Seam normalizing

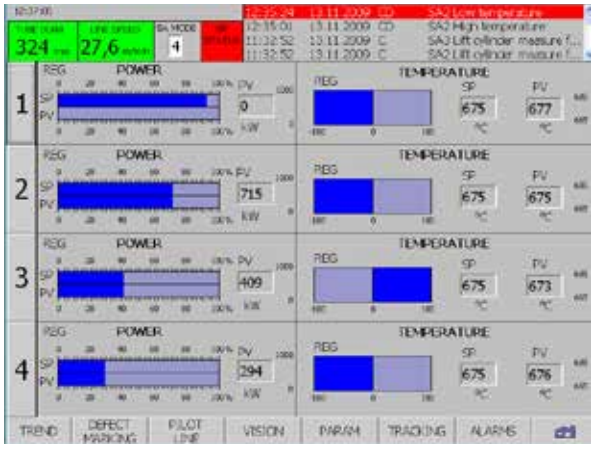
A guide to the benefits of induction heating

Advanced seam normalizing. For advanced alloys and pipe.

In-line seam normalizing systems from EFD Induction—a proven way to meet oil and gas pipe standards.

Normalizing the weld zone on longitudinally welded pipe is technically challenging. And it is becoming ever more so, due to the new generation of high yield strength thermo mechanically processed steels and gauges being used in the oil and gas industries. These new materials and dimensions typically have narrower tolerances, meaning the normalizing process must be extraordinarily accurate, reliable and controllable.

There are other challenges. Normalizing is an 'in-line' process that must integrate with existing or planned welding solutions. And specialist expertise is needed to design solutions that save floor space. This is because seam normalizing involves air cooling of the pipe prior to quenching. Faulty calculations and/or the use of obsolete coil designs can result in unnecessarily long and costly installations.



The market's most advanced control system guides both the welding and the normalizing processes. The system shown here can download data, and report to a Manufacturing Execution System (MES).

But now for some good news. EFD Induction has made key breakthroughs in simulation modeling and coil design for weld zone normalizing. These advances—combined with our expertise at in-line integration—translate into several crucial benefits:

- Smaller installation footprints. Our proven and unique coil design minimizes the length of the normalizing line, while at the same time helping to ensure optimum normalizing results.
- Minimal surface heating. We have developed powerful simulation tools to help devise accurate alloy- and gauge-specific heating and cooling zones. These tools are critical when designing normalizing solutions for the new generation of pipe being used by the oil and gas industries.

Specially designed control systems help maximize uptime

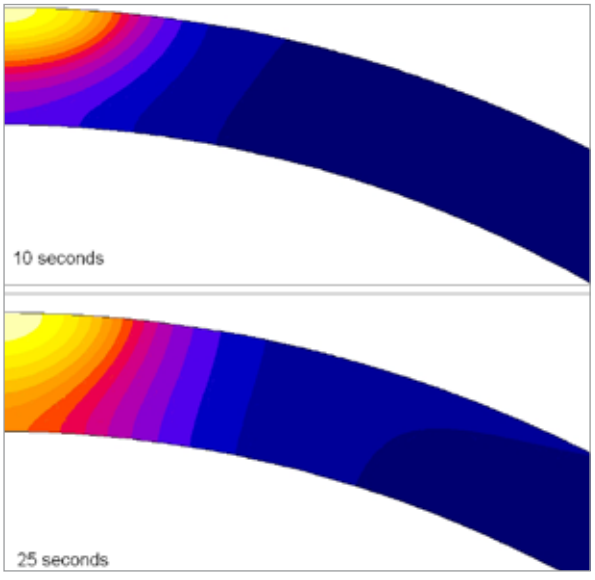
Your entrance ticket to the oil and gas pipe market.

EFD Induction is a leader in modern, cost-cutting seam normalizing. Our solutions (which feature both NQN and NQT installations) can be found around the world, working for demanding pipe manufacturers to ensure that:

- The temperature at the inner wall is sufficient to achieve full homogenization.
- The heat pattern at the inner wall is wide enough to cover the full Heat Affected Zone.
- The temperature at the outer wall is kept to the minimum required for homogenization, thus avoiding the risk of coarse grain re-growth.

EFD Induction seam normalizing systems are easy to control. In fact, these control systems are specially designed to work with EFD Induction power sources, coils and handling mechanisms. Each control system can handle up to four induction heaters independently, and features temperature control of the seam heating as well as seam tracking control of the induction coils in manual and automatic mode. A recording unit records and stores important process parameters.

The seam normalizing systems available from EFD Induction include horizontal tracking, orbital tracking and travelling systems. With horizontal tracking systems the horizontal movement of the inductors lets them track on the top of the weld. With orbital systems, the orbital movement of the inductors ensures a constant distance between the weld and the inductor, independent of the twisting of the weld. Travelling systems feature a movable coil that in the event of a line stop can 'track' backwards to complete the normalizing process, thereby minimizing scrap.



Advanced simulation tools let us design the best possible coils and systems. Here the simulation software analyzes the temperature differential through the pipe wall. Such analysis is crucial when developing seam normalizing solutions.

One of our horizontal tracking seam normalizing systems. The induction coils are positioned above the pipe, and track the seam with the help of a specially designed tracking camera.

High uptime. High throughput. High quality.

A complete EFD Induction seam normalizing system typically includes: a Sinac converter, workstations with induction coils, a flexible power cable, and a control system. All our seam normalizing systems include a 'quick lift' device to prevent open seams or deformed pipes from damaging the coils.

An EFD Induction Sinac converter (left) and a seam normalizing workstation. Sophisticated software and numerous sensors make the process control solution in such systems the most advanced on the market.

EFD Induction is Europe's no. 1—and the world's no. 2—induction heating company. In addition to our equipment we offer a range of services to ensure you get a solution best suited to your business and technical needs. We have manufacturing plants, workshops and representatives around the world.

Learn more about EFD Induction and our solutions that are boosting productivity for companies around the world. Visit: www.efd-induction.com

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PUTTING THE SMARTER HEAT TO SMARTER USE

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