

PULP BLEACHING WITH OZONE

Ozone (O₃) bleaching is a commercialized process in pulp bleaching technology, and is one of the key technologies to consider for total chlorine free (TCF) or elemental chlorine free (ECF) pulp production.

The need to further reduce or eliminate adsorbable organic halides (AOX), such as dioxins and furans, has forced the pulp & paper industry worldwide to examine or implement alternative bleaching technologies for ECF/TCF pulp production. Ozone bleaching, combined with oxygen delignification and other non-chlorine bleaching technologies, will enable mills to meet AOX emission standards. The process will result in a higher percentage of process water recycling, lower biochemical/chemical oxygen demand (BOD/COD) discharges, and reduced color in mill effluent.

There are approximately 20 ozone bleaching installations around the world. The majority of these installations are operated in conjunction with oxygen delignification, which precedes the ozone bleaching stage.

A crucial factor in the implementation of the ozone bleaching process is a reliable, on-site source of high-quality ozone. Praxair, one of the world's largest industrial gas companies, and Trailigaz, the world's leading supplier of ozone systems, have formed a worldwide alliance to provide customers with total ozone solutions that deliver cost savings and environmental benefits. Praxair-Trailigaz Ozone offers the combination of Praxair's expertise in the development, engineering and

manufacturing of vacuum pressure swing adsorption (VPSA) oxygen generation systems (integral to producing high quality ozone) and Trailigaz's advanced ozone generating systems.

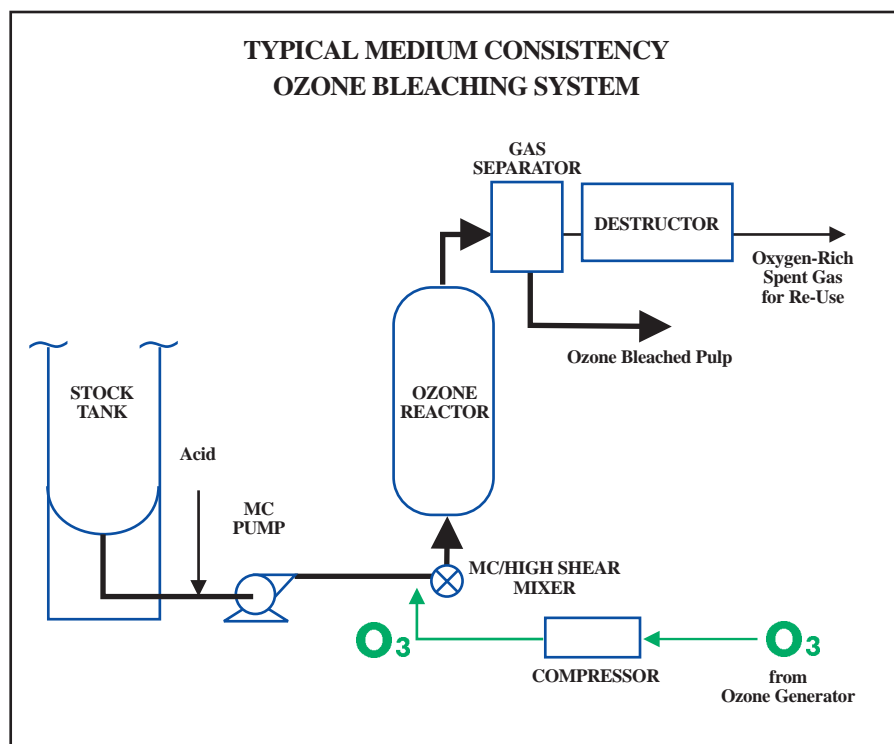
APPLICATION

Ozone bleaching is usually conducted in medium consistency pulp and in relatively low pH. The pulp is first acidified to the desired pH level, then transferred by an MC pump through an MC/high shear mixer to an ozone reactor. Ozone is introduced into the pulp just before, or at the mixer, commonly in dosages of 0.5 to 1.0%. The mixer ensures intimate mixing between the pulp fiber and the ozone gas. At the ozone reactor, spent gas is separated

from the pulp, and the pulp continues for further processing. The spent gas is discharged to an ozone destruction unit for residual ozone removal. The oxygen-rich spent gas is then exhausted to the atmosphere or recovered for other processes in the mill.

BENEFITS

- ❑ Chlorine and chlorine dioxide are replaced
- ❑ AOX is reduced or eliminated
- ❑ BOD/COD is lowered and effluent color is reduced
- ❑ Higher process water recycling rates can be achieved
- ❑ An important bleaching step towards TCF or ECF pulp production and mill closure





Praxair Gases and Technology for Pulp and Paper Making

WORLD HEADQUARTERS
Praxair Inc., 39 Old Ridgebury Road, Danbury, CT 06810-5113
Tel: 1-800-PRAXAIR (1-800-772-9247) or (716) 879-4077
Fax: 1-800-772-9985 or (716) 879-2040
Internet: www.praxair.com e-mail: info@praxair.com

IN CANADA
Praxair Canada Inc.,
1 City Centre Drive, Suite 1200, Mississauga, ON L5B 1M2
Tel: (905) 803-1600 Fax: (905) 803-1696

*The information contained herein is offered for use by
technically qualified personnel at their discretion and risk
without warranty of any kind.*

Praxair is a trademark of Praxair Technology, Inc.
© 1998, Praxair Technology, Inc.

