



# Deck and bulkhead straightening

A guide to the benefits of induction heating



# Decks have to support many things. Extra costs shouldn't be one of them.

**Induction heating cuts deck and bulkhead straightening times by as much as 80 per cent compared to alternative methods. Induction straightening is better at preserving metallurgical properties. It's also the safest, healthiest, most environmentally friendly straightening method available.**

Flame and mechanical straightening of weld-induced distortions in decks and bulkheads is a slow, skilled and costly task. Such methods also have a 'domino effect' on costs. They delay the entry of other trades, and contribute to unnecessary extra days in dry dock. Moreover, the end results are often unsightly, leading to additional work—and even more costs.

Induction straightening, however, is fast, easy and safe. And it is a method proven by years of use in shipyards worldwide. The method works by inducing eddy currents in the steel plate. This causes extremely rapid through-heating in a very concentrated area, which in turn expands vertically. As the heat affected zone cools, the surrounding material shrinks equally in all directions, permanently shortening and straightening the plate.

Although induction heating can reach the Curie temperature for magnetic steel in about four seconds, pre-set parameters minimize the risk of overheating. But rapid, intense and localized through-heating only partly explains the unmatched efficiency of induction straightening. Ease of operation is also decisive. It typically takes only a few hours to train an operator in the effective use of induction straightening. And the equipment itself is a turnkey solution: simply plug in, set the timers to match plate thickness, and start applying the heat according to the easy-to-follow sequences.



*Terac works just as well on bulkheads and other vertical structures as it does on decks. For added ergonomic comfort, the handheld transformer pictured above can be attached to a balancer and suspended from a magnet or wire rope.*

# EFD Induction—the induction straightening specialists

EFD Induction pioneered the use of induction for deck and bulkhead straightening, selling its first Terac straightening system in 1981. Since then, Terac has evolved to remain the world's premier induction straightening solution, with the latest model, the Terac 25, featuring a state-of-the-art generator with an output power of up to 40kW.

EFD Induction Teracs can be found in shipyards around the world. Customers usually cite a dramatic reduction in straightening costs as the biggest benefit of switching to Terac. This is because the Terac ensures:

- Rapid, repeatable, controllable and localized heat; Terac has been documented to cut straightening times by as much as 80 per cent compared to flame heating and other traditional methods
- Single-side heating; unlike flame heating, all the straightening work is done from one side of the plate
- Straightening of convex and concave bulges
- Failsafe operation; it is impossible to overheat magnetic steel
- Small equipment footprint; a complete ready-to-work Terac system fits in one standard 1.8m (5' 9") container
- Maximum flexibility; a Terac works just as well on bulkheads as it does on decks
- Wide working range; an operator has a working radius of up to 60 meters (197') from the heat generator
- Maximum operator efficiency; it takes only a few hours to master the efficient use of a Terac system



*Note the easy-to-use controls. It usually takes only a couple of hours to train an operator to use a Terac system.*

# The EFD Induction Terac— thirty years of experience in only ten kilos

The EFD Induction Terac is a complete, turnkey system. A beginner operator will be able to start using Terac after just a couple of hours training. The system, which fits in a small container for easy movement to and around shipyards, consists of:

- Heat generator
- Cooler
- Coolant control unit
- Capacitor unit
- Heating unit (also known as inductor unit)
- Operator panel
- Cables
- Optional system for handheld vertical operation

The heating unit—which weighs only 10kg (22lbs)—is a mobile wheel-mounted coil and transformer. Magnets on the underside of the unit ensure accurate positioning during the heating operation. For bulkhead straightening, the lighter handheld unit can replace the deck heating unit in just a few seconds.

Ergonomic design and light weight aren't the only ways Terac protects operators' health and safety. With Terac, no toxic gases are developed from the heating source. There is no acoustic noise. And there is less smoke than flame heating when working on painted or primed metal. Also, since operators need only heat one side of the plates, there is a lower risk of injuries caused by reaching and working under decks and in confined spaces.



EFD Induction has to date installed thousands of heating solutions for a vast range of industrial applications—bringing the benefits of induction technology to many of the world's leading manufacturing and service companies. EFD Induction has manufacturing plants, workshops and service centers in the Americas, Europe and Asia. Corporate headquarters are in Skien, Norway.

**Learn more about the EFD Induction solutions that are boosting productivity for companies around the world. Visit: [www.efd-induction.com](http://www.efd-induction.com)**