



J O S E P H O A T C O R P O R A T I O N



E S T A B L I S H E D 1 7 8 8

Process Equipment Fabrication,
Design and Consulting Services for
the Chemical Process Industry.



Above: 12' 6" Diameter x 175' Tall Solid Zirconium Tower with Trays

Opposite Page: 13' 0" Diameter x 120' Tall Solid 316-L Tower



AN INTRODUCTION TO OUR COMPANY

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Joseph Oat Corporation is a world renowned designer and fabricator of pressure vessels, reactors, columns, heat exchangers, and other specialty items for the chemical and petrochemical, nuclear power, and other commercial industries. Family owned and operated since 1788, the company has gained its reputation by providing high quality equipment in a great variety of alloys for some of the most demanding and critical applications.

Facilities. Conveniently located on the Delaware River, which divides Philadelphia, PA and Camden, N.J., JOC economically ships equipment worldwide. Our heavy lift capabilities, modern fabricating and welding equipment, and expertise in fabricating large and challenging vessels makes JOC the fabricator of choice for buyers demanding excellent workmanship combined with competitive pricing. Included in over 120,000 sq. ft. (11,150 sq. M) of shop space is almost 20,000 sq. ft. (1860 sq. M) of environmentally isolated clean room fabrication area for the construction of reactive metal equipment, including titanium, zirconium and tantalum.

Engineering. JOC has always been one of the true leaders in heat transfer technology. We are not only users of internationally recognized software such as HTRI and AspenTech—BJAC, but we are contributors as well. Our unique experience with the special problems facing process and power plant designers allows us to offer innovative and economic solutions to complex problems. We can perform thermal and mechanical ratings of all of the heat exchangers we sell. We perform vibration analysis, seismic and structural analysis, and fatigue analysis in-house. We utilize programs such as ALGOR and IMAGES for sophisticated finite element analysis. Our solutions are always real-world solutions; those that work in practice, not merely on paper.

QA – QC. Quality Assurance is a way of life at JOC. One of the first U.S. fabricators to embrace the ISO 9001 standards, Oat maintains certifications in ASME Sec VIII Div. 1 and Div. 2, ASME Sec III Class 1, 2 and 3, and ASME Sec I. Combining its vast experience in the nuclear industry with providing specialty equipment for severe industrial services provides JOC with a rare perspective on the relationship between proactive prevention of quality anomalies and supplying equipment which will provide the owner with decades of successful and economical operation.

Oat is large enough to successfully tackle the largest commercial projects, yet small enough to provide the buyer with a true sense of dedicated service. Our employees are the key to our strength. We are not a company managed by a corporate conglomerate by remote control. The owners of the business work side by side with all of our employees, working for the common goal of total customer satisfaction with our products.





ENGINEERING CAPABILITIES

For decades, Joseph Oat has offered its customers the ability to provide innovative engineering solutions to problems facing industry. Today, Oat remains a full-service fabricating and engineering company, offering its customers a wide array of service uncommon in the industry. From designing special purpose heat exchangers and pressure vessels for petrochemical applications, to safety related heat exchangers for the nuclear power industry, Oat serves its customers in many strategic ways.

Our services include the following:

- Innovative heat transfer solutions which conserve space and capital
- Thermal and mechanical rating of heat exchangers
- ASME Code calculations
- Wind load analysis of columns
- Seismic analysis of heat exchangers, vessels and structures
- Fatigue analysis of heat exchangers and vessels with thermal and mechanical loads
- Analysis of shell stresses due to applied nozzle and external loads on shells

Our engineers have extensive experience, in both the power industry and chemical process industry. They can offer proven, technologically superior designs which are industry tested and commercially attractive.

Joseph Oat uses a combination of popular state-of-the-art software, together with proprietary computer programs to analyze equipment and prepare calculations. We utilize popular AUTOCAD software to prepare two and three dimensional renderings of our designs.

Our engineering services can be incorporated into the equipment we sell or can be offered as a stand-alone service to customers performing budgetary analysis, attempting to upgrade existing equipment, or preparing design specifications.

Memberships

- ASME
- AspenTech-BJAC
- HTRI
- Materials Technology Institute
- TEMA



MACHINING CAPABILITIES

At Joseph Oat Corporation we are always prepared to solve a wide variety of fabrication challenges. Utilizing various welding techniques, both manual and automated, and the latest equipment including state-of-the-art tube to tubesheet automatic welding, we manufacture and assemble components from virtually all weldable alloys such as:

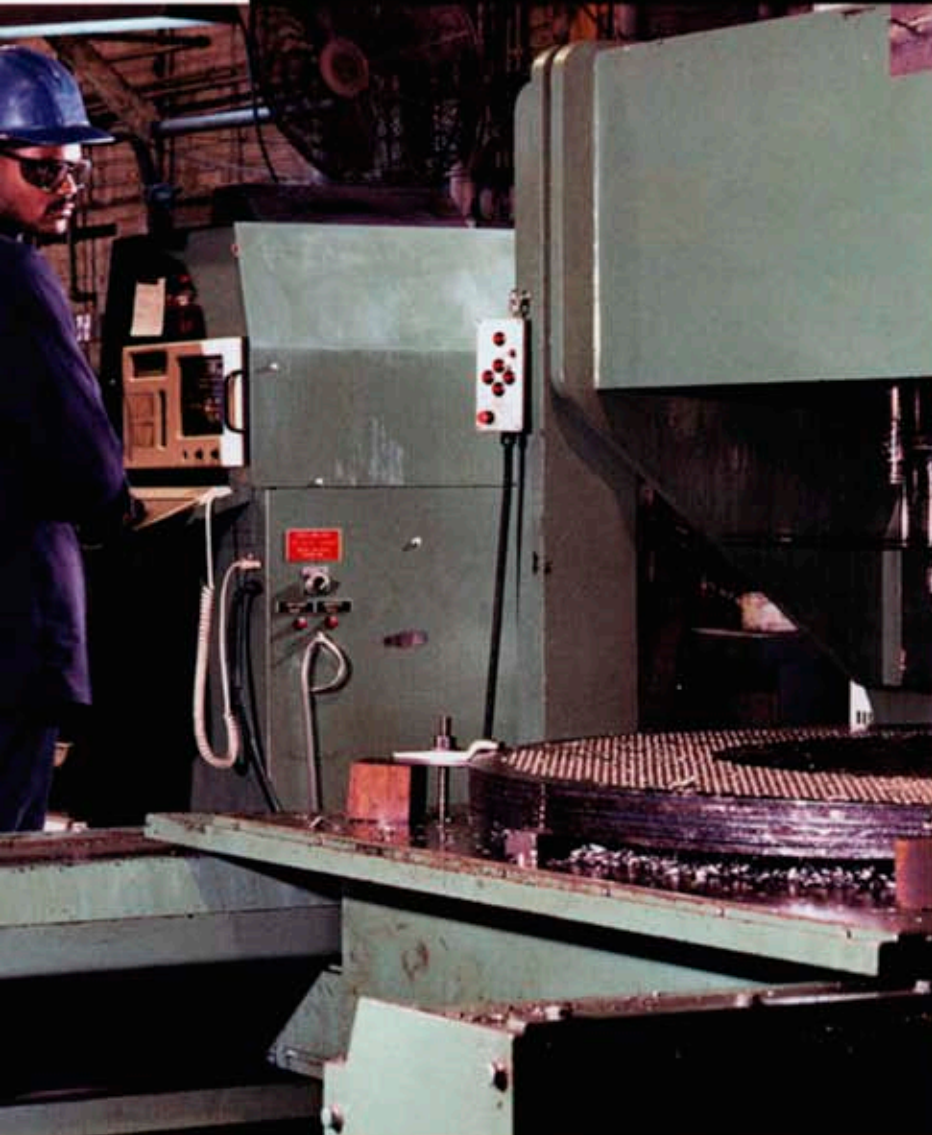
- Titanium
- Zirconium
- Tantalum
- Chrome-moly steels
- Nickel Alloys
- Hastelloys

Opposite Page Top: Our state-of-the-art computer room
Engineers use the latest software to solve any design challenge.

Top: CNC Multi Spindle –168" x 180" table - capable of deep hole drilling

Center: CNC Single Spindle drilling

Right: "ARC" automatic tube to tubesheet welding





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REACTIVE METAL FABRICATION AND CLEAN ROOM TECHNOLOGY

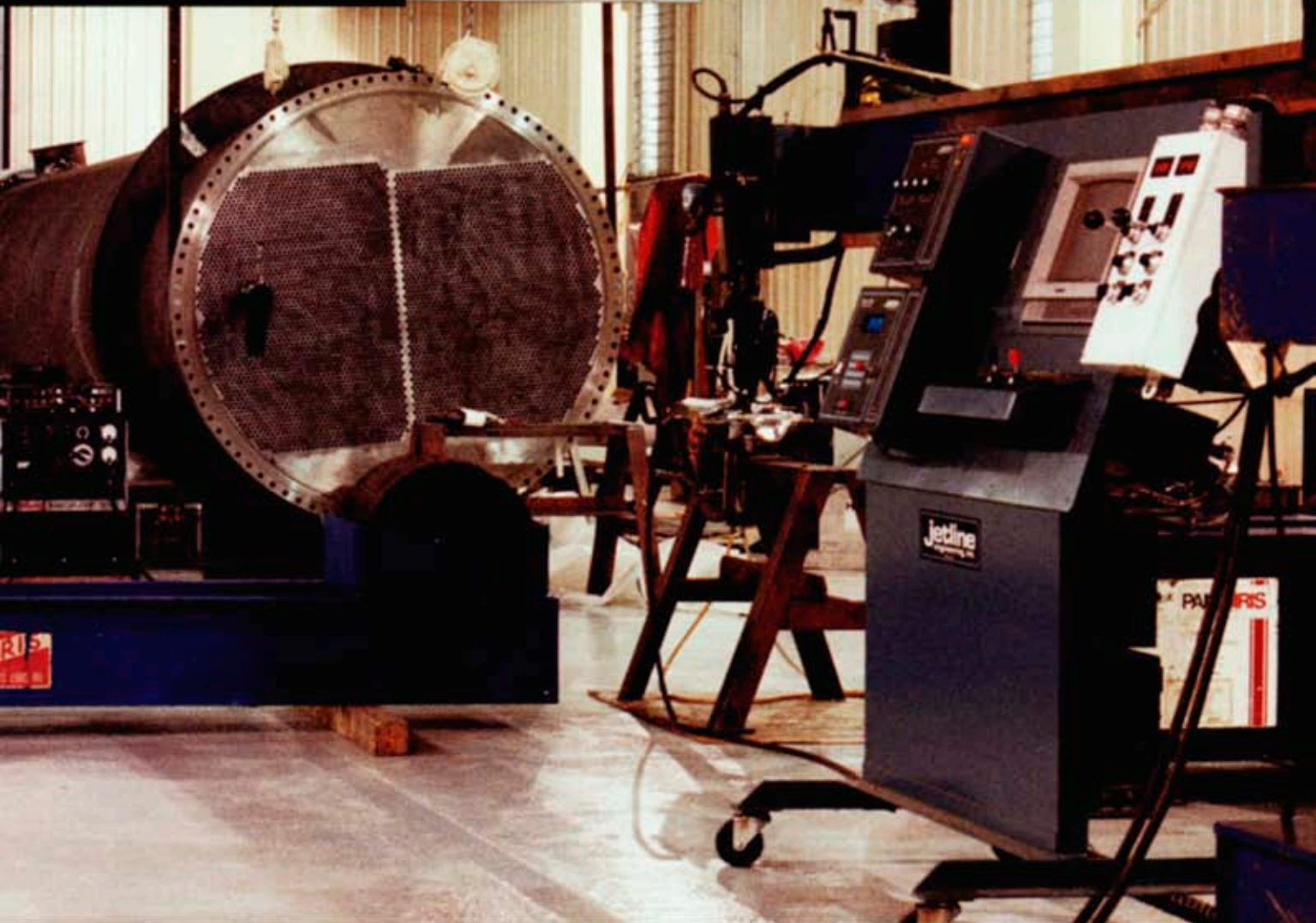
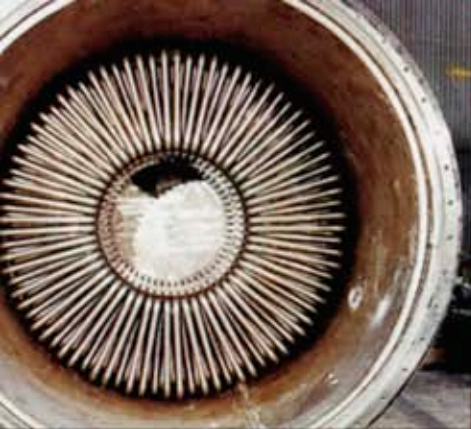
It is well known that reactive metal fabrication (titanium, zirconium and tantalum) requires not only specialized fabrication techniques, but, in order to maximize quality and reliability of the finished product, requires a completely segregated and environmentally controlled and monitored clean room area to optimize fabrication quality. Reactive metal equipment fabricated in a clean room environment is superior to equipment manufactured in standard conditions. By removing the most prevalent sources of contamination of a reactive metal weld, the welds produced by Oat are pure silver in color, which indicates welds free of contamination and oxidation. Welds produced in this manner are more ductile and corrosion resistant, and will hold up better to severe service longer than ordinary reactive metal welds.

For the fabrication of reactive metals, we have constructed two completely enclosed world class clean rooms with a total shop space of almost 20,000 sq. ft. (1860 sq. M), with each room having access to our 200 ton capacity cranes. These rooms are truly state of the art. In these temperature controlled environments, each with independent HVAC controls, air is filtered 6-8 times per hour, and positive pressure is maintained at all times to keep out contaminants. We have the ability to check for the presence of free iron particulates for work requiring special atmospheric monitoring. We employ special fabrication techniques to assure clean, contamination free fabricated product.

Equally important, we have developed proprietary welding techniques for reactive metals which enable Oat to produce equipment which our customers have consistently claimed is the finest quality produced anywhere in the world.

This investment in facilities and equipment has enabled Oat to become an unquestioned leader in reactive metal fabrication. And will be there to lead the way into the next millennium.





Opposite Page Top: Zirconium Shell and Tube Exchanger

Top: Zirconium Vessel and Coil

Center: Remotely operated welding equipment for reactive metal fabrication

Left: Clean Room fabrication for various reactive metals





GENERAL PRODUCTS & CAPACITY

Joseph Oat Corporation produces heat exchangers, pressure vessels, and specialty products for both general industrial applications and power industry.

We are an integrated supplier offering a wide-reaching array of products and services.

Our large shop facilities allow us to fabricate vessels up to 20 ft. (6.1M) in diameter, weighing up to 400,000 lbs. (182,000 kg), and having an overall length of up to 200 feet (60.8 M) in one piece. We are located in an international seaport, with convenient access to all modes of transportation.

Joseph Oat fabricates virtually all metals used in construction, including carbon and low alloy steels, austenitic and ferritic grades of stainless steel, duplex steels, nickel alloys, copper and copper alloys, titanium and titanium alloys, zirconium and tantalum. We also fabricate stainless clad, nickel alloy clad, and titanium, zirconium, and tantalum clad materials.



Examples of industries we serve are as follows:

PETROCHEMICAL
CHEMICAL
OIL REFINING
PULP AND PAPER
PHARMACEUTICAL
MINING
LNG AND LNP
NUCLEAR POWER
FOSSIL FUELED POWER
GEOTHERMAL
CONGENERATION





Top Left: Typical Shell and Tube Exchanger for chemical process industry

Top Center: Solid Zirconium tower – 200 ton

Top Right: 40,000 sq. ft. – 192" Dia. Titanium Shell and Tube Heat Exchanger

Left: Titanium Clad Shell and Tube Heat Exchanger

Center: Titanium Clad Reactor

Center Window: Hydrogen Cooler

Our products include:

Shell and tube heat exchangers*

Pressure vessels*

Reactors

Columns

Condensers

Feedwater heaters

Filters*

Strainers*

Special weldments and parts

Nozzles, flow restriction devices
(orifice plates and venturies), etc.*

Evaporators

Special purpose machinery

Spent fuel pool racks

Nuclear waste containers

Component supports

Pump supports, bedplates*

Spray nozzles

Piping

Raw materials such as bolting,
flanges, plate etc.

Engineering services such as fatigue
analysis, heat transfer analysis etc.

*Nuclear Safety Related per ASME
Sec III or industrial quality per
ASME Sec VIII



QUALITY ASSURANCE

Joseph Oat's Quality Assurance Program is structured to provide assurance to our customers and to ourselves that the quality of the products and service which Joseph Oat offers is the finest available anywhere. Our quality policy is simple. "It is the policy of Joseph Oat Corporation to perform work of the highest attainable quality in accordance with applicable codes, standards, and customer specifications." We take the phrase "highest attainable quality" quite seriously. Examination of our finished products reveal an uncommon level of attention to all structural and cosmetic features of fabrication.

The Joseph Oat Quality Assurance Program is fully documented. The company is an ISO-9001 certificate holder, which attests to our commitment to adhere to internationally recognized quality assurance standards.

Our program also conforms to the following standards:

- ASME Sec III Nuclear Code
(We possess the ASME Sec. III CL. 1,2, and 3 "N" Stamps)
- ASME Sec VIII Boiler and Pressure Vessel Code
- Federal Regulation 10CFR50 Appendix B
- ANSI N45.2
- ASME NQA-1
- ISO 9001, EN ISO 9001

Our QA Program has been audited by dozens of current customers. In addition, we have been audited by NUPIC, the multi-utility consortium which reviews businesses which actively supply equipment to the Nuclear Industry.



PRODUCT TRANSPORT



Top Right: Zirconium tower ready for ocean vessel delivery

Above: Railway transportation of finished product

Directly Above: Truck delivery of 25,000 sq. ft. heat exchanger

Right: Barge loading facilities adjacent to our shop provides us easy access to domestic and international waterways.



Upon completion of your project Joseph Oat Corporation offers several shipping options.

Our location on the Delaware River, with docking and barge loading facilities literally at our back door, provides the capability to access all domestic and international waterways and ports giving us a window to the world.

In addition to our waterway transport, we also utilize nearby railways and trucking lines for the quick, convenient delivery of your products.

From design to delivery JOC provides world class service that has satisfied customers around the globe for over two centuries. We are poised to continue being a leader in the process equipment fabrication industry.





THE HISTORY OF OUR COMPANY

Joseph Oat Corporation (originally Joseph Oat & Sons) is the oldest continuously operating industrial fabrication business in the United States. Founded in the year 1788 in historic Philadelphia, Pennsylvania, it may have been patronized by the U.S. founding fathers on their sojourns through narrow cobblestone streets. Started by Jesse Oat, the company sold copper works such as kettles and utensils, competing with other craftsmen such as Paul Revere. Son Joseph continued in his father's footsteps and added brass and sheet-iron work to the scope of products offered. Exquisite copper plates and lamps became the company's forte. They also built stills, steam engine boilers, and pressure vessels for soda water bottlers.

Ownership of Joseph Oat and Sons remained in the Oat family until the late 1800's, when the business was sold to their accountant. In 1966, the business was sold to its current ownership, and the name was changed to Joseph Oat Corporation. The business rapidly expanded and moved from its quaint 10,000 sq. ft. Philadelphia location to its current sprawling complex across the Delaware River in Camden, N.J.

The Joseph Oat name has always been synonymous with quality. From its outstanding copper work of the 1700's to the most demanding applications today, the company retained its reputation for supplying the highest quality equipment available anywhere in the world. Joseph Oat has remained a privately owned and operated family business throughout its history. This has enabled the company to provide a personal level of service with easy access to management at all levels. While many other competitors need to please their corporate stockholders, Oat needs to please only its customers.



ESTABLISHED 1788

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