



## DRAX CONDENSER 2007 - RE-TUBE UNITS 2 & 3

In 2006 TEI were awarded the contract to re-tube 3 condensers at Drax – the UK's largest, cleanest and most efficient Coal Fired Power Station.

TEi purchased the tube from Italy and it was delivered to site via Goole docks.

Each condenser contains 19,205 tubes, 69ft in length, with a 2 ½" fall from the centre of the condenser to the outer tubesheets. 27 sagging plates support the tubes.

On the steam side the tubes are expanded into a carbon steel tube sheet, and on the CW side the tubes are packed with 2 fibre and 3 metallic packings into a naval brass tube sheet. The original Aluminium Brass material was upgraded to Yorcoron (70/30 copper nickel).



## TEi EXPERTISE

TEi have the exclusive UK licence for specialist equipment for cutting, pulling and flattening the old tube.

This equipment is maintained on a 24hr basis by site technicians.

### Key Activities

- Removal of outlet waterboxes and erection of 75ft dancefloor scaffolding.
- Internal bore tube cleaning using water jetting equipment to maximise the scrap value of the tubing and minimise the environmental impact.
- Removal of plastic flow straighteners, internal bore cutting and stub removal at the tube inlet.
- Pulling, travelling and chopping of the old tube at the tube outlet.  
Disposal of scrap into 8 tonne skips.
- Removal of existing packings using high pressure water jetting and purpose designed jetting heads.



## KEY ACTIVITIES AFTER DETUBE

### Key Activities

- Cleaning and sizing of sagging plate holes using carbide ball burrs.
- Cleaning of carbon tube sheet holes using abrasive flapping wheels.
- "Known Hole" measuring to ensure each new tube is expanded within the agreed tolerance.
- Installation of new tubes.
- Expanding of new tubes into the carbon tube sheets.



- Installation of fibre and metallic packings into the brass tubesheets.
- Soak time to allow swelling of the fibre packings.
- Hydrostatic pressure testing of the annulus spaces to prove the integrity of both the expanded and packed joints.
- Installation of the Outlet Waterboxes.
- Hand back of both units before the Outage completion date.

### Statistics

- 38,400 tubes removed and installed, 501 miles in total.
- New tube weight 598 tonnes, removed tube weight 380 tonnes, ie wall reduction of 40% during 30 years after service.
- 1,114,000 holes cleaned prepared and measured.
- 38,410 expansions carried out, no leaks found during hydrostatic testing.
- 3,841,000 packings installed.
- Approx. 60,000 man-hours liquidated.



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TEI's integrated management system, ISO 9001 ISO 14001 OHSAS 18001