



Figure 1 - Bruce Power Generating Station Ontario, Canada

### The Project

Spring and fall outages are an important event for power plants, involving months of careful planning to minimize downtime. As part of the planned outage at the Bruce Power Station in Ontario (figure 1) four shutdown coolers with internal tube bundles were originally scheduled for cleaning. However closer inspection revealed they required complete removal and refurbishing to restore peak efficiency. Bruce Power partnered with Wachs Canada to expedite the needed repairs and maintain their tight schedule.



Figure 2 - Wachs LCSF split frame end cap removal



Figure 3 - Shutdown cooler with exposed tube bundle

### The Challenge

Removal of the shutdown coolers required cutting their feed connections. Due to the extremely tight clearances, special mounting legs were used to mount an LCSF split frame to the nozzle elbows prior to parting. After removal, accessing the internal tube bundles required sectioning of the reusable end cap (figure 2) from the shell and removal of a large flanged connection. Finally, the outer shell was sectioned axially to expose the tube bundles for servicing. Reassembly required a weld prep bevel on the end cap and outer shell, plus facing of the large diameter flange mating surfaces.

### The Solution

E.H. Wachs experience in onsite machining allows us to keep our cool with challenging, time sensitive projects like Bruce. For removing the shutdown coolers we specified an LCSF 1420/3 with special legs to cut the 16" (DN400) short radius elbows. For removal of the end cap, an LCSF 4248/3 was used around the girth of the outer shell (figure 3). For this application's large diameter flange facing we utilized our HDSF 4860 (figure 4) for single pointing the flange mounting surfaces (figure 5). These precision split frame machines helped Bruce Power technicians to weld, reassemble and reinstall the shutdown coolers on time and on budget.



Figure 4 - Large diameter flange facing with HDSF split frame

### The Technology

The split frames used to section the shutdown coolers for Bruce Power are one of many onsite machining products E.H. Wachs offers. They operate on the principal of a lathe, utilizing a rotating frame with fixed tooling to achieve highly precise and repeatable results. Lathe technology is ideal for 360 degree machining operations such as the cutting, beveling, and facing used here.

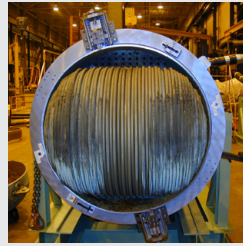
Other Wachs machining technologies include milling devices, reciprocating saws and products for chipless cutting, drilling, threading and abrasive cutting. Multiple technologies can be combined on a single project, or we can modify standard machines or create complete custom solutions as required. To learn how E.H. Wachs can help you keep your cool during the next outage, contact your local Wachs representative for Superior Equipment. Complete Support.™



Figure 5 - Machining flange to restore tolerances and finish

### Executive Summary

During a recent planned outage Bruce Power planned to clean four shutdown coolers, but closer inspection revealed the need for a complete refurbishing that might have delayed their schedule. Partnering with Wachs Canada, Bruce Power used E.H. Wachs LCSF and HDSF split frames to help remove the coolers, open them for servicing and reface the flange mounting surfaces prior to reinstallation. Wachs equipment allowed precision machining of the coolers onsite, keeping the planned outage on schedule.



LCSF Split Frame on Shutdown Cooler

Bruce Power partners with E.H. Wachs, a manufacturer who is a single source for the portable machine tools required to keep their facility running smoothly. We have the engineering and manufacturing expertise combined with the global resources to meet and exceed the most demanding expectations.

**You don't think in terms of machine tools, you think in terms of solutions. At E.H. Wachs, so do we. Call one of our product specialists today to see which of our portable machine tools is right for your next project, outage or turnaround. Ask for details about Wachs LCSF and HDSF split frames and all our Superior Equipment. Complete Support.™**

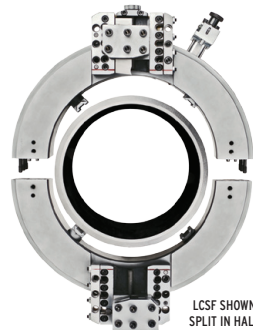
### Quality & Innovation Since 1883

E.H. Wachs<sup>®</sup> 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<sup>®</sup>, Guillotine<sup>®</sup> pipe saws, boiler tube bevelers and handheld valve operators.

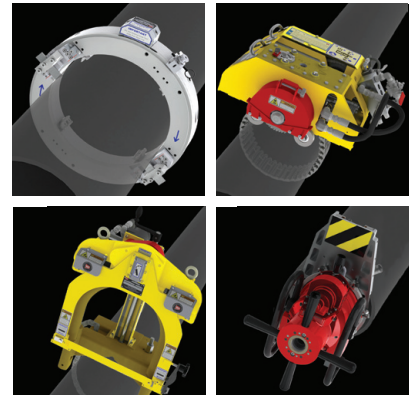
Our products are renowned for their engineering excellence, precision manufacturing and rugged reliability. They're sold and serviced worldwide through our international dealer network and Wachs Sales and Service Centers located in Illinois, Texas, Canada, the UK, Singapore, Germany and the UAE.

### E.H. Wachs<sup>®</sup> Industrial Division

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

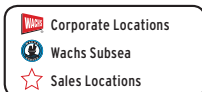


LCSF SHOWN SPLIT IN HALF



#### Clockwise:

LCSF Low Clearance Split Frame • Trav-L-Cutter<sup>®</sup>  
 Guillotine<sup>®</sup> Pipe Saw • EP 424 Speed Prep



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