



Figure 1 - Praxair is a worldwide provider of industrial gases

The Project

At times it can appear impossible to mount a Wachs LCSF split frame to an unusually shaped object, or where limited clearances exist due to obstructions. Such was the case with Praxair (figure 1) at their industrial gas complex outside Ecorse, Michigan. Here a semi-elliptical head heat exchanger required servicing of the interior tube bundles. Looking for a way to precisely part the elliptical head for access while preparing it for eventual re-welding, we said - never say never. Praxair partnered with Wachs Industrial and Engineered Product groups for a cost effective solution to this curvaceous problem.



Figure 2 - Semi-elliptical heat exchanger at Ecorse, Michigan facility



Figure 3 - Vessel presented mounting and clearance issues

The Challenge

When a critical heat exchanger starts to lose efficiency with leaks or poor flow, it often becomes necessary to replace some or all of the tube bundles inside to restore its performance. Accomplished by opening the head, repairing or replacing the internals and carefully re-welding the vessel, this practice saves downtime while preserving the expensive outer vessel. On a cylindrical vessel Wachs LCSF split frame mounts easily to the outside circumference, but at the Ecorse facility their elliptical vessel presented mounting and clearance challenges (figure 3).

The Solution

E.H. Wachs LCSF low clearance split frames cut and bevel with great precision, and their compact radial and axial dimensions permit fitments in very tight quarters. Although practical for most applications the standard mounting feet wouldn't work on Praxair's heat exchanger head, the only area where the split frame could be mounted. Wachs engineered a custom set of mounting blocks that were tack welded in place, allowing a secure perch for the standard LCSF feet while clearing the existing obstructions. This mix of Wachs standard and custom parts offered a cost effective method of repairing the heat exchanger while preserving the outer vessel.



Figure 4 - Custom radiused mounting blocks tacked in place

The Technology

Wachs LCSF is part of a complete machining system that includes accessories and tooling to handle even unusual jobs like elliptical head vessels. This project took advantage of out of round spring slides that track the outer surface of the workpiece to prevent the tooling from diving in and out, delivering a uniform land for greater integrity of the finished weld. At E.H. Wachs we never say never to a good machining challenge.

- ▶ Portable, lightweight low clearance design
- ▶ Rugged steel and aluminum construction
- ▶ Pneumatic, Hydraulic and Electric Servo Drive options
- ▶ Standard sizes for 2" to 48" (50.8 to 1219mm) O.D.
- ▶ Great versatility, wide ranging applications



Figure 5 - Out of round tracking slides cut and double bevel



Executive Summary

E.H. Wachs LCSF low clearance split frames are ideal machines for heat exchanger repair, precisely cutting and beveling while preserving the expensive outer vessel. At times a split frame can appear impossible to mount due to obstructions or, as in Praxair's Ecorse, Michigan facility, a curved semi-elliptical head. We say never say never - bring us your toughest machining challenges.



Wachs precision machined heat exchanger

Custom radiused mounting blocks from our Engineered Products group combined with our standard LCSF split frames and out of round tracking slides provided a cost effective solution to precisely machine the heat exchanger in situ. Cutting and double beveling the elliptical head to a weld ready finish allowed repair of the internal tube bundles with minimal downtime. See a video of how we did it at YouTube.com/ehwachs.

E.H. Wachs LCSF Low Clearance Split Frames are part of the most versatile machining system in the business. To learn more about the LCSF and all its applications contact your E.H. Wachs representative, email us at info@ehwachs.com or visit ehwachs.com.

Quality & Innovation Since 1883

E.H. Wachs® has a long history of quality manufacturing and product innovation dating back to 1883. Today our Industrial division builds the finest portable weld prep machine tools including I.D. mounted end prep and O.D. mounted split frame pipe cutters and bevelers, flange facers, the Trav-L-Cutter®, Guillotine® pipe saws, boiler tube bevelers and handheld valve operators.

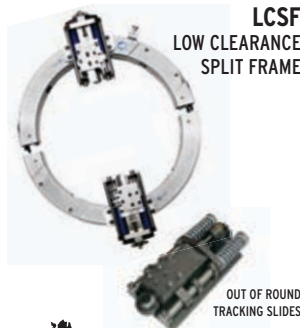
Our products are renowned for their engineering excellence, precision manufacturing and rugged reliability. They're sold and serviced worldwide through our international dealer network and Wachs Sales and Service Centers located in Illinois, Texas, Canada, the UK, Germany, the UAE, India, Singapore, and China.

Wachs Rental Centers - Rent the Best

When it makes more sense to rent our machines instead of purchasing, virtually the entire E.H. Wachs product lineup is available for rental. Every Wachs Rental Center maintains a large inventory of machines, accessories and tooling ready for immediate shipment. For short term usage such as one time repairs, turnarounds and outages rent the best. Rent with E.H. Wachs for Superior Equipment. Complete Support.™

E.H. Wachs® Industrial Division

- ▶ Industrial Pipe Cutting and Beveling Machine Tools
- ▶ Portable Weld Prep Machine Tools, Sales and Rentals
- ▶ Split Frames, Guillotine® Pipe Saws, Trav-L-Cutter®
- ▶ End Prep Machines, Flange Facers, Hydraulic Power Units
- ▶ Onsite Technicians, Factory Training, Engineered Products






LCSF
 LOW CLEARANCE
 SPLIT FRAME

OUT OF ROUND
 TRACKING SLIDES



Clockwise:
 LCSF Low Clearance Split Frame • EP 424 Speed Prep
 Trav-L-Cutter® • Guillotine® Pipe Saw



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