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# Abstracts

## Optimizing Chemical Treatment of Condensate Systems in Industrial Plants – Tools, Methods, and Strategies

Robin W. Kluck and James O. Robinson

Effective chemical treatment of steam condensate is critical to industrial plant operation, yet in many plants condensate treatments continue to be widely misunderstood, misapplied and improperly monitored. This paper provides a review of the variables that influence condensate treatment performance and offers a suggested road map for designing or optimizing a condensate treatment and monitoring program.

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## Evaluation of Organics Removal Options: A Case Study from a Zero Liquid Discharge Power Plant

Emmanuel K. Quagraine, Keith Dean Hill, and Fredrick Omorogbe

Although the role of organics in power plant cycle chemistry still appears to be controversial, their adverse effects in the course of makeup water treatment are very familiar and include fouling of ion exchange resins. This paper describes the organic/bio-fouling experience in a boiler makeup water treatment train for a zero liquid discharge plant, which draws on treated sewage water and surface water for cooling and utilizes the cooling tower blowdown to make distillate water from an evaporator prior to final treatment with a mixed bed demineralizer. In a case study, which is the focus of this paper, the performance of the pilot plants of two recommended organic removal techniques (i.e. reverse osmosis and organic trap resin) were compared to the existing activated carbon bed for organic removal prior to the mixed beds. Parameters evaluated for these three techniques (before and after each unit) include bacteria plate counts, organic carbons, inorganic nutrients (e.g. $NH_3$-N, [$NO_3^-$+ $NO_2^-$]-N, P, Mn, and Fe), known parameters that could significantly impact on the performance of the mixed beds (i.e. $SiO_2$, $Cl^-$, $SO_4^{2-}$, $Na^+$), and various others like pH, conductivity, turbidity, $HCO_3^-$ etc. The effects of oxidizing (i.e. bleach) and non-oxidizing (glutaraldehyde) biocides on the performance of the activated carbon filter were also evaluated.

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## Post-combustion $CO_2$ Capture: A Techno-Economical Comparison

Joseph Hook

Due to emissions being subject to increasing constraints following progressively stringent environmental legislation, a new technology is evolving to allow the continuation of energy production using coal-fired plant. This technology is carbon capture. Carbon capture is developing along three discrete routes: pre-combustion, post-combustion and oxyfuel processes. Post-combustion capture, a process of absorption and desorption of $CO_2$ from flue gas, is the topic of research in a many labs and test rigs across the world, each employing different techniques or absorption media. Two absorption media of interest in modern plant designs are monoethanolamine and chilled ammonia. The medium used defines the chemistry, the thermodynamics and the technical processes throughout the capture system and hence has a major influence on capital costs, operation costs and health and safety considerations. This paper considers the technical aspects of post-combustion capture using monoethanolamine and chilled ammonia and compares each case from an economic viewpoint.

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**2010's Scientific and Technical Contributions** – Part 1

As every year, the January issue closes with abstracts of all the articles published in this journal in the previous year. This year, due to space limitations, only half of the abstracts for 2010 is included in this issue; the second part of this listing will appear in the February issue of our journal. I would like to remind you that back issues of our journal are – with few exceptions – still available and that you can receive PDF files of all articles by e-mail. The order forms may be downloaded from our homepage.

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