



**E.H. WACHS®**  
Superior Equipment. Complete Support.™

## APPLICATION REPORT

# That's Heavy - Heavy Wall Machining Accurate, Onsite Weld Prep with E.H. Wachs

Volume 3 ▶ Issue 1

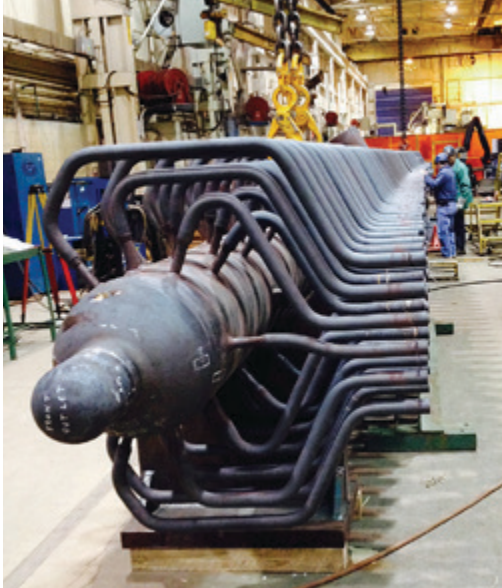


Figure 1 - Main Steam Header Fabrication

### The Project

One of the nation's premier boiler and steam generation manufacturers fabricated two main steam header assemblies for a Michigan fossil power plant (figure 1). As part of the fabrication process, the headers were sealed with a welded-in-place plug (figure 2) for pressure testing. The fabricator selected an E.H. Wachs OD mounted LCSF low clearance split frame to cut off the plugged end, and ID mounted an E.H. Wachs EP 424 to counterbore and weld prep the main outlet prior to shipping and final installation.

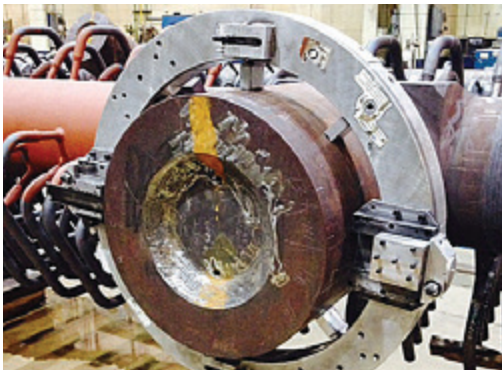


Figure 2 - Welded in Place Plug for Pressure Testing



Figure 3 - Main Steam Outlet 4.78" (121.4mm) Heavy Wall

### The Challenge

Main steam headers in power plants are designed to collect and transport steam under great pressure (up to 5,000 psi or 34,470 kPa), and must meet strict requirements for strength and corrosion resistance. To safely withstand working pressures, the main outlet for the header was fabricated from heavy wall high alloy steel with a 23.5" (597mm) OD, with a 4.78" (121.4mm) wall thickness. Due to the critical nature of the final weld, the J prep was specified as .078" (1.98mm) land thickness +/- .016" (.406mm) with a 3/16 radius 10/20 overall prep with the transition .750" (19mm) from the ID.

### The Solution

E.H. Wachs machine tools were selected for the heavy wall (figure 3) cutting and weld preparation. Ideal for heavy wall applications, an E.H. Wachs pneumatic drive 28" LCSF low clearance split frame, equipped with worm gear slides and dual carbide parting tools, was used to part the main outlet.

An E.H. Wachs EP 424 end prep machine with Speed Prep autofeed and self centering mandrel (figure 4) was used for speed and ease of use during the final weld prep. For this project, the EP 424 was equipped with a DuoEdge tooling holder and insert system (figure 5), a new, cost effective tool replacement for traditional single-tipped tooling.



Figure 4 - Pneumatic EP 424 with Self Centering Mandrel

### The Technology

Performing accurate, heavy wall weld preps is critical in power generation system maintenance. E.H. Wachs equipment is the best solution for heavy wall weld preparation in a fabrication shop or in the field. Here the sheer size of this fabrication made E.H. Wachs portable weld prep machine tools the best choice over conventional stationary lathes. Wachs machine tools are engineered to be easy to transport, install, and operate even for less experienced users.

- ▶ Portable, Versatile, Lightweight Designs
- ▶ Rugged Construction, Built Under ISO 9001:2008
- ▶ Available with Pneumatic, Hydraulic, and Electric Drive Options

So if you come across a job That's Heavy, contact your local E.H. Wachs representative to learn more about our heavy wall machining solutions and all our Superior Equipment. Complete Support.™



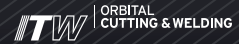
Figure 5 - DuoEdge Insert Tooling and Holders





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### Executive Summary

Heavy wall pipe is an integral component of steam generation in nuclear and fossil facilities, due to the inherently high pressures. Nowhere is the pressure greater than in the main steam header, used to collect steam from the water wall and send it thru a single outlet to the turbines. Designed to withstand pressures up to 5,000 psi (34,470 kPa) the headers utilize heavy wall pipe that requires precision weld preps in both new construction and maintenance projects in existing plants.



Finished Weld Prep Ready for Final Welding

Prior to installation of replacement main steam headers, E.H. Wachs LCSF low clearance split frame and EP 424 end prep were selected for the critical task of severing the pressure plug, and counterboring and J prep beveling the 4.78" (121.4mm) heavy wall outlet. Since 1883, customers have trusted Wachs for machines and tooling related to steam power generation. Today's EP 424 with Speed Prep autofeed and new DuoEdge tooling are just two of the latest Wachs innovations for field machining of heavy wall projects.

E.H. Wachs has a product to cover .5" to 120" (DN15-3000) OD, thin wall, heavy wall, carbon steel, high alloy, or stainless steel. No matter the pipe or tube material we have a machine to cut and prep it.

### E.H. Wachs Sales, Service and Rental Centers

The best machine tools in the world are no help if they're not available at the right time and place. Stocked with the entire range of E.H. Wachs and Orbitalum machine tools and accessories, Sales, Service, & Rental Centers are located in:

- ▶ Illinois
- ▶ California
- ▶ New Jersey
- ▶ Louisiana
- ▶ Texas
- ▶ Toronto, Canada
- ▶ Edmonton, Canada
- ▶ United Kingdom
- ▶ Germany
- ▶ India
- ▶ Singapore
- ▶ UAE

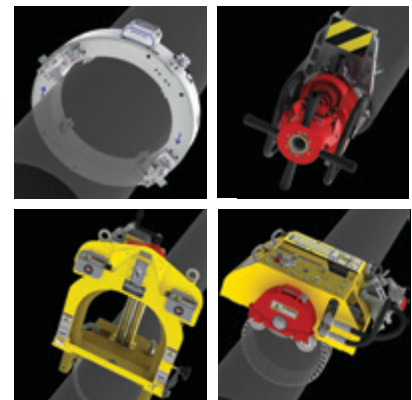
Wachs and Orbitalum products are also available worldwide through our international dealer network.

### Contact E.H. Wachs

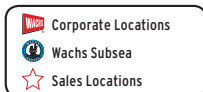
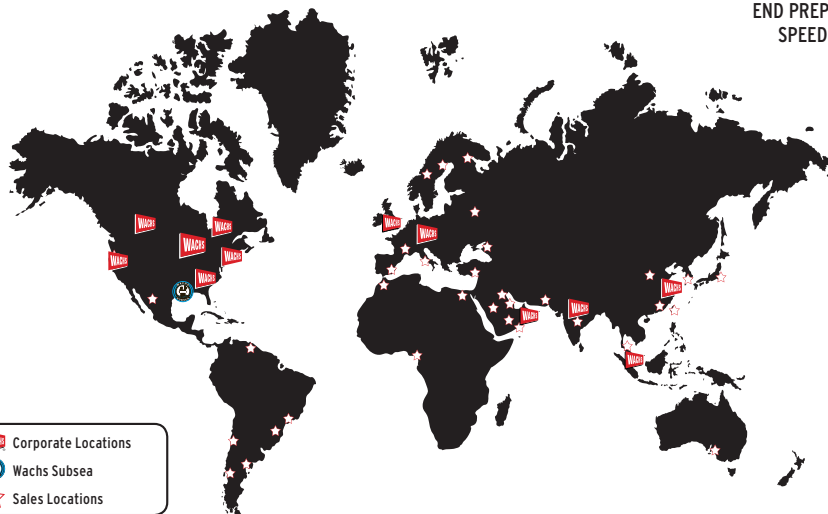
For additional information visit us at [ehwachs.com](http://ehwachs.com), email us at [info@ehwachs.com](mailto:info@ehwachs.com), or call us at +1.847.537.8800 (1.800.323.8185 in the US & Canada). Ask for a no cost, no obligation quotation or demonstration of our Superior Equipment. Complete Support.™

### E.H. Wachs® Industrial Division

- ▶ Industrial Pipe Cutting and Beveling Machine Tools
- ▶ Portable Weld Prep Machines & Tooling, Sales and Rentals
- ▶ Split Frames, Guillotine® Pipe Saws, Trav-L-Cutter®
- ▶ End Prep Machines, Flange Facers, Valve Operators
- ▶ Orbitalum Tube Saws, Facers and Orbital Welding Systems



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



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