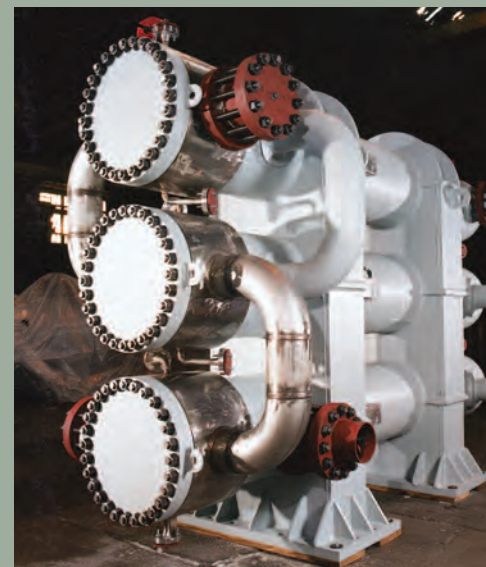
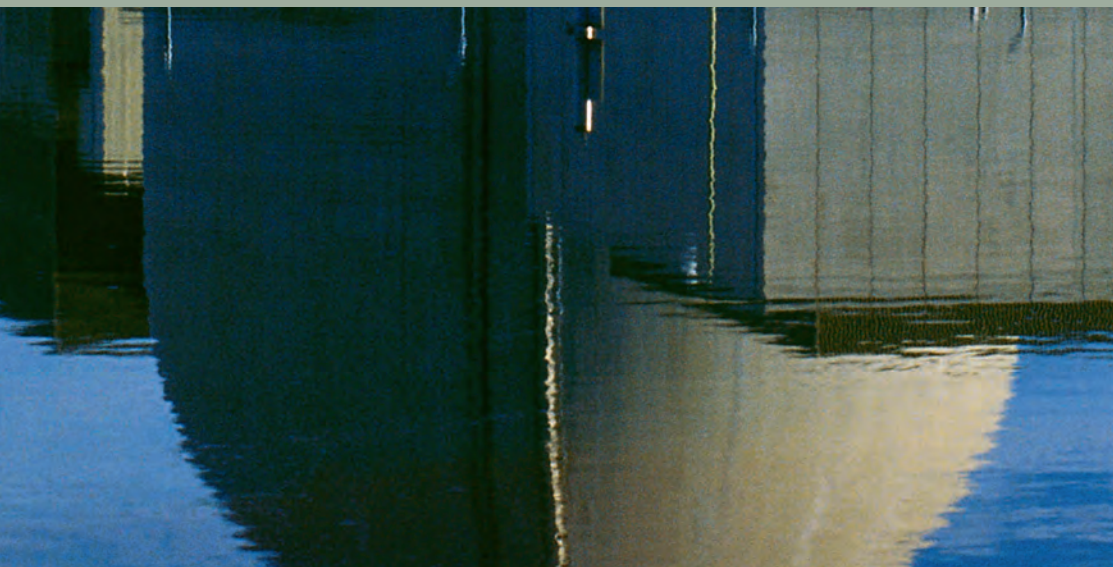


ESTABLISHED 1788

## JOSEPH OAT CORPORATION

We Make Metal Work<sup>®</sup>

FABRICATION, DESIGN, AND  
CONSULTING SERVICES  
FOR THE **NUCLEAR INDUSTRY.**



# JOSEPH OAT CORPORATION

Joseph Oat Corporation, a family owned and operated business for over 200 years, provides a vast array of specially designed and fabricated equipment to the power industry, as well as for industrial applications. Our large fabrication shop with heavy lift capability, our ability to produce intricately machined and close tolerance parts, our certified self-contained clean room, and our highly experienced group of engineering professionals provides the means to successfully produce equipment for many diverse and challenging applications.





20,000 sq. ft. climate controlled clean room for titanium and zirconium fabrication.

1

Joseph Oat Corporation is dedicated to continuing its nearly six-decades of service to the nuclear industry, while providing a wealth of products for other energy-related industries.

**Newly designed plants** — we provide an impressive array of heat exchangers, pressure vessels, filters, strainers, flow meters, flow restriction devices, and other special fabrications.

**Existing plants** — we provide replacement equipment even when the original manufacturer no longer exists. We will also provide fuel storage equipment and engineering services.

**Decommissioned plants** — we provide equipment which will facilitate safe storage and disposal of whole reactors and radioactive waste.

**Federally owned laboratories and waste disposal sites** — we provide specialized safety related equipment used in the operation of the sites, and in the disposal of radioactive waste products.

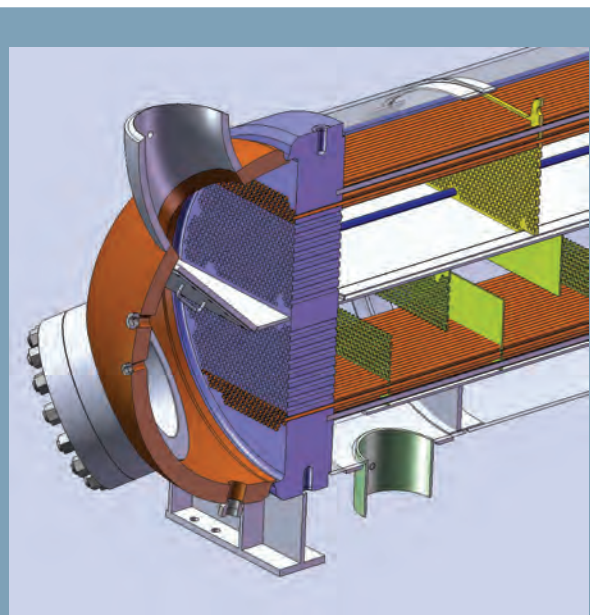
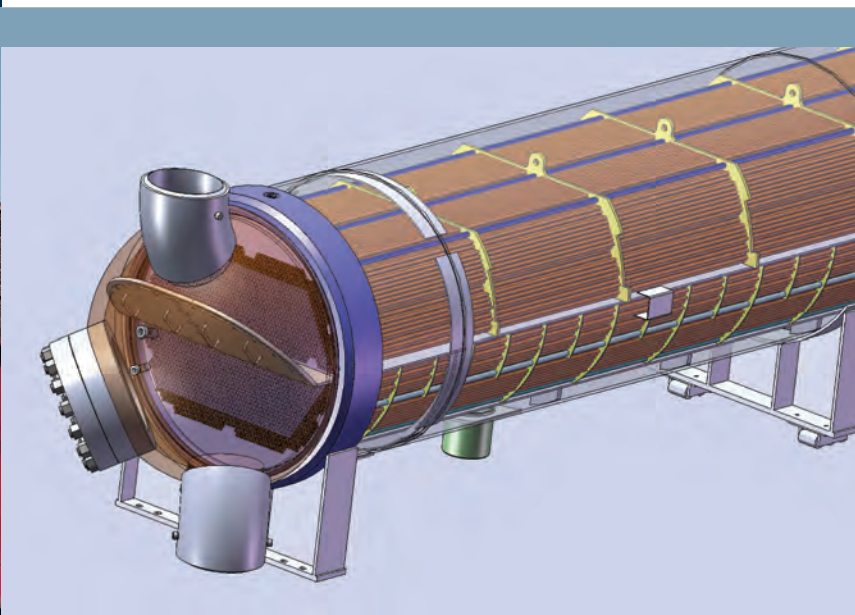
The photographs throughout this brochure indicate the variety in size and scope of components designed and fabricated by Joseph Oat Corporation. Our history of performance is evident and indicative of our ability to serve our customers in the future.



## QUALITY ASSURANCE

In the power industry, an effective Quality Assurance system is a company's most vital resource. Joseph Oat's Quality Assurance system has been certified for ASME Sec III Class 1, 2, and 3 safety related equipment since 1966. It is kept current and dynamic by continuous internal and external audits and conformance to the current ANSI and ASME Quality Assurance Standards, including NQA-1. Joseph Oat is also certified to the internationally recognized standard ISO-9001 and possesses a Chinese license.

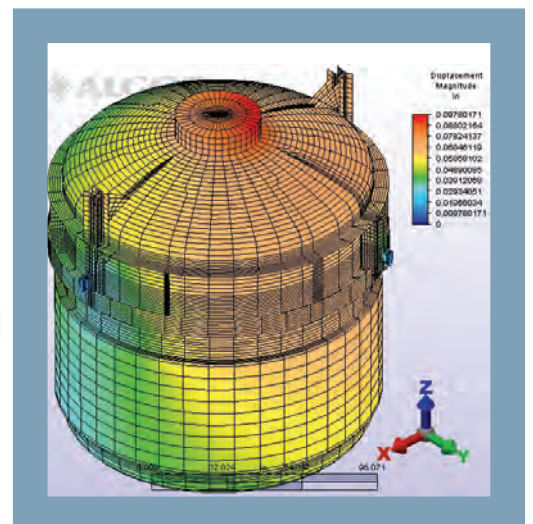
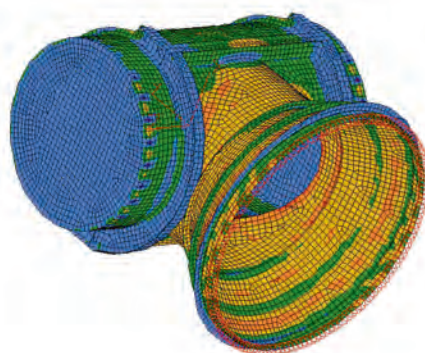
Effective Quality Assurance is the responsibility of all Joseph Oat employees, and they are intimately involved in its successful enactment. From initial quotation, through the order review and execution, until final delivery of goods and the continued servicing of those goods, our Quality Assurance Program provides the customer with the confidence that the products he has purchased are the best available world-wide.



## DESIGN & CONSULTING SERVICES

Joseph Oat Corporation's engineering department consists of chemical and mechanical engineers with specialized education and multidisciplinary industrial experience in applied mechanics, heat transfer and transport phenomena. Our staff engineers are extensively experienced in ASME boiler and pressure vessel code design and stress analysis. The latest finite element analysis techniques are used to qualify equipment for seismic loading, vibration, thermal fatigue and piping loads.

Our design and analysis methods utilize current commercial software packages as well as proprietary codes developed at Oat over the past forty years. Computer-aided design/drafting offers speed and ease with which a drawing can be prepared and modified and allows high-resolution and interpretation of prints for review and fabrication.

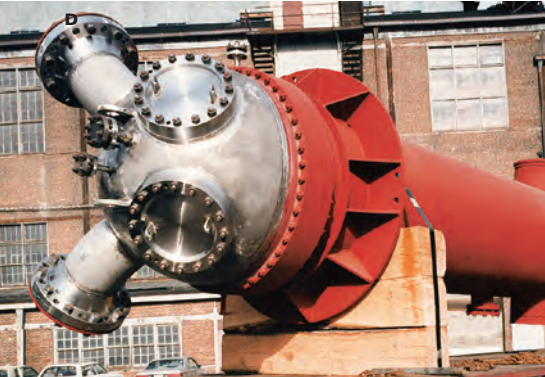


# DIVERSE APPLICATIONS FOR THE NUCLEAR INDUSTRY



4

- A** | RHR Heat Exchanger
- B** | Titanium coil fabrication in clean room
- C** | Commercial nuclear reactor burial cask
- D** | Isotope reactor heat exchanger
- E** | Fabrication of canister (MCO) shell for the Department of Energy



# RADIOACTIVE WASTE HANDLING AND STORAGE

Joseph Oat Corporation manufactures canisters and casks used in the safe permanent and temporary storage and handling of radioactive waste. We routinely develop special fabrication techniques, weld sequences, and fixturing to construct these demanding and intricate safety related items.



H



G



I



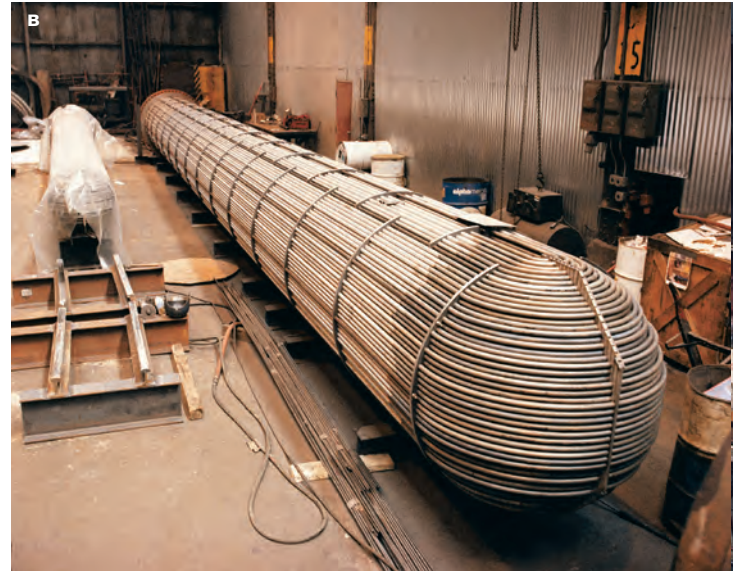
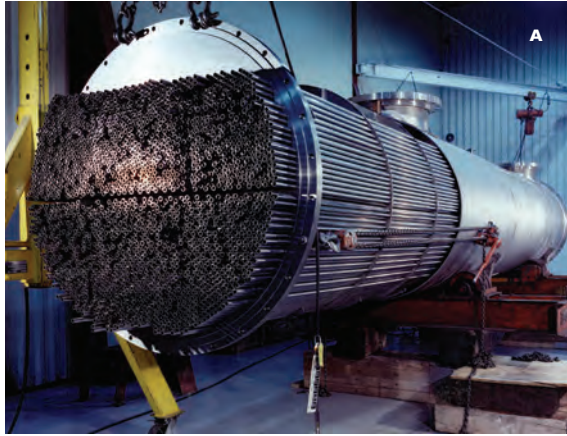
J



K

- G** | Free path and pressure test of MCO
- H** | Heat treatment of Yucca Waste Package outer barrier
- I** | Model 9975 plutonium storage container
- J** | Fuel canister and remote handling equipment to store damaged fuel for TMI
- K** | MCO Canister prepared for helium test

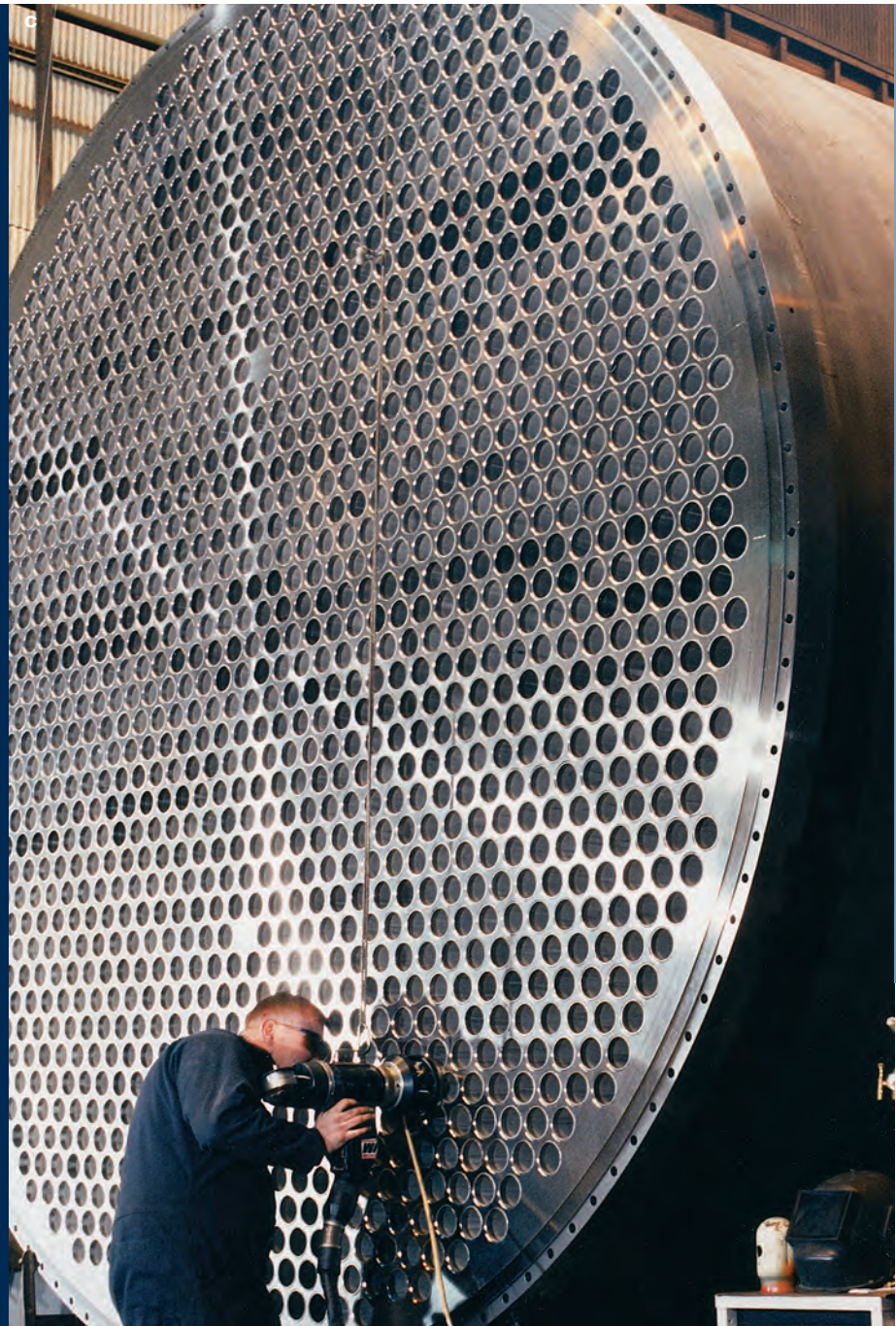
# HEAT EXCHANGERS



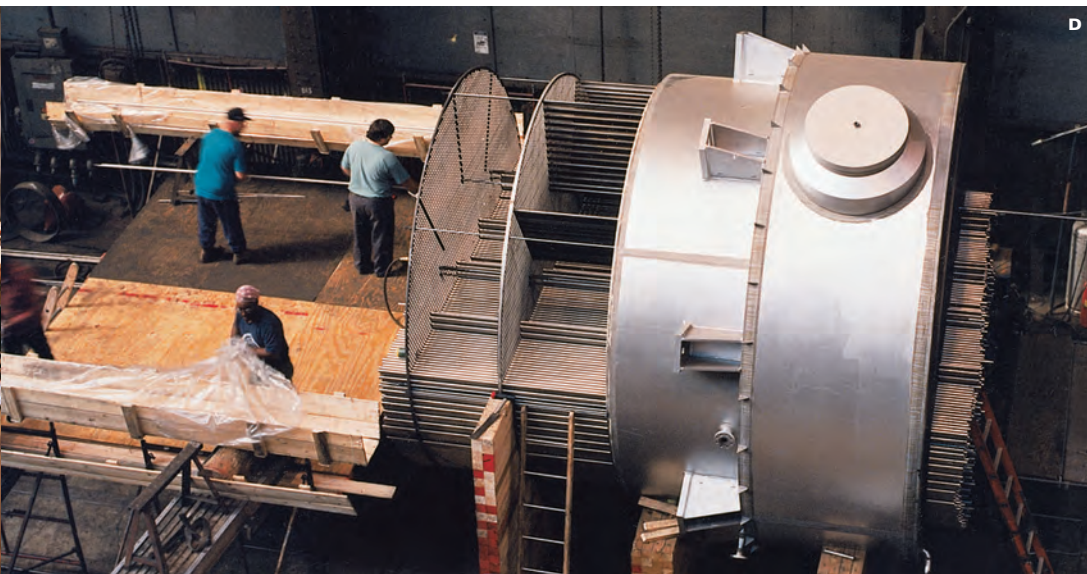
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Joseph Oat Corporation produces every type of ASME Section I, III and VIII Heat Exchanger that is required for use in any nuclear and fossil fired power plants.

- Component cooling water heat exchangers
- Fuel pool cooling heat exchangers
- Nuclear cleanup system heat exchangers
- Residual heat removal heat exchangers
- Oil and air coolers
- Regenerative and nonregenerative heat exchangers
- Containment spray heat exchangers
- Other special service units

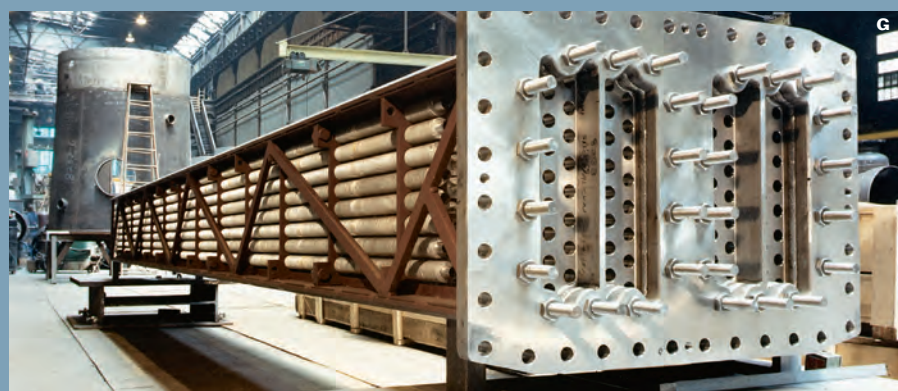






7

- A** | Cleanroom heat exchanger fabrication
- B** | Residual heat remover heat exchanger for BWR
- C** | Strength welding of tubesheets
- D** | Large condenser — 200 tons
- E** | Inconel heat exchanger tube bundle
- F** | RHR heat exchanger
- G** | Hydrogen cooler for steam generation using finned tubes
- H** | Component cooling water heat exchanger



# HEAT EXCHANGERS



8

Joseph Oat Corporation stands ready with solutions to a wide variety of heat transfer problems. Our qualifications include:

- Membership in TEMA, HTRI, EWI, and ASME
- Staff of professional engineers skilled in Heat Exchanger Thermal and Mechanical Design.
- Vast experience producing conservative, reliable, yet innovative designs.

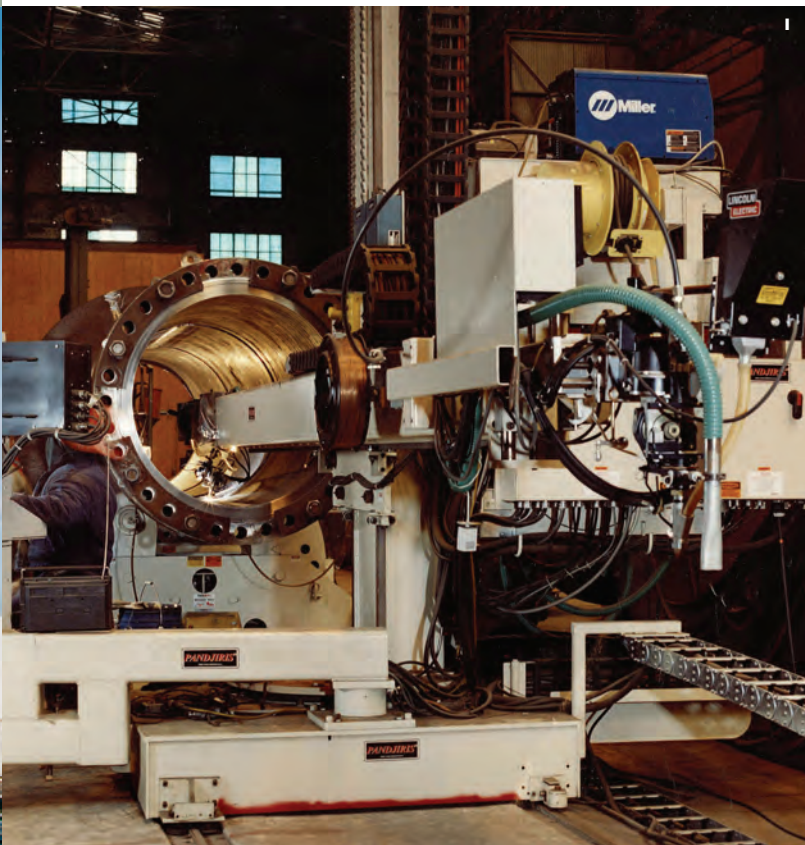
Joseph Oat's fabrication shop employs the latest equipment and techniques for component manufacture and assembly. We use state-of-the-art tube to tubesheet automatic expansion and welding equipment.

Our facility houses over 120,000 square feet of shop space and an automated machine shop for the manufacture of all critical heat exchanger sub-assemblies.



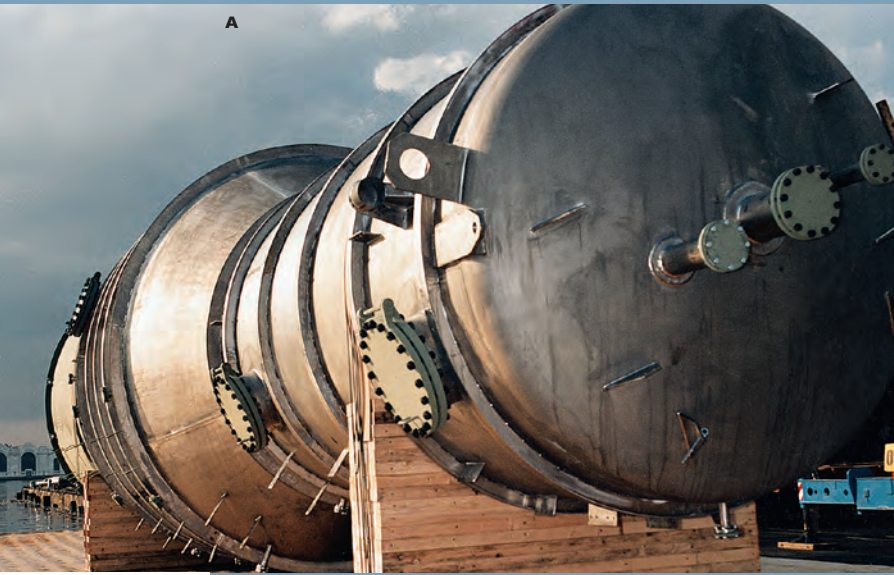


9



- A** | Tube to tubesheet welding using filler metals
- B** | Tube to tubesheet seal-welding
- C** | Monel tube condenser weighing 180 tons
- D** | RHR exchanger bundle
- E** | Feedwater heater
- F** | Non-regenerative heat exchanger

- G** | Automatic drilling equipment for drilling tubesheets up to 180" diameter and 10" thick
- H** | Large G&L horizontal boring mill  
Travel is 144" x 96" x 36"
- I** | Main shop weld boom
- J** | Baffle drilling on 96" CNC drilling machine



10

## PRESSURE VESSELS

Since 1966, Joseph Oat Corporation has manufactured ASME Sec III and Sec VIII pressure vessels for various applications in power plants. We can assume total design responsibility for a system, or build to customer's design criteria. All design and fabrication services are provided on our premises to assure total control of the project.

We produce vessels of all sizes including units up to 20 ft. in diameter, weighing up to 200 tons. Materials used in fabrication include all ferrous, non-ferrous, and reactive metals. Heat treatment of heavy weldments and non-destructive testing is done on site. Our plant location allows shipment by truck, rail or barge. Oat's equipment can be found in over ninety of the world's nuclear power plants.



**A-C** | Various pressure vessels

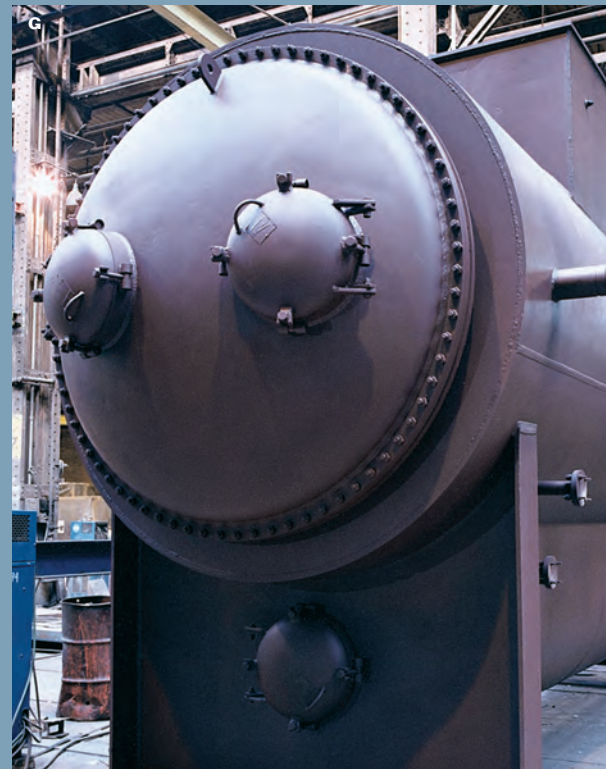
**D** | Sodium dump tanks for a fast breeder reactor being prepared for barge shipment





## CONDENSERS

Joseph Oat Corporation has a wealth of experience in the design and manufacture of surface condensers for a wide variety of end users. We design and build condensers to meet specific customer requirements over a wide range of operating conditions and design parameters. Our capability also includes the design and manufacture of shop tubed condenser tube bundle modules used to replace tube bundles in existing condensers during upgrade or life extension projects. Fabrication materials include stainless steel, nickel and duplex alloys, copper alloys, and titanium.



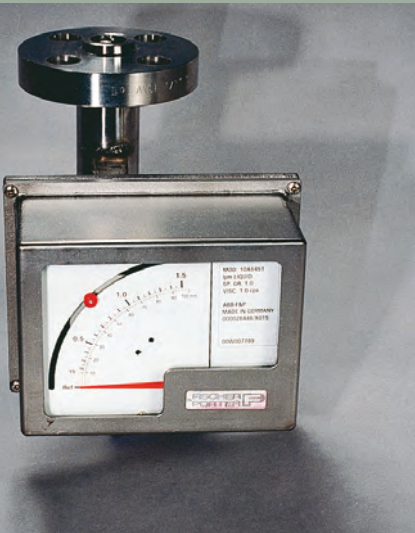
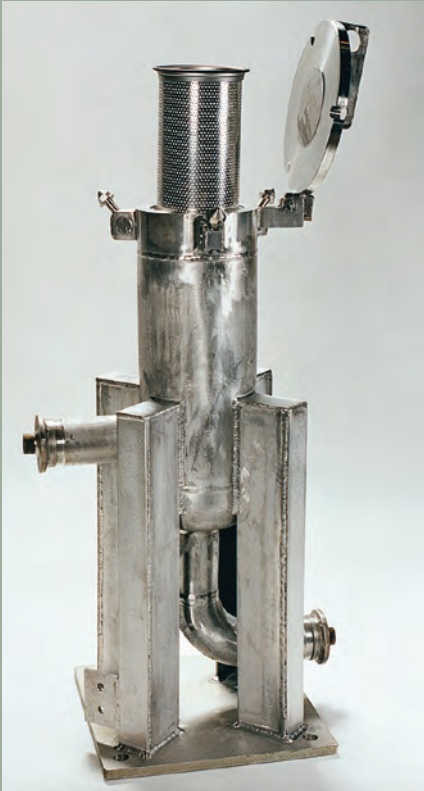
**E-I** Surface Condensers ranging in size from 15,000 to 31,000 sq. ft. surface area

# RADIOACTIVE SERVICE STRAINERS AND FILTERS

Oat designs and manufactures strainers and filters for ASME Section III and Safety Class Application.



12



# FLUID METERING EQUIPMENT

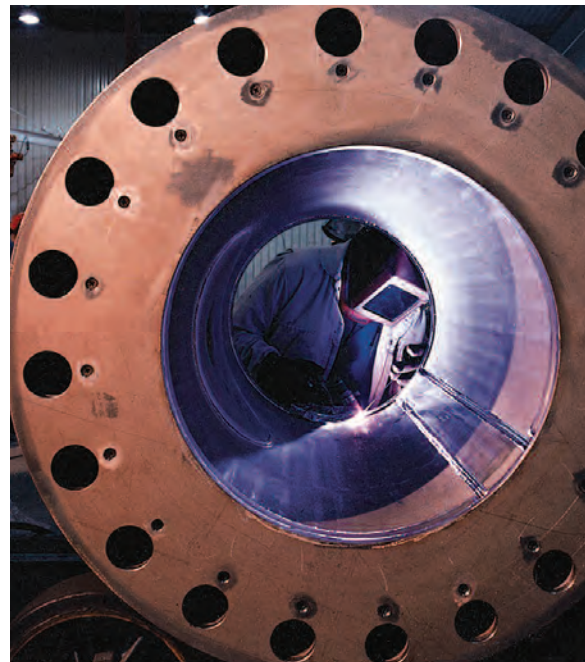
Joseph Oat Corporation designs and manufactures fluid metering equipment including orifice plates and flanges, flow nozzles and venturis.

# SPARE PARTS AND SPECIAL WELDMENTS

Joseph Oat can furnish virtually all forms of raw material, special weldments, and unique equipment with emphasis on rigid quality control, on-time delivery, accurate and prompt documentation and strict adherence to codes and customer specifications.

## **Examples of special items furnished previously include:**

- Component Supports
- Safety Related Brackets and Clips
- Missile Shielding
- Special Machined Items
- Manways and Sight Glasses
- Thermowells
- Lifting and Handling Devices
- Structural Elements for Safety Related Applications
- Spray Nozzles
- Pulsation Dampeners
- Safety Related Pump Parts
- Raw Material Meeting ASME Sec III and NQA-1 Requirements



# 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. Oat 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 retains its reputation for supplying the highest quality equipment available anywhere in the world. Joseph Oat remains a privately owned and operated family business to this day. This has enabled us 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 only to please its customers.



**JOSEPH OAT  
CORPORATION**  
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