

# Ozone Bleaching - From Laboratory Curiosity to Commercial Reality

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## ABSTRACT

*As the 'Green Movement' is gaining momentum day-by-day the world over, there is an urgent necessity to make all the industries eco-friendly and to meet with environmental compliances. The pulp and paper industry, one of the most polluting industries has also to follow suit. Bleaching of pulp using chlorine and chlorine compounds will be a thing of the past in the near future. Ozone bleaching has already taken the centre stage. This paper summarises the development so far achieved in ozone bleaching technology. Due to significant development in ozone bleaching, it is possible today to design an ozone stage to meet the process requirement. From a cost stand point, designing the ozone system for flexibility is the most important factor because ozone equipment is the highest cost-factor. However, bleaching process involving ozone-bleaching reduces the cost of water and wastewater treatment plants considerably, as there is a 75% reduction in effluent discharged due to recycling of process water. General trend of pulp industry to achieve "closed effluent" concept and the long-term visions of totally Effluent Free Pulp Mill rely on, ozone-bleaching- process. Total elimination of gaseous chlorine as a bleaching chemical, will induce interest in modifying the bleaching process by using ozone, in combination with ECF or TCF pulp production. Mill that uses ozone stage presently either for ECF or TCF pulp, use different sequences depending mainly on factors like pulping methods, brightness target and end product. For ECF, sequence of OZEoD or OA EOD sequence can be used. Mills using chelants (Q) adopt a different sequence. There are mills using QP (ZQ) (PO) and get required end brightness. It is reported that bleaching process involving ozone and peroxide are more attractive and use QP (ZE) P and (ZE) QP sequence. Regulatory limits on AOX and other effluent parameters compelled with improvement in ozone generator-efficiency, will surely make more and more mills adopt ozone bleaching. (Revised paper to be presented during the Seminar).*

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