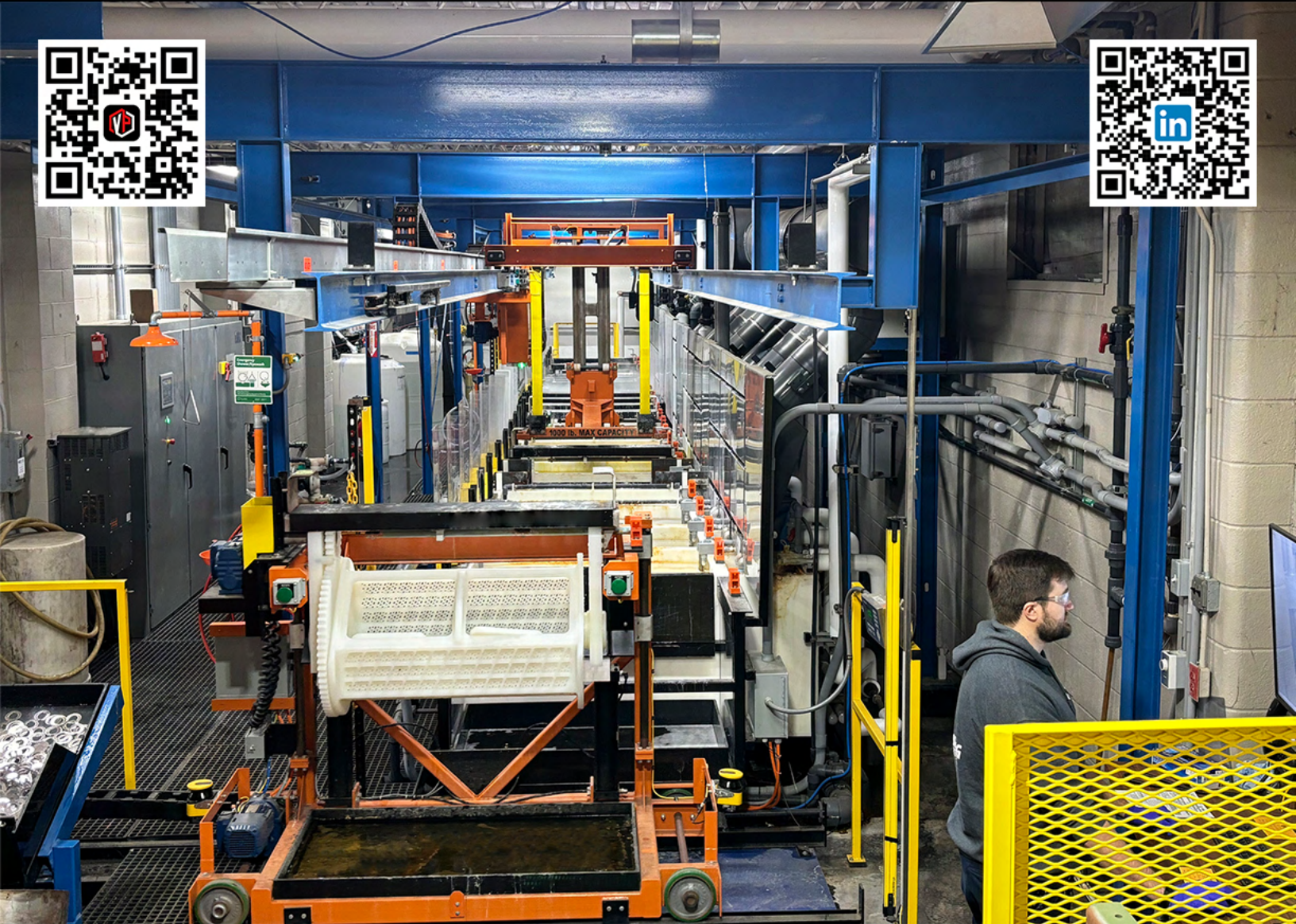




# VARLAND PLATING

CINCINNATI, OH • EST. 1946

SPECIALIZING IN HIGH QUALITY PRECISION BARREL PLATING FINISHES




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## PLATING PROCESSES

### ELECTROLYTIC NICKEL **AUTO**

ASTM B689, QQ-N-290, TSH6503G

- Available in bright and semi-bright finishes from fully automated line
- Excellent adhesion in brazing applications

### ZINC-NICKEL **AUTO**

ASTM B841, PS-8955, 12578628

- Available in high and low alloy
- BAE, FCA, & Lincoln Electric approved
- RoHS, ELV, & WEEE compliant trivalent chromate
- Black finish available

### COPPER **AUTO**

ASTM B734, MIL-C-14550, EMR. ES81-323

- Excellent adhesion on brazing applications
- Available in antique (statuary bronze) finish
- Excellent for heat treat stop-off

### ELECTROLESS NICKEL **AUTO**

ASTM B733, AMS 2404, MIL-C-264074

- Available in mid-phosphorus & high-phosphorus finishes
- Inert atmosphere baking for hardness

### TIN-ZINC **AUTO**

IAW 12469218, PS-8956, LIN. EL. E4265

- Only North American barrel plater approved for MacDermid Zinklad 750
- BAE, FCA, & Lincoln Electric approved

### CADMIUM

ASTM B766, AMS-QQ-P-416, MIL-STD-171

- Military certifications provided
- Available in clear & yellow finishes
- Excellent lubricity & low electrical resistance

### ZINC **AUTO**

ASTM B633, HES D2003, TSH6524G

- Chloride & alkaline chemistries
- RoHS, ELV, & WEEE compliant clear trivalent chromate
- Other topcoats available including yellow, black, and green finishes

### TIN **AUTO**

ASTM B545, MIL-T-10727, LIN. EL. E3445

- Available in matte & bright finishes
- Lincoln Electric approved
- Great for solderability & electrical applications

### BRASS

- Available in bright & antique finishes

OUR AUTOMATED PROCESSES ALLOW US TO DELIVER INDUSTRY-LEADING QUALITY, CONSISTENCY, AND TURN-AROUND TIME TO OUR CUSTOMERS

## ADDITIONAL SERVICES

### BAKING

- Traditional ovens for hydrogen embrittlement relief
- Inert atmosphere ovens for hardening of electroless nickel
- Automated control of baking cycles and automated tracking of time in oven to ensure specification compliance

### BEAD BLASTING

- Mechanical cleaning procedure sometimes used to supplement traditional chemical cleaning

## PLATING SPECIFICATIONS

Varland plates thousands of different parts for a diverse customer base across a wide range of industries. Some common plating specifications are listed with our processes, but we have experience with many more.

When you choose Varland, we review any applicable specifications to ensure we can meet all the necessary parameters. We won't put our name on something we don't understand and that we're not confident we can complete in accordance with your quality requirements.



**ZINC**



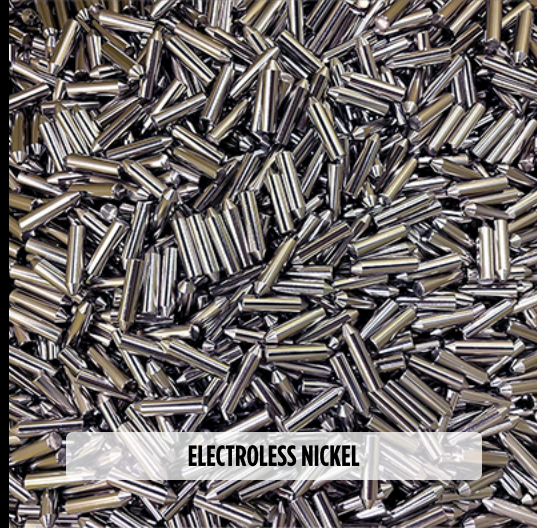
**ZINC + BLACK TRIVALENT CHROMATE**



**TIN-ZINC**



**COPPER**



**ELECTROLESS NICKEL**



**CADMIUM**



**BRIGHT TIN**



**MATTE TIN**



**BRASS**



**ZINC-NICKEL**



**ZINC-NICKEL + BLACK TRIVALENT CHROMATE**



**ELECTROLYTIC NICKEL**

## VARLAND OFFERS AUTOMATED ZINC + TRIVALENT BLACK CHROMATE

Varland Plating started working with trivalent black chromates over 17 years ago, in 2007. At that time, we encountered significant challenges while learning to perfect the process to the point where it could compete with hexavalent black coatings already on the market. We experimented extensively with different chemistries from different suppliers over the years in pursuit of a solution that would meet our standards and the needs of our customers, but we were never completely satisfied with the consistency and quality of the product.

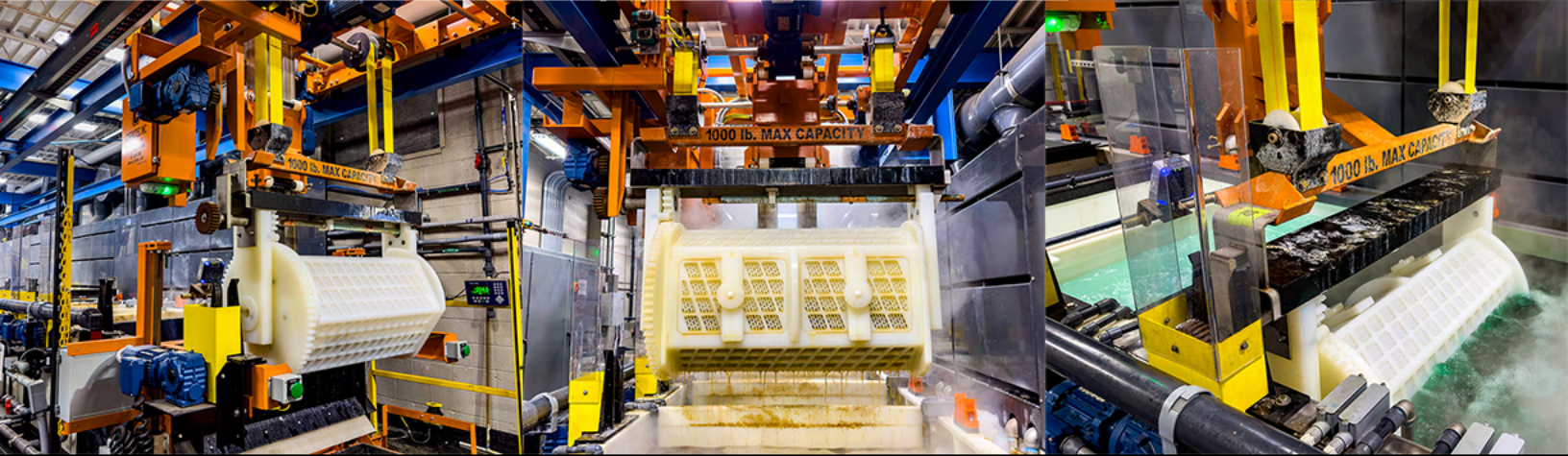
In 2017, one of our chemical suppliers released a new product that reignited our optimism. We immediately saw appearance improvements, and we spent the next two years refining the process to ensure we could produce consistently excellent results.

Despite seeing improvement, complete satisfaction remained elusive. In 2019, Varland installed a chloride zinc plating process which propelled our trivalent black process to new heights. After fine tuning the chemistries, we reached a level of appearance comparable to hexavalent black while also providing benefits like reduced toxicity and superior corrosion protection.

There were still hurdles we had to overcome, namely perfecting the process across the wide variety of parts we process as a job shop. In particular, flat parts like washers tend to stick together in the barrel preventing optimal chromate coverage. The solution to this problem went beyond chemistry and procedural adjustments to engineering special barrels for post dip operations of these challenging parts.

The final hurdle, completed in 2023, was automating the trivalent black process. Automation is critical not only for quality and consistency, but also for efficiency and scale, allowing Varland to match outstanding quality with competitive pricing.

All of these refinements over the years have led to a product that receives overwhelmingly positive customer feedback as our customer/part base has grown. Our exhaustive experimentation and rigorous internal standards have made us true experts in zinc plating with trivalent black chromate.



## VARLAND'S ELECTROLESS NICKEL AUTOMATIC BEGINS PRODUCTION

Varland Plating is very excited to announce that our new electroless nickel automatic plating line is fully online and running production work. We invested significantly in this line, partnering with leading industry experts in plating chemistry, line design, and automation. Our vision was to work with other experts in the field on the foundation of this new automatic line and then leverage our unique expertise to develop a line that is truly second to none. As of late 2023, that vision has been realized.

If you are in need of electroless nickel plating, reach out to a member of our sales team today and let us solve your EN plating problems. Varland has been a leader in electroless nickel plating for years, and this line allows us to reach even higher heights.



**“For several years, Varland has seen consistent growth in the demand for electroless nickel plating. Our new automated electroless nickel line has significantly expanded Varland’s capacity and allowed us to reach new levels of flexibility, efficiency, and quality. EN is a challenging but exciting process, and this new line perfectly positions Varland as a premier electroless nickel plater.”**

**Brian Mangold, President**

## ABOUT VARLAND PLATING

Every company promises quality, delivery, and service. At Varland Plating, these aren't just words in our mission statement – they're values that form the backbone of who we are as a company. For over 75 years, since the company's founding in 1946, Varland Plating has strived not only to meet our customers' expectations, but to exceed them. We are committed to a philosophy of continuous improvement, continually pushing boundaries, and looking for ways to outperform the rest of the plating industry in first pass quality.

Varland is proud to have been an ISO-9001 certified company since 2003, and we're proud to say that we haven't received a single corrective action in our last 10 annual audits. We're also proud that our hard work on behalf of our customers has helped us gain recognition as one of Products Finishing's Top Shops. We're committed to keeping the partnerships with our existing customers strong, and we're always eager to form new ones. We would love the opportunity to take care of all your plating needs.



## WE DELIVER ON TIME AND IN SPEC

As a job shop plater offering a wide variety of plating processes and serving a large number of customers, consistently meeting delivery targets is a constant challenge. At Varland, our internal goal is to turn around all jobs in five business days or less. We're not quite there but we're close (and among the best in the industry). We turn around over 97% of all orders in five days or less and we meet more than 99% of promised delivery dates. We take turnaround time so seriously that our management team reviews every order that is not shipped within five days in order to better understand how we can apply our organizational resources more effectively in the pursuit of customer satisfaction. We understand that our customers not only want their parts on time, they also expect quality plating. Varland delivers on both of these expectations.

Excellent communication is also a priority for Varland. In those rare cases when we're not able to deliver your order on time, we'll let you as soon as possible. If you need to contact us by phone, you will always reach a live person, day and night. No frustrating automated phone system to deal with.



## VALUE ADDED AT EVERY STEP

In addition to the excellent plating quality and turn-around time we provide for our customers, Varland offers a variety of value-added services at no additional cost – unlike others in the industry. These services include detailed quotations, plating thickness testing, salt spray corrosion testing, hardness testing, PPAP documentation, CQI-11 documentation, and plating certifications. We're committed to standing out and offering the best customer service in the industry.



## OUR TECHNOLOGY SETS US APART

Many plating companies advertise automated plating lines – but not all automation is created equal. Keep reading to learn a bit more about our technology and how it allows Varland Plating to deliver industry leading quality, consistency, and turnaround performance for our customers. Let us show you how our commitment to in-house expertise in both plating and technology has allowed us to develop custom and innovative solutions that we believe are unmatched in the plating industry.

## TECHNOLOGY IS IN OUR DNA

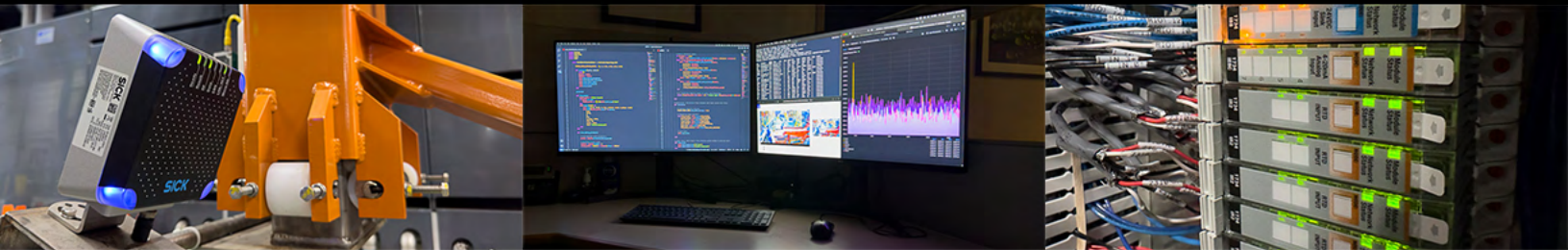
Long before we were designing automation systems for our plating lines, Varland Plating developed our own custom software for running our business. Our in-house programmers began writing COBOL programs for an IBM AS400 server in the early 1980's and we haven't looked back since. We even marketed and sold our software to other plating companies. Many of the core components of this software remain in use and still provide us with a competitive advantage due to being specifically designed for our needs as a barrel plater.

In an industry that hasn't always been known for being on the leading edge of technology, our founders' early embrace of technology is still paying dividends today. When we need a new integration between our existing production control system and a new piece of equipment used on the plant floor, we can make that a reality because of the foundation laid decades ago to promote and maintain strong in-house technological and programming capabilities.

Throughout the '90s and '00s, Varland sold our business software to other plating shops and provided phone support.



Some of those shops are still using the software today!



## ANATOMY OF A VARLAND AUTOMATED PLATING LINE

At Varland, the automation actually begins before customer parts make it to one of our plating lines. When an order of customer parts is received, it is immediately entered into our proprietary production control system and is identified with an in-house order number. Our system then tracks each customer order through our entire process from receipt through shipment assuring lot integrity. Our software maintains a database of all the thousands of different parts we plate. This database includes part-specific information, including a detailed plating procedure/recipe. Plating procedures are built from a series of standardized instruction codes along with part-specific instructions tailored exactly for each part. This system allows for control and consistency within certain similar groups of parts and/or from order to order of the same part. Historical data (shipment history, process/procedure history, etc.) is also maintained for each part.

The fun really begins when the custom plating recipe is downloaded to a PLC (programmable logic controller) controlling an automated line. Our PLCs are programmed to monitor and control nearly every aspect of our automated lines. PLC automation starts before customer parts are even loaded into a plating barrel – the system monitors a load scale and verifies that the right size load is loaded into the barrel per the plating recipe. The system will also adjust specific plating parameters based on load size variances. All plating barrels are outfitted with RFID tags that are read by readers on the hoists. Every time a hoist moves a barrel, the PLC knows exactly which parts are in the barrel allowing monitoring and control of plating process parameters – barrel rotation, tank temperature, rectifier voltage/amperage, etc. Even after parts are unloaded from a plating line, our PLC's monitor the drying process.

A failure at any stage of the plating process can lead to quality problems and/or missed delivery deadlines. We have designed our comprehensive PLC programs to deliver process consistency from the time customer parts are loaded into one of our plating lines until they come out meeting all quality requirements. As a job shop, we plate thousands of different parts for hundreds of different customers across a wide range of industries. It is our tightly controlled process and system integration – from the time customer parts are received on our dock until they are shipped back out – that allows us to consistently deliver results that meet or exceed our customers' expectations.

# TECHNOLOGY BEYOND AUTOMATED PLATING LINES

While PLCs and automated plating lines may grab the headlines, Varland employs many other technological systems in our never-ending pursuit of continuous improvement. We never want to rest on our laurels so we're constantly looking for ways to innovate. Check out some of the other ways we leverage technology in our plant:

**CENTRALIZED DATABASE OF X-RAY PLATING THICKNESS RESULTS AGGREGATING DATA FROM MULTIPLE X-RAY MACHINES FOR HISTORICAL ANALYSIS OF THICKNESS AND ALLOY PERCENTAGE TRENDS**

**CONTINUOUS RECORDING OF SCREENSHOTS ON PLANT COMPUTERS RUNNING HMI SOFTWARE ALLOWING FOR MANAGEMENT REVIEW AND TROUBLESHOOTING**

**CUSTOM PROJECT MANAGEMENT APPLICATION DESIGNED AS PART OF OUR QUALITY MANAGEMENT SYSTEM FOR TRACKING CORRECTIVE ACTIONS AND CONTINUOUS IMPROVEMENT PROJECTS**

**DATA HISTORIAN WITH BUILT IN REDUNDANCY ALLOWING TRACKING, ANALYSIS, AND VISUALIZATION OF METRICS FROM PLCs AND OTHER SYSTEMS**

**CUSTOM API THAT ALLOWS OUR PLC PROGRAMS TO FLAG PLATING EXCEPTIONS REQUIRING QUALITY CONTROL PERSONNEL TO REVIEW ORDERS BEFORE FINAL APPROVAL**

**FULLY AUTOMATED WASTE WATER SYSTEM ENSURING COMPLIANCE WITH LOCAL REGULATIONS AND UPHOLDING COMPANY COMMITMENT TO ENVIRONMENTAL STEWARDSHIP**

**PLC MONITORING AND CONTROL OF OVENS (TRADITIONAL AND INERT ATMOSPHERE) USED FOR BAKING TO RELIEVE HYDROGEN EMBRITTLEMENT AND FOR HARDNESS**

**CENTRALIZED DATABASES AND APPLICATIONS FOR TRACKING SALT SPRAY PERFORMANCE, HARDNESS TESTS, CALIBRATIONS, PLATING SPECIFICATIONS, PREVENTIVE MAINTENANCE, AND MORE**



## VARLAND'S ORGANIZATIONAL COMMITMENT TO TECHNOLOGICAL EXCELLENCE

The extent that Varland leverages technology requires an extraordinary commitment. Innovative technology requires vision and creativity, and team members from all levels of the organization have always been encouraged to bring their ideas forward. Through the years, many employee ideas have been implemented.

We're not the largest plating company but we feel we're one of the best. One of the challenges of achieving technological excellence for a company our size is navigating a marketplace that caters mainly to large teams and even larger budgets. It is also a challenge to integrate different systems (from multiple vendors) that were never intended to work together. Without Varland's embrace of technology at all levels of the organization for decades, the results we have delivered simply would not have been possible.

Whether that commitment manifests itself in deploying a group of open source applications rather than proprietary software or writing a custom translation layer to get historical PLC data into our data historian, we will continue to seek new ways to leverage technology for the benefit of our customers.

# VARLAND PLATING CUSTOMER PORTAL

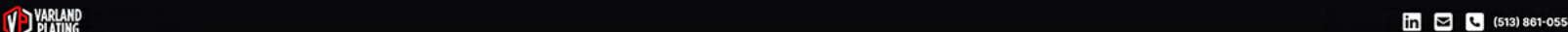
In addition to delivering industry-leading plating quality, Varland Plating always strives to offer our customers great customer service. We know there's nothing more frustrating than automated phone systems, constant voicemails, phone tag, or waiting for responses to emails. We work extremely hard to be responsive and easy to reach, and our new customer portal is an extension of our goal to make things easy for our customers.

Our portal, available to all customers free of charge, allows easy access to near-realtime status information about all jobs at Varland and all shipments made by Varland in the last 30 days.

For jobs at Varland, you'll see all the relevant information about your jobs, including our order number, part number, your purchase order number(s), and part quantities. You'll also see the status of your order, color coded to make it easy to understand at a glance.

For jobs that have shipped, you'll have access to even more helpful information. You'll be able to download PDF copies of certifications for orders that include certifications and PDF copies of Varland's packing list for all shipments. You'll see the shipping method and tracking information, including links directly to carrier tracking whenever possible.

All of this is designed to make things easier and faster for you. Whether you need a copy of a recent certification, proof of delivery from a trucking company, or an inventory of all your jobs at Varland, now you can have access to that information any time and from any device.

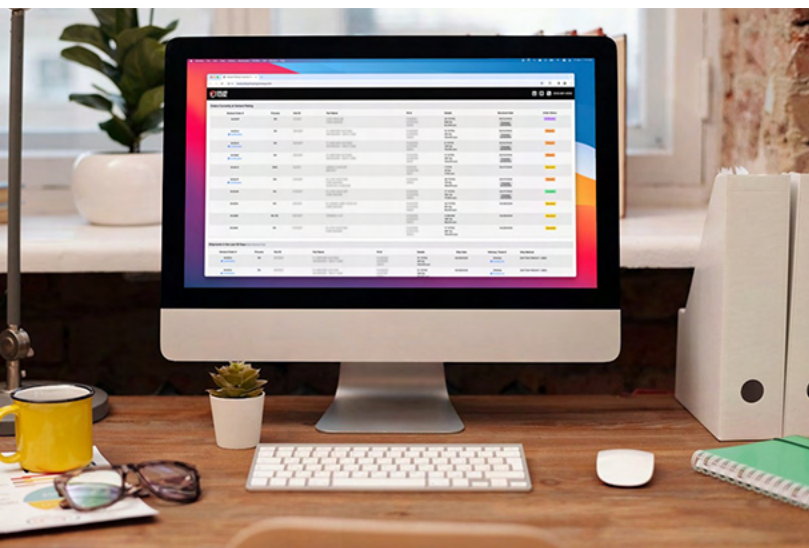


Orders Currently at Varland Plating

Varland Order #	Process	Part ID	Part Name	PO #	Details	Received Date	Order Status
123456	NICKEL	1234-XYZ	3/8-16 X 7/8 HEX HEAD CAP SCREW GRADE 8	12345XYZ ABC987 1234567890	30 TOTES 608 lbs 62,546 pcs	03/01/2024	Received
123456	ZINC	1234-XYZ	3/8-16 X 7/8 HEX HEAD CAP SCREW GRADE 8	12345XYZ ABC987 1234567890	30 TOTES 608 lbs 62,546 pcs	03/01/2024	In Process
123456	SN-ZN	1234-XYZ	3/8-16 X 7/8 HEX HEAD CAP SCREW GRADE 8	12345XYZ ABC987 1234567890	30 TOTES 608 lbs 62,546 pcs	03/01/2024	Complete
123456 <a href="#">Certification</a>	ZN-NI	1234-XYZ	3/8-16 X 7/8 HEX HEAD CAP SCREW GRADE 8	12345XYZ ABC987 1234567890	30 TOTES 608 lbs 62,546 pcs	03/01/2024	Shipped

Shipments in the Last 30 Days Most Recent First

Varland Order #	Process	Part ID	Part Name	PO #	Details	Ship Date	Delivery Ticket #	Ship Method
123456 <a href="#">Certification</a>	EN	1234-ABC	3/8-16 X 7/8 HEX HEAD CAP SCREW GRADE 8	12345XYZ ABC987 1234567890	16 TOTES 439 lbs 112,268 pcs	02/28/2024	654321 <a href="#">Packing List</a>	DAYTON FREIGHT LINES <a href="#">PHO # 12345678</a>



## PORTAL FEATURES WE KNOW YOU'RE GOING TO LOVE:

- 1 For carriers that support it, we provide links to tracking websites. This makes it very easy to learn exactly where your parts are when they're en route and to obtain proof of delivery when it's required.
- 2 We make it easy for you to get electronic copies of plating certifications. We've always been happy to email certifications on request, but now you can get PDF copies without needing us to email them or having to scan them.
- 3 Our portal features a responsive design. Whether you're on a desktop, laptop, or mobile device, all your information is at your fingertips.
- 4 We prioritized speed and a clean design, so there no clutter and nothing to prevent you from finding what you need quickly.



# MEET THE TEAM

There are many reasons why Varland has been successful for over 75 years, but our people set us apart as much as any other factor. Our team is full of hard-working and driven people who do their jobs with integrity because that is the way Varland has always done business. Among our talented team, we're proud to be able to say that we have a number of 2<sup>nd</sup>, 3<sup>rd</sup>, and even 4<sup>th</sup> generation employees. Incredibly, over 50% of our team, including most of the people here, have been with Varland over 15 years. We all understand what it takes to exceed customer expectations, and we look forward to exceeding yours!



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