# COMPLEX TESTS AND DIAGNOSTIC AT AL KHOBAR, SAUDI ARABIA

The test and diagnostic group of UNIS Power has performed remaining boiler life time assessment and boiler performance verification test for Saline Water Conversion Corporation (SWCC) in the Kingdom of Saudi Arabia. UNIS Power has been responsible for the expertise while all local related activities such as scaffolding installation and/or insulation dismantling and reinstallation were in responsibility of a local partner.

The heavy fuel oil fired boiler was put out of operation for three months when detail inspection and evaluation of all boiler components, tube wall thickness measurements and remaining life time re-calculation has been performed. A comprehensive plan for component repairs or replacements together with expected cost estimation has been prepared. After the inspection, a performance verification test has been conducted with consequent recommendations for boiler efficiency improvements and firing process optimisation.

The inspection included:

- Wall thickness measurements of ECO, WWP, SH and RH tubes, headers and pipes
- Hardness measurements
- Replication tests of drum, header and piping welds
- Laboratory tests of taken tube samples (macros, sediment thickness and chemical analysis)
- Short creep tests of the tubes working under the creep conditions
- Performance verification test including efficiency calculation

## Client

Babcock Borsig Service Arabia Ltd /
Saline Water Conversion Corporation

## Year of Completion

2014

## Boiler data

- 672 t/h
- 86 bar(a)
- 525 °C
- HFO and gas fired boiler

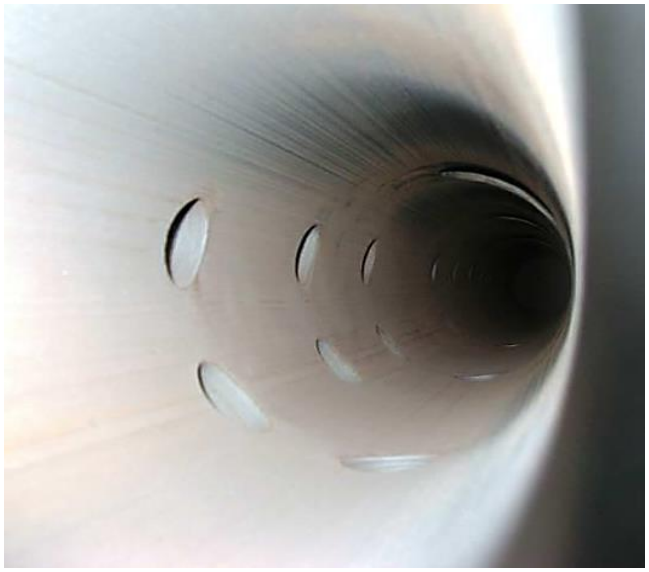
## UNIS Power scope of work

Boiler inspection and remaining life time assessment of complete boiler pressure and non-pressure parts including auxiliary equipment (burners, rotary air heater, FD fans etc.), performance verification test

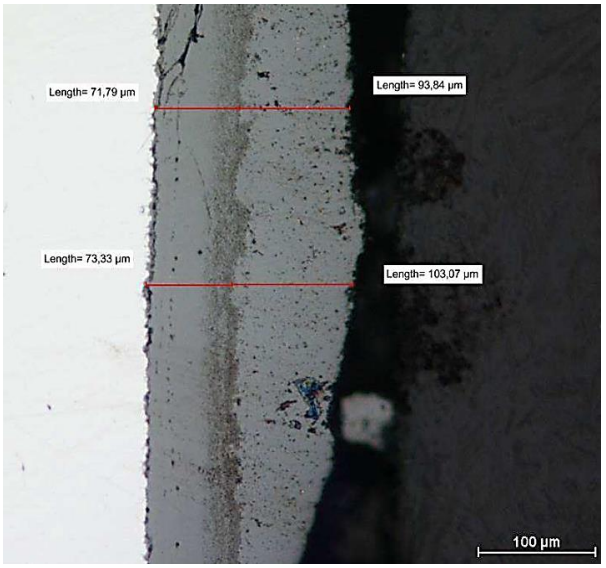
All the tests have been performed in full compliance with respective norms and standards.

*Drum internals*

*Intermediate pass – primary SH tubes*



*Inner surface of water-wall header*




*Inner deposit measurement - secondary SH*