

Petrochemical Refinery Maintenance  
Complete Maintenance Solutions

  
edmonton exchanger  
group of companies

**The difference is our experience...**

Edmonton Exchanger has over 30 years of on-site maintenance and construction experience in the petrochemical and oil industries.

Our experience and expertise range from small maintenance projects to complete turn-key petrochemical plant and refinery shutdown / turnaround projects.









Engineering of rail system and removal of reformer overhead transfer line performed by Edmonton Exchanger at client site.

## Overview of Services

### Plant Maintenance Solutions since 1975.

Edmonton Exchanger provides plant maintenance and construction services for the petrochemical industry, refineries and fertilizer plants. In the case of emergency maintenance requirements, we are capable of mobilizing a 1,500 person work force within a short time frame.

### Our Resources.

Our field operations are supported by a vast network of support services that range from project planning and management, to steel fabrication, machining and heat exchanger fabrication / repair services.

### Our People.

Our specialized tools, heavy equipment and resource network all contribute to our ability to meet the needs of our clients, but it is ultimately the technical expertise, dedication and professionalism of our employees that make our projects successful.



### Field Services and Capabilities

- \_ Turn-key Shutdown Projects
- \_ General Shutdown Services
- \_ Heavy Lift Execution
- \_ On-site Heat Exchanger Services
- \_ Crane and Equipment Rentals
- \_ Piping Projects

### Specialized Field Services

- \_ Controlled Bolting
- \_ Flange Facing
- \_ Cold Cutting
- \_ Specialized Welding

### Field Support Services

- \_ Project Management
- \_ Estimating
- \_ Safety Management
- \_ Procurement
- \_ Subcontract Coordination
- \_ Quality Control
- \_ Engineering
- \_ Planning / Scheduling
- \_ Steel Fabrication Plant Support
- \_ Steel Plate Services
- \_ Large-scale Machining
- \_ Heat Exchanger Services



## On-site Services and Capabilities

- \_ Turn-key petrochemical plant and refinery shutdown / turnaround services
- \_ Furnace and boiler repair and erection
- \_ Vessel erection / heavy lift execution
- \_ Crane and equipment rentals
- \_ Tray installation for towers and vessels
- \_ Heat exchanger bundle pulling and pushing
- \_ Heat exchanger repair, re-tubing and fabrication
- \_ Custom tube bending
- \_ Piping fabrication and repairs
- \_ Strip cladding and weld overlay of vessel internals



Heat exchanger bundle pulling (left). Reformer reharp project (below).



## Specialized Field Services

### Controlled Bolting

We use state-of-the-art mobile bolt torquing and tensioning equipment. Specialized equipment is available to provide bolt torquing up to a 5" (127 mm) nut size and bolt tensioning up to a 4" (101.60 mm) stud size.

### Flange Facing

Our mobile flange facing equipment enables us to machine material from 5" (127 mm) I.D. - 60" (1524 mm) O.D..

### Cold Cutting

We are able to cut and custom bevel pipe on-site from 4" (101.60 mm) - 72" (1829 mm) using our specialized cold cutting equipment.

### Specialized Welding

We offer over 500 certified procedures for the welding of numerous materials, and have the capability of quickly obtaining and implementing a specific procedure in the event that it is not immediately available.

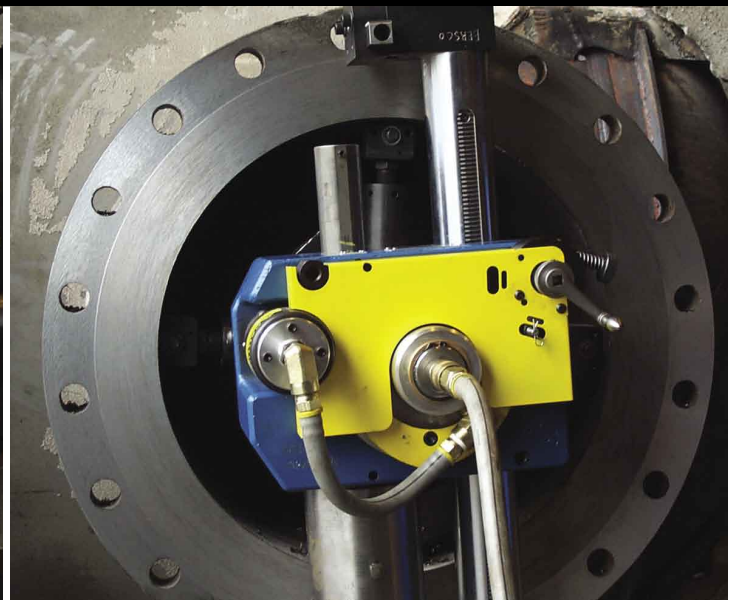
#### Included weld procedures:

- \_ All types of Stainless Steel
- \_ Chrome Moly Alloys
- \_ Titanium
- \_ Hastelloy
- \_ Incoloy(s)
- \_ Inconel(s)
- \_ Monel(s)
- \_ Copper Nickels
- \_ Nickel Alloys
- \_ Multiple Bi-metallic Procedures

#### High Temperature Casts:

- \_ HK-40
- \_ HP-40
- \_ Paralloy
- \_ Kubota

Flange facing in progress (below left) and the fully machined flange face (below right).





## Field Support Services

All field operations are fully supported by in-house services that can be obtained individually or as a complete service package.

They include:

- \_ Project Management
- \_ Estimating
- \_ Safety Management
- \_ Procurement
- \_ Subcontract Coordination

### Quality Control

Standards available include:

- \_ ASME Section 1
- \_ ASME Section VIII Div. 1
- \_ ASME Section VIII Div. 2
- \_ ASME Power Piping
- \_ ASME B31.1 Power Piping
- \_ ASME B31.3 Piping
- \_ CWB 47.1 Level 3 Structural
- \_ National Board

Additional services available include:

- \_ Nondestructive Examination
- \_ Weld Mapping
- \_ Turnover Documents

Heavy lift execution of a 400 ton reactor at client site (right).



### Our Commitment to Safety

Edmonton Exchanger's proactive safety policy strives to enhance the working experience of its employees and ultimately achieve a zero incident working environment.

Supported by our leading-edge incident management software, our extensive training programs provide our

employees with the skills required to complete complex jobs on time, without incident.

Our safety programs enable us to maintain the highest levels of quality throughout the products and services that we provide.



## Field Support Services

### Engineering

Our high-tech engineering capabilities allow us to provide complete in-house engineering support to our field operations. Additional support is provided for such applications as:

- \_ Equipment Rigging Analyses
- \_ Alterations to ASME Sec. VIII Div. 1 and 2
- \_ Vessel Evaluations
- \_ Vessel Re-rates

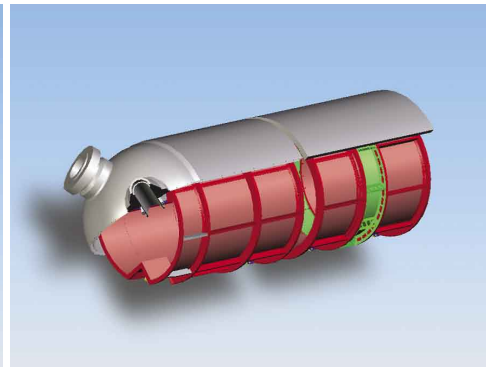
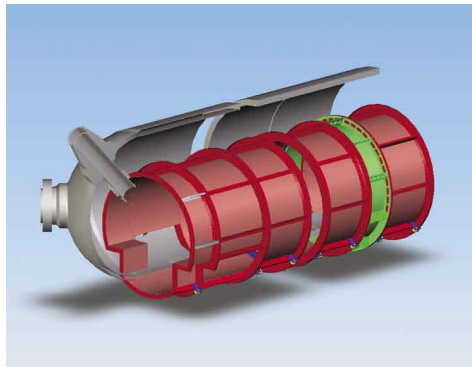
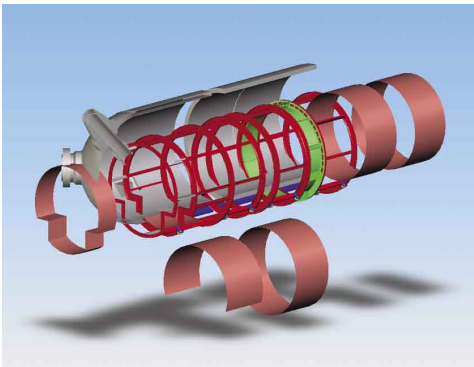
Finite Element Stress Analyses are available for such uses as SIF, as well as for allowable load and stiffness determinations for vessel nozzles and fittings. Additional comparisons to traditional verification methods are also offered.

### Planning / Scheduling

We offer in-house scheduling, detailed planning and custom reporting services by means of state-of-the-art software technology.

For shutdown planning and scheduling, we utilize the powerful SP module from ImmPower by Walker. For project scheduling we employ the industry standard Primavera scheduling software.

In addition, cost control functions can be provided to complement our scheduling capabilities. Planning and scheduling services can be provided as a stand-alone service contract or as a support service.



The computerized renderings seen above, illustrate the engineering support provided in-house for an Edmonton Exchanger field project. A heat shield design was developed for an Ammonia Converter in order to facilitate welder operators to work comfortably at high temperatures by reducing the heat on the inside of the shell during bake-out, preheat and

PWHT operations. An extremely accurate real-time temperature analysis was completed for the heat treatment on this project and ultimately, two 6" thick x 102" long heat shields with 8 centrally located removable covers were designed and fabricated by Edmonton Exchanger.

## Field Support Services

### Pressure Vessel Component Fabrication

Edmonton Exchanger's steel fabrication plant specializes in the fabrication of large-scale pressure vessel components and features steel forming capacities that are some of the largest of their kind.

Our steel plate forming capabilities range up to an 8" (203.20 mm) thickness for pressure vessel head and shell production. Heads can be formed up to 28'-6" (8,687 mm) in diameter and shells up to 144" (3,658 mm) in length. Steel components can be fabricated from customer supplied material or from our own inventory.

### Steel Plate Rolling

- \_ Shells for Pressure Vessels and Tanks
- \_ Eccentric and Concentric Cones
- \_ Repads
- \_ Rolled Rings for machining applications
- \_ Custom Rolling

### Head Forming Types for Pressure Vessels

- \_ Hemispherical
- \_ Torispherical Flanged and Dished
- \_ 2:1 Semi-Elliptical
- \_ Flanged Only
- \_ Dished Only



Steel plate rolling (above) and our 3,000 ton head press (right).

### Custom Stress Relieving

Approximate furnace dimensions measure 27'-0" wide x 27'-0" deep x 9'-6" high (8,230 mm x 8,230 mm x 2,896 mm). Maximum operating temperature: 2,190°F (1,200°C).







## Field Support Services

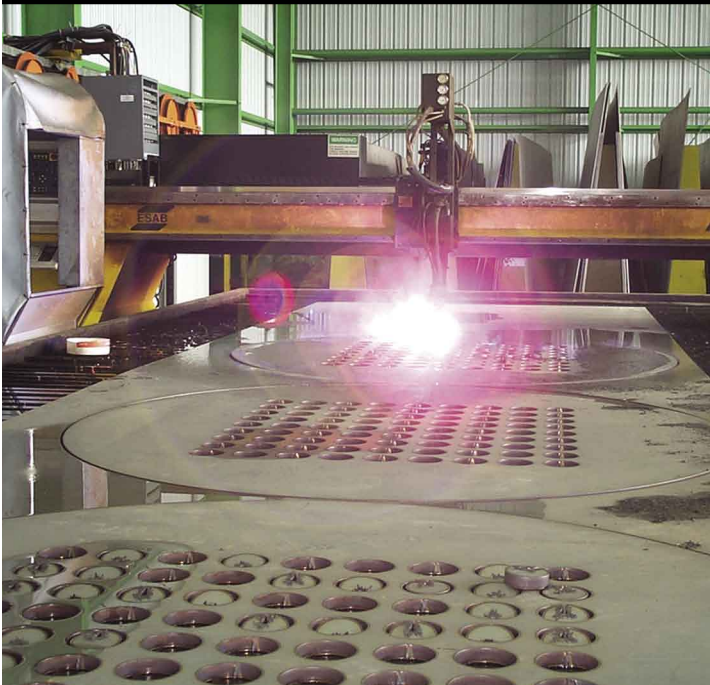
### Steel Plate Services

Inspired by the immense quantity of steel plate, Edmonton Exchanger's plate inventory is commonly referred to as Plateland. All stocked steel plate complies with ASME code requirements and is accompanied by clearly legible Mill Test Certificates at time of shipment.

We stock one of the largest inventories of Pressure Vessel Quality SA 516-70 "normalized" carbon steel plate in North America, as well as a large range of stainless and chromium molybdenum steel plate.

Visit [www.edmontonexchanger.com](http://www.edmontonexchanger.com) to view complete Steel Plate Specifications.

Plasma cutting of 1 1/8" stainless steel tubesheets on a plasma cutter (below). Overhead view of Plateland (above).



### Profile Cutting of Steel Plate

We provide profile cutting of steel plate for:

- \_ Almost any pattern or shape imaginable from plate up to 17'-0" x 40'-0" in size (5182 mm x 12,192 mm).
- \_ Discs and Rings for Flange production up to 10" (254.00 mm) thick.
- \_ Plasma-cutting of stainless steel up to 3" (76.20 mm) thick.
- \_ Oxy-fuel / plasma-cutting of carbon steel up to 10" (254.00 mm) thick.
- \_ Plasma-cutting of chromium molybdenum steel up to 6" (152.40 mm) thick.

## Field Support Services

### Large-scale Machining

Edmonton Exchanger's large-scale machining facility was specially designed to handle large diameter components and boasts equipment that is some of the largest of its kind.

We offer a diverse range of machining capabilities and specialize in large-scale and tube sheet drilling applications. We feature vertical boring mills that handle material up to 24'-0" diameter x 10'-0" high (7,315 mm x 3,048 mm), and a weight of 50 tons.

### CNC Tube Sheet Drilling

Edmonton Exchanger features a number of state-of-the-art QuickDrill CNC machines for tube sheet drilling applications.

Our QuickDrill 120 CNC machine enables us to offer a wide range of drilling, slotting, milling and boring services. Our larger QuickDrill 200 CNC features drilling, slotting, milling and boring services and additionally enables us to circular interpolate off center.

Vertical boring mill (below left) handles material up to 24'-0" diameter x 10'-0" high. QuickDrill 200 CNC drilling tubesheet (below right).



Our horizontal mill has a travel of 156" vertical and 360" horizontal (3,962 mm V x 9,144 mm H).

A 50 ton overhead crane spans the entire length of the machining facility and enables the transport of large components throughout the shop.



It features a machining envelope of 200" x 120" x 30" (5,080 mm x 3,048 mm x 762 mm), and accommodates material up to 29" (736.60 mm) in height and a drilling capacity of up to 16" (406.40 mm) thick.





## Field Support Services

### Heat Exchanger Fabrication and Repair

Specializing in heat exchanger manufacturing and repair, our heat exchanger services facility stocks a diverse inventory of materials and heat exchanger equipment that allows us to quickly adapt to our client's specialized requirements and specifications.

Upon client request, we will schedule shop time in preparation for field projects in order to ensure a short turnaround time for field maintenance work.

### Heat Exchanger Services

We manufacture, repair and refurbish any size and type of heat exchangers including:

- \_ Shell and Tube Bundles
- \_ Straight-tubed Heat Exchangers
- \_ U-bundle Heat Exchangers
- \_ Plate Exchangers
- \_ Coil-style Heat Exchangers
- \_ Fin-fan Coolers
- \_ Hairpin Exchangers

### Equipment and Materials

To assist us in quickly adapting to specialized customer requirements, we stock a large inventory of heat exchanger specific equipment and material.

### Materials Inventory

- \_ Steel Tubing
- \_ Tapered Tubing Plugs
- \_ Plate and Tubing Material
- \_ Plugs and Gaskets

### Heat Exchanger Equipment

- \_ Tube Expanders
- \_ Rolling Guns
- \_ Tube Pulling and Testing Equipment

### Quality Control

Prior to shipment, all manufactured components undergo thorough Quality Control inspection to ensure conformance to ASME codes Sec. VIII Div. 1 and 2.

## Partial List of Clients

- \_ Agrium
- \_ Alberta Envirofuels
- \_ Albian Sands
- \_ Atco Midstream
- \_ Aurora
- \_ Celanese
- \_ Duke Energy
- \_ Husky
- \_ Imperial Oil
- \_ Innovene
- \_ Petro-Canada
- \_ SemCAMS
- \_ Shell Canada
- \_ Sherritt
- \_ Syncrude Canada

## Union Affiliations

Union	Local
_ Boilermakers	146
_ Carpenters	1325
_ Electricians	424
_ Insulators	110
_ Ironworkers	720
_ Labourers	92
_ Millwrights	1460
_ Operators	955
_ Pipefitters	488
_ Sheet Metal Workers	8



## Fabrication Shop Area

Edmonton Exchanger’s under-roof plant area encompasses over 82,000 square feet of working space throughout various shop facilities.

Each facility is specially designed for specific fabrication, machining or repair purposes, and is capable of supporting our field operations.







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