European Technology Development

Experts in Power & Process Plant Inspection & Integrity

Newsletter March 2024

Decarbonisation of Power Production

This Newsletter shows examples of work carried out/ being carried out by ETD in this area.

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Can we help you?

Decarbonisation is critical to address climate risks and build a more sustainable world.

At ETD we help accelerate our clients' decarbonization journey towards a low-carbon future with independent advice and guidelines.

We can help you understand the decarbonisation of your fossil power plants and the new sources of low or no carbon fuels. For more information please write to:
enquiries@etd-consulting.com

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About ETD

ETD Ltd. is a UK-based technical consulting company established over quarter of a century ago. We are a leading provider of independent consulting, innovative products and high-quality training for the power and process industries worldwide.

We specialize in the provision of full and comprehensive inspection and condition / life assessment of power and process plants worldwide.

Thermal Power Plant Changes/Modifications In order to burn Low Carbon or Carbon Free Fuels

ETD has been working for a few months now on a one-year study project into the use of **Hydrogen** and **Ammonia** for combustion in gas turbines and its effect on combustion, hot-gas path components and HRSGs. This is also looking at hydrogen production, transport, storage and a mix-of hydrogen or ammonia with the natural gas for combustion. Cost of hydrogen on-site production and storage or transport is being studied. The damage to GT, HRSG, hydrogen storage and transportation materials is also being reviewed. The project is being undertaken by ETD for a group of North American utilities.
This project has led to another newer one year duration project studying worldwide development of all 'low or no carbon' fuels for use in the existing and new fossil power plants by 2030 and beyond. (see below ↓)

Low Carbon or Carbon Free Fuels for the Next Decades

ETD has won another significant project in early 2024 to investigate a wide range of low- or no-carbon fuels that can be potentially used to decarbonize global economy, by reducing the emission of Green House Gases (GHG) that are generated during power generation. The study will evaluate the feasibility and application of such fuels, as well as their production, transportation, storage, regulatory and health & safety handling requirements.
These fuels include: *Renewable green hydrogen ● Ammonia as a fuel ● Pyrolysis (biomass) ● Gasification (biomass) ● Conversion of non-recyclable residual material, wood waste into advanced biofuels ● Fermentation technology to capture CO-rich gases and convert the carbon to fuels ● Production of renewable diesel using ethanol from waste streams ● E-fuels (E-ammonia, E-ethanol, E-hydrogen, E-methanol) ● Bio -LNG ● Renewable Compressed natural gas ● Other technologies suggested by ETD: (Hydropower technology for pumped storage and back-up - Carbon capture and storage technology).*

Wind Turbine tower manufacturing process and facility audit

To continue on a similar theme on renewable power, in Feb 2024 ETD conducted a wind turbine tower manufacturing process and facility audit in Egypt for a large 500-MWe WT on behalf of a European utility. ETD team carried out the manufacturing specifications, procedures, and quality records review as well as inspection of tower fabrication welding and related inspection and testing processes live at the time.

The above audit followed a similar wind turbine and turbine tower manufacturing process audit in several factory locations in China in 2023.

Flexible Operation of Conventional Power Plants and CCGTs

Technical and Cost Analysis

Having worked on the above issues for a number of years, ETD has recently been approached by a number of national and independent utilities in Asia, Middle East and North America to support them especially with the cost of plant cycling or load following operation and advice on what modifications need to be made to the existing plants to make them more compatible with flexible operation and thus reduce the O&M costs, increase plant reliability & availability and reduce forced outages.

Prediction of fossil fired plant O&M costs with increasing renewables is another area being studied.

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