option, allows you to install units anywhere and still have full control.



#### Reliability

It's a nightmare when your plating power supply is down. We understand the importance of reliability to your business. Our rugged corrosion-proof IP65 cases combined with multiple electronic protections ensure long life and maximum uptime.



I honestly don't know what other manufacturers are going to do when these guys get known. Their engineering and features are far ahead of the big names we all know. We do a lot of work for oil and gas, the plating quality is so good they look like jewelry.

Travis  
President CEO, Del's Plating



#### Easy To Use

Designed to be extremely easy to use, our 7" touchscreen control panel is a dream for operators. Even complex activities such as ramping programs and automation controls are easy to understand and implement.



#### Consistent Results

Wouldn't you like to take the "art" out of plating? With automatic load adjustment and programable workflows, consistent results are a norm. Once the unit is set, your operators simply press a button and the same thing happens every time.



#### NextGen High-speed Pulse

Solve many plating problems all at once simply by implementing high-speed pulse plating. Get better current distribution, reduced metals and additive consumption, finer grain structure, enhanced brightness, improved corrosion resistance and faster plating speeds.



#### Reduce Electricity Costs

Our switch-mode-based rectifiers offer approximately 95% efficiency. The electricity savings, especially in high power applications, ensure your ROI on anodizing rectifiers and hard chrome power supplies is quick.



#### Programmable Features

Our microprocessor-controlled systems have advanced capabilities such as programmable timers, Amp hour counters, programmable process recipes, thickness programs, and an optional PLC interface and dosing pump control.



#### Easy to Service

ION Rectifiers are engineered to make accessing and/or replacing internal components very easy. Our rugged yet lightweight construction makes shipping and handling the units much easier and cost-effective. However, our plug-and-play architecture means most repairs can be handled on-site.

Improvement and Savings Using an ION Pulse Rectifier Compared to SCR. These are average numbers, in many cases final results are even better.

Process	Current Distribution	Process Time	Corrosion Resistance	Abrasion Resistance	Adhesion to the Substrate	Selective Plating	Throwing power	Electrochemical Efficiency	Raw Material Usage	Energy Usage
ZINC	10% Better	10% Faster	15% Better	15% Better	20% Better	25% Better	5% Better	SAME	5% Savings	60% Savings
Alcaline Copper	20% Better	20% Faster	10% Better	10% Better	20% Better	25% Better	15% Better	SAME	10% Savings	70% Savings
Acid Copper	28% Better	30% Faster	30% Better	30% Better	35% Better	40% Better	45% Better	SAME	25% Savings	75% Savings
Nickel	40% Better	40% Faster	50% Better	50% Better	50% Better	50% Better	50% Better	SAME	50% Savings	75% Savings
Hex Chrome Decorative	18% Better	50% Faster	80% Better	80% Better	40% Better	50% Better	10% Better	65% Better	SAME	85% Savings
Tri Chrome Decorative	20% Better	25% Faster	50% Better	50% Better	50% Better	60% Better	15% Better	SAME	SAME	60% Savings
Hard Chrome	18% Better	60% Faster	60% Better	65% Better	50% Better	60% Better	5% Better	65% Better	SAME	80% Savings
Tin	25% Better	70% Faster	30% Better	30% Better	50% Better	50% Better	5% Better	65% Better	5% Savings	80% Savings
Gold	30% Better	20% Faster	50% Better	70% Better	50% Better	70% Better	20% Better	SAME	25% Savings	65% Savings
Platinum	20% Better	20% Faster	50% Better	60% Better	40% Better	65% Better	20% Better	SAME	7% Savings	70% Savings
Rhodium	20% Better	25% Faster	50% Better	50% Better	50% Better	55% Better	15% Better	SAME	6% Savings	70% Savings
Silver	15% Better	15% Faster	30% Better	55% Better	20% Better	55% Better	15% Better	SAME	6% Savings	75% Savings





# ION SURFACE FINISHING POWER SUPPLY PRODUCTS



## Pulse Water Cooled

Our next-generation high-speed pulse plating high-speed pulse rectifier can take you to the next level.



## Pulse Air Cooled

With up to 200 Amps air cooled, our high-speed pulse units hit way above their weight class.



## DC Water Cooled

Our compact high-efficiency power supplies with integrated low ripple filters produce amazing results.



## DC Air Cooled

Up to 200 Amps, our DC units with integrated low ripple filters are compact and durable.



## CASE STUDY

**Honda pays back pulse rectifier investment in 99 days by increasing production, saving 51% on nickel costs, and saving 78% on electricity.**

### Proven Technology

During a meeting with a chemistry salesman, a plating manager at a motorcycle factory in Brazil was discussing the problems he was having with his line. He was trying to figure out a way to increase production but was challenged because the line was mechanically automated and the mechanical speed could not be increased. They considered the raw material numbers to be normal, but the reject rate was high, and the SCR rectifiers they were using had reached end-of-life. The chemistry salesman knew that his biggest need was not new chemistry. Another customer of his was having success with pulse rectification using the same chemistry. The plating manager championed the purchase of the pulse rectifier based solely on the estimated savings of 15% on nickel that had been proven at another plant.

### Once the Pulse rectifiers were up and running, the results were astounding:

- 1 Nickel savings went up to 51% overall.
- 2 The reject rate was reduced from 100 parts per day to virtually zero.
- 3 They saw a 78% savings on electricity. (Switchmode VS SCR ran at low voltage)
- 4 They further increased production by 30% because they were able to add more parts per rack.

# PULSE UNIT UNIQUE SPECIFICATIONS

- ✓ Programmable Pulse Square Waveform up to 10KHz at full power
- ✓ Dual Pulse capability +Pulse Train ( for alloys )
- ✓ Sync Voltage Reverse Pulse Units available
- ✓ Synced Unit Divergent Voltage Reverse Pulse Capability
- ✓ Straight DC capable

## SPECIFICATIONS AND FEATURES (ALL UNITS)

### Control Details

- ✓ Standard Digital Controller: 7"HMI touchscreen
- ✓ Optional Wireless Controller: 7"HMI touchscreen
- ✓ Wireless Remote Range: 1000ft (more than a football field)
- ✓ Multi-Unit Wireless Remote: Control up to 32 units.
- ✓ Optional PC-Based Program: Control up to 250 units.

### Electrical

- ✓ Input Voltage Options: 240V,380V,440V,480V
- ✓ Frequency Options: 50Hz,60Hz
- ✓ Single Unit Output Amps: 300Amp to 5000Amp
- ✓ Single Unit Output Volts: 0-50V
- ✓ Modularity: All units can be combined in series (same current) or parallel (same voltage)

### Performance

- ✓ Ripple:  $\leq 2\%$
- ✓ Power Factor: 0.95 Low Energy Consumption
- ✓ Regulation Range: Digital( 0 - 100% )
- ✓ Control Precision: Digital ( Calibrated Exact )

### Pulse Capability

- ✓ T On =from 5uS to 654,800uS (1uS resolution).
- ✓ T Off =from 5uS to 654,800uS (1uS resolution).
- ✓ Train Pulse adjusts from 0.1 to 6,000Sec.
- ✓ Automatic pulse adjust (single pulse only)

### Operation Modes

- ✓ On/Off manual operation
- ✓ 10 independent programmable timers
- ✓ 10 independent Amp X min or Amp X hour counters +1 total
- ✓ 10 independent recipes (for decorative chromium applications)
- ✓ Thickness operation (10 independent programs)

### Construction

- ✓ Corrosion-proof IP65 molded fiberglass (NEMA Type 4, 4X, 12 and 13) or Polycarbonate (IP65) enclosure
- ✓ 7" Color touch screen control panels
- ✓ Modular construction for quick and easy repairs

### Protection

- ✓ Line fault and output overload electronic protection
- ✓ Line voltage detection and logging
- ✓ Internal over-temperature alarm
- ✓ Thermal magnetic trip circuit breaker
- ✓ Programmable Fault Isolation fault

### Automation

- ✓ Process Maintenance Alert (5 Amp X min or Amp X hour independent programs)
- ✓ 3 independent dosing pumps control (Optional)
- ✓ 4 input x 4 output integrated PLC (Optional)

ION Precision Products | Pulse Rectifier | 1000A/16V



## CONTACT iNFORMATION

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