


WORKMAN ENGINEERING & MANUFACTURING

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SPRING LAKE MI
49456**



**Workman
Engineering & Manufacturing**



From concept to installation, **Workman Engineering & Manufacturing** can be your single source for Metal Finishing Equipment.

We utilize our many years of experience to develop a conceptual design for each Metal Finishing client and then utilizing our vast network of vendors, select the appropriate equipment to provide a complete quotation.

Once we have successfully been awarded the contract, our **Professional Project Manager** for the project will collaborate with technical sales engineer who has been involved with the project from the start, thereby , ensuring a level of continuity that other firms lack. The Project Manager coordinates with the site Supervisor at the installation site to provide start-up and training for both the machine and the chemical/process.



Our History

WE&M was founded in 2014 by Richard (Rick) Workman, and he brings his decades of prior experience in the metal finishing industry to develop and build unique solutions.

Rick's experience includes:

Direct of Engineering – Walgren Company

Senior Design Engineer – Campbell Grinder

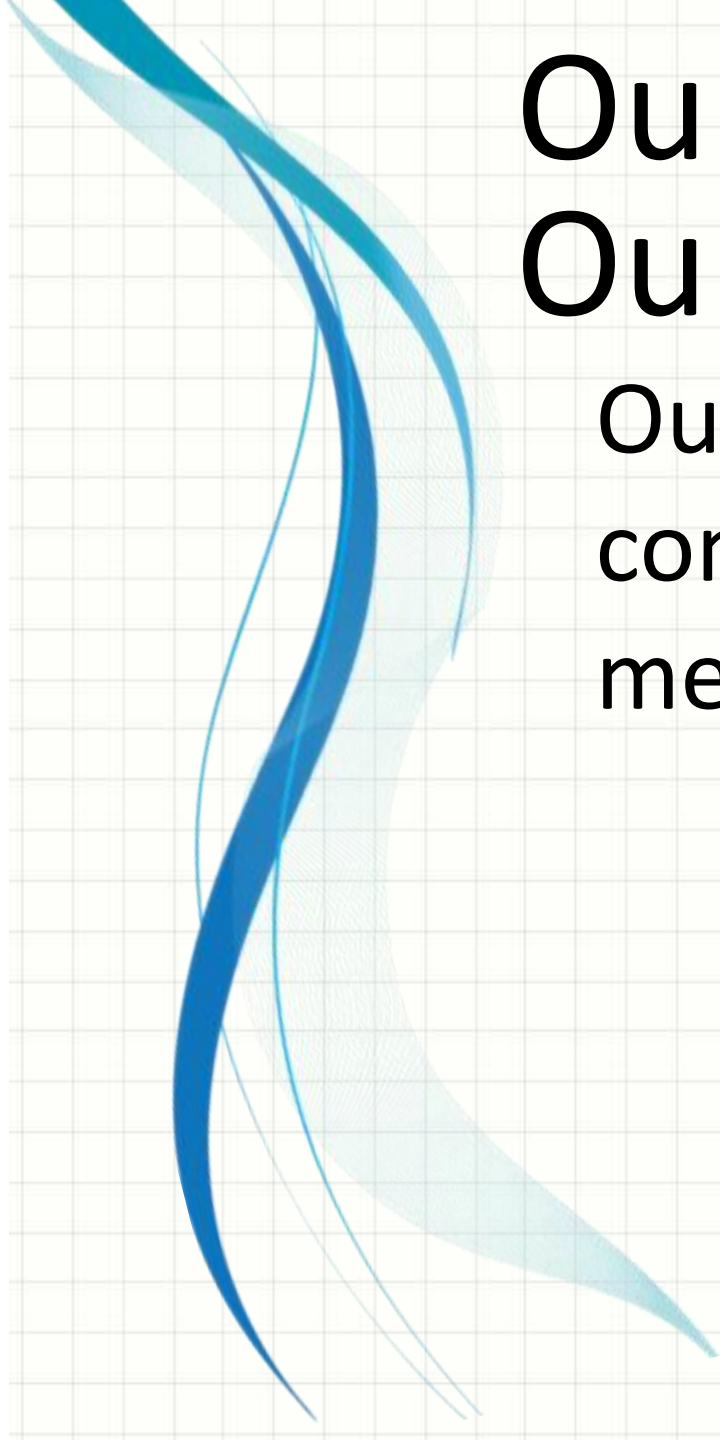
Design Engineer – National Bulk Equipment

“Our company has seen substantial growth in the last ten years especially transforming from an equipment supplier to a full turn-key system provider.”



Workman Engineering & Manufacturing offers our customers the following:

- ✓ To focus our efforts on industries and clients where our products, experience and creative problem solving provide the most benefit and customer satisfaction.
- ✓ To work preferentially with those clients willing to devote time to educate us about their needs (present and future) and problems, (past and present), as the best engineered solutions occur when we're well informed.
- ✓ To respond thoroughly, in a timely fashion, and provide clients with highly detailed, well conceived, engineered solutions.
- ✓ To honor delivery commitments, provide superior service, and hold our vendors to these same standards of quality and on-time delivery.



Our Strength Lies in Our People

Our leadership team
consists of the following
members:

- Rick Workman
- Jim Crozier
- Jerry Coombes
- Kody Hayes

Rick Workman

Founder & Owner | Engineer

Rick Workman's efforts within the Plating Equipment field began in 1994, having previously worked as a consultant to the industry. Prior to founding Workman Engineering (WE&M) in 2014, Rick held the position of Director of Engineering for (Koch) Walgren.

Key to his success at WE&M has been Rick's unique problem solving ability and the ability to develop new processes for the industry. This has allowed WE&M to develop strong relationships with customers and vendors alike, thus becoming known as a company that is willing to tackle large challenges.

Over the years, Rick has formed a team of creative, technical problem-solvers whose varied experiences in areas such as mechanical design, energy and environmental waste minimization, along with flexible designs based on unique scheduling algorithms.

Jerry Coombes

Technical Sales Manager | Project Manager

Gerald “Jerry” Coombes has over four decades of experience in the metal finishing industry. His family founded and owned a large company offering decorative finishes on metals and plastics.

His job experience includes: production chemist for the family operation, technical service & sales engineer for companies that offered proprietary plating products, as well as equipment sales and engineering for companies that provided automated finishing and waste treatment systems.

He also served as Quality Assurance manager for a company that manufactured plumbing goods, and as a result, purchased significant quantities of plated products and finishes.

With his experience, Jerry can offer significant knowledge in automation and equipment design, facility layout, ventilation and waste treatment design. He has extensive experience in the oil, aerospace and plating on plastics industries with intimate knowledge of many finishing chemistries and processes.

Jerry is located in Southern California and functions primarily in a Senior Project Management and Technical Sales & Engineering capacity for Workman Engineering.

Jim Crozier

General Manager | Engineer

Jim has over three decades in the design engineering field. Jim began his career as a Project/Design Engineer for an international material handling company located in Southwest Michigan, soon working his way to a role as a Senior Project Engineer.

Jim's experience transitioned to the office furniture industry, where he served as a Development Engineer for a large Michigan furniture company. After several years, Jim realized his passion for design was centered in material handling.

Jim transitioned into a Design/Project engineer role for a custom machine manufacturer and soon moved in to the role of Operations Manager while continuing as a Design Engineer.

With the knowledge and experience Jim gained, he was recruited to a large Automotive/Furniture supplier as the V.P. of Engineering. It was here that Jim led multiple internal groups developing and introducing innovative project launches.

Jim joined Workman Engineering & Manufacturing as the General Manager in 2019. Jim is involved with the mechanical engineering, electrical controls, and making sure the operations of the company continue to move forward.

Kody Hayes

Manufacturing Manager | Field Service

Kody's manufacturing career began working in the automotive industry as a component supplier building transmission parts, solenoids and wire harness components. He had worked on all three shifts which allowed him to further his leadership skills. Kody was promoted to the machine maintenance team, eventually becoming the 3rd shift lead. He gained experience working on cam driven pneumatic pick and place machines, vibratory feeders, conveyor systems, coil winding systems, annealing ovens vision systems as well as R&D projects. Kody was also an important lead for 5S/Kaisen events and new engineering projects.

In 2017, Kody was recruited to Workman Engineering & Manufacturing. He started his role by running all the machines to gain an understanding of the WE&M building process. Kody also became AWS weld certified and gained certification to run equipment such as forklifts, scissor lifts, telehandlers and boom lifts.

Kody's role evolved to now lead the system installation team as well as continuing to be an asset on the manufacturing floor running machines and helping to train new employees.



WE&M

EXPERIENCE MAKES

THE DIFFERENCE

With years of collective experience in the design, engineering, fabrication, installation and project management of automated wet processing systems, and knowledge of the related facilities issues, WE&M offers creative, cost effective, space/energy/waste and water conserving solutions.

Principal areas of specialization: Extrusion anodizing, printed circuit boards, automotive industry applications, electronics, semi conductor industry and numerous other decorative and functional applications. Our associates have intimate experience in anodizing, chem film, passivation, electropolishing, electrophoretic painting and many decorative and functional plating processes.

This experience allows us to provide equipment and services to a variety of industries including aerospace, oil/energy, automotive, electronics, semi conductors and more.

In Our Work, We Have Become Proficient In The Design of the following

- ✓ Layout of Process Line
- ✓ Automation & Material Handling
- ✓ Exhaust Ventilation Systems
- ✓ Tank Construction in Plastic, Stainless Steel & Mild Steel
- ✓ Heating Systems.... Electric, Steam or Hot Water
- ✓ Cooling Systems
- ✓ Electrolytic Plating/Anodizing Tank Including Power, Anode & Cathodes and Bussing
- ✓ Solution Filtration
- ✓ Solution Agitation Including Eductors, Mechanical, Vibratory and Bump
- ✓ Chemical Replenishment Systems
- ✓ Rinsing Systems
- ✓ Waste Pumping & Storage Systems
- ✓ Waste Treatment Systems
- ✓ Rinse Water Purification, Metal Recovery and Recycling Systems
- ✓ Waste Minimization Systems including Evaporation and Zero Discharge

Our *Experience* Allows Us to Offer Some Unique Features

- Processing Multiple Recipes Simultaneously with an optimizing, Mixed Cycle or Dynamic Scheduling Hoist Control Algorithms
- Automated Tank Covers with Modulating Exhaust to Reduce Ventilation Volumes by as much as 60%
- Ventilation Booths on the Hoist
- Work Platforms on the Hoist
- Automated Drip Trays with Wash Down Features
- Automated “Water Break” Testing
- Flight Bar Washing
- Dual Polarity Flight Bars to Power Auxiliary Anodes
- Insoluble Anodes to Increase Throwing Power and Plating Speed
- Switchmode Power Supplies for Greater Reliability and Control of your DC Power
- Pulse Rectification to Improve Deposit Characterizations
- Pulse Jet Dryers
- Hydrosonic & Ultrasonic Cleaning Tanks

Our Strategic Partners

The world has become a MUCH smaller place in terms of communications and technology. Knowledge derived on one continent can be instantaneously transported to another. WE&M acknowledges that many of our accomplishments have been due to many long-term, key domestic and foreign strategic relationships. We routinely work with partners throughout North America.

Our core foundation is not simply based on ongoing, successful buyer-seller arrangements, but rather novel joint ventures where we and our “partners” may jointly fund research, hire employees, share large project responsibility, and even jointly approach the market with a new product offering.

Our Strategic Partners

AUCOS

Aucos, a major controls firm for more than 30 years, AUCOS AG, is the world's largest plating/wet processing system controls firm, with more than 70 specialists devoted solely to the design and engineering of software and control systems for automated electroplating, anodizing, solar and metal finishing systems. Aucos controls' unique flexibility and adaptability have been effectively integrated into over 1,200 sites, on both new and existing (retrofitted) systems.

Our Strategic Partners



IPEC GLOBAL INC.

IPEC Global has been a valued partner for a number of years. Their primary business mode is the design and fabrication of smaller, manual process lines as well as waste treatment systems based on chemical precipitation.

When IPEC encounters a project with an automated process line, they turn to Workman Engineering & Manufacturing. We, in turn, frequently use them for waste pumping & small to medium waste treatment systems. We also use them for chemical replenishment systems and electrical and control support.

Our Strategic Partners



MAPCO has 20,000 Sq.Ft. of manufacturing space in Traverse City, Michigan where, since 1979 they have manufactured quality plastic products, primarily ventilation for the metal finishing industry.

Their tools include a Wagner butt fusion welder, CNC router, vertical router, strip heater to bend plastic, extrusion welders and an iron worker.

Their ventilation systems are well respected, primarily because of their efficiency. In addition to a standard packed bed, with high efficiency spherical packing, Mapco uses a combination of a chevron and composite mesh pad mist eliminator to capture mists down to 6 microns.

Our Strategic Partners



Because of their excellent support and quality product line, we have come to rely on Thermal Care for many of our chilled water requirements. They provide WE&M complete units that are modularized and easy to install. We can choose a combined model in which the condenser, compressor, controls, reservoir and recirculation pump are in a single unit or a split model in which the condenser is separate from the compressor, controls, reservoir and recirculation pump. We typically use split units for large chilled water systems to allow the condenser to be located outside.

Our Strategic Partners



WE&M uses Parker Boiler when our projects require a hot water or steam boiler. They introduced the concept of using pressurized hot water to heat tanks to the metal finishing industry. Their boilers are efficient and more important, extremely safe. Parker Boiler was established in 1919 and opened their manufacturing facility in Los Angeles in 1936.

Project Management

Workman Engineering & Manufacturing is intimately involved in the project from start to finish.

We develop exceptionally detailed proposals that describe the conceptual design in detail. Our internal team uses this design concept along with extensive engineering and design reviews to produce an exceptional system.

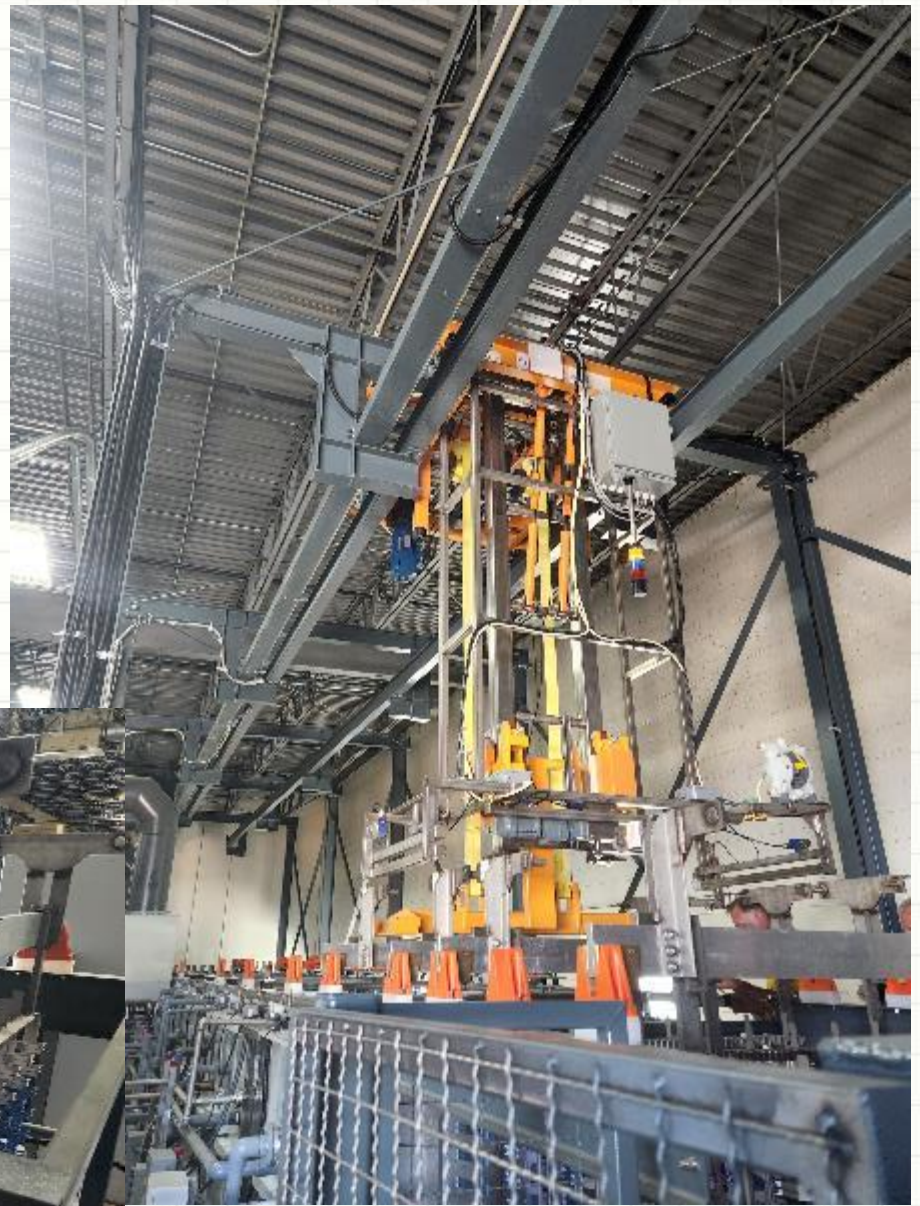
We have a strong presence during installation, often remaining on site the majority of the time to supervise and support both our subcontractors and our customers with their installation efforts.

After installation, we are there for start-up and training. It is even possible to contract further support with establishing a laboratory, writing work procedure and arranging follow up training at six month or one year intervals.

Our Work



Our Work



Our Work



Our Work



Our Work



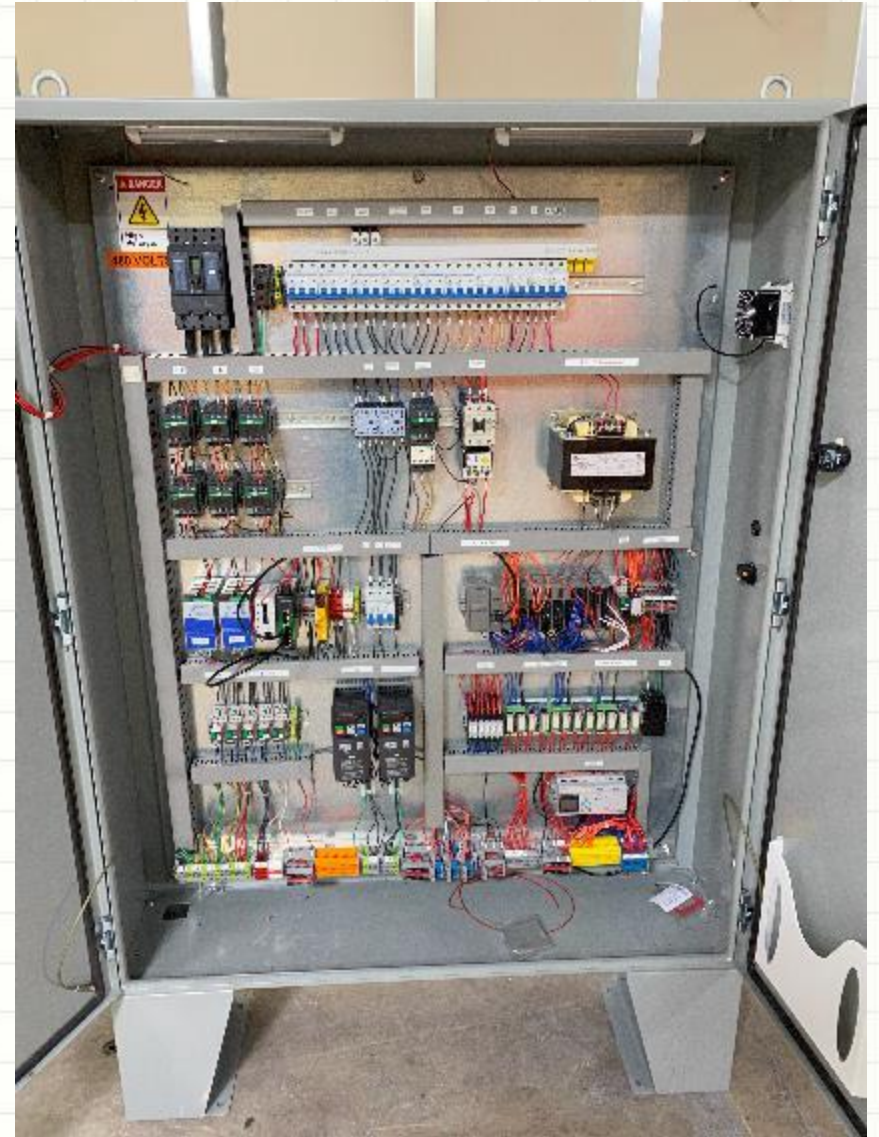
Our Work



Our Work



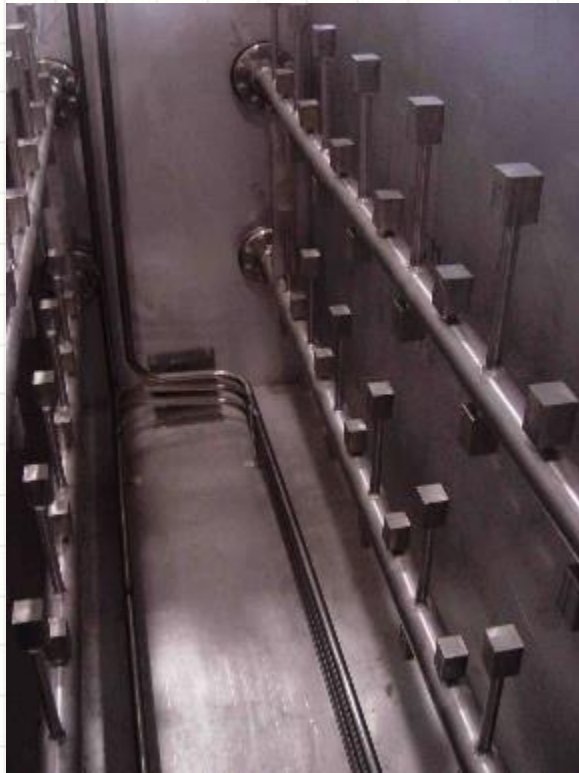
Our Work



Our Work



Our Work



Our Work



Waste Treatment

We would like to point out that one of our associates, Jerry Coombes, has extensive experience in the design of treatment and recycling systems. Based on this experience, WE&M would recommend the use of ion exchange to purify and recycle up to 90% of the dilute rinse wastes. This ion exchange system would have automated, on site regeneration and include carbon, filtration & UV purification. The feed and product holding tanks would be large enough to operate for 6 to 8 hours to allow maintenance of the system.

The concentrated wastes from resin regeneration and spent process chemistries would be treated on site using chemical precipitation on a batch basis.


The effluent or treated waters from the batch treatment could be discharged to the sewer, evaporated or hauled off site for legal disposal.

Waste Treatment

Other technologies that WE&M has experience and used on past projects include:

- Chemical Precipitation on a Batch or Continuous Flow Basis
- Membrane Systems including Cross Flow, Ultrafiltration & Reverse Osmosis
- Evaporation
- Closed loop and Zero Discharge treatment systems
- Electrowinning and metals recovery
- Source-point treatment loops
- Waste minimization methodologies both PRIOR to generation and post generation

Our work in treatment system design, methodology, recycling and waste minimization has garnered awards from the USEPA, NPEP (National Partnership for the Environment), USDOE and multiple state and regional regulatory agencies.



If There are Opportunities Where
the Capabilities of WE&M and Our
Strategic Vendors can Serve Your
Company, Please Give me a Call.

Jerry Coombes

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