

## Defoamer

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### OTHERS :

Deposit control

Biocide

Deinking  
Chemical

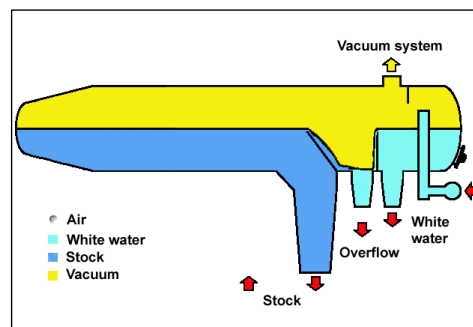
Felt & Wire  
Conditioning

Formation Aids

WWT Polymers

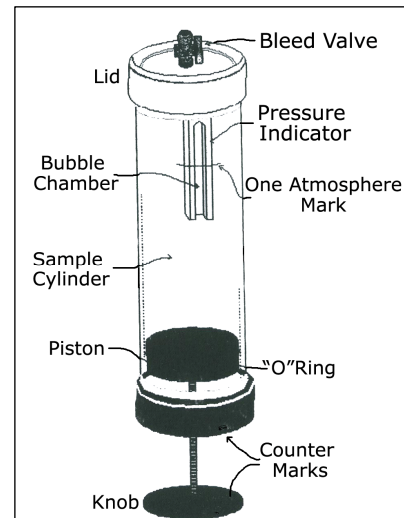
Foams are caused by air in water or liquid. There are 3 types of air in water; namely Dissolved Air, Entrained Air and Free Air. Dissolved air is microscopic and have minimal effect in Production. But according to Henry's Gas Law, at low partial pressure, dissolved air can become Entrained or Free Air. When this happens, it gives trouble to paper makers. The impact of foam in Paper Making cannot be under-estimated. Foam prolongs drainage time on the wire at an alarming rate; for every 0.5% increase in Entrained Gas, drainage time is doubled. It contributes water marks problem to final paper. It promotes microbiological growth to enhance slime problem. Therefore it is important to tackle foam problem at the early stage of manufacturing.

Since foams are caused by air, removal of air will minimize its problem. The physical means to remove air from water is by using Deaerators,

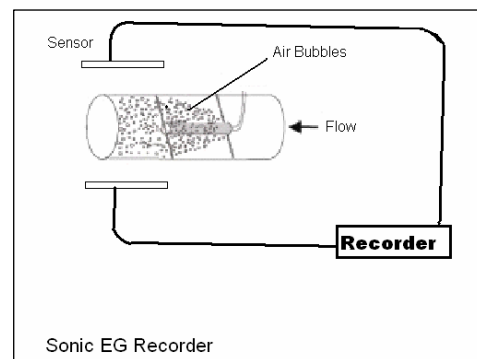


which may require chemicals or anti-foam to work competently. However it is only functional with the help of a powerful vacuum pump which is an energy guzzler. The ultimate solution

for de-foaming still depends heavily on the use of chemicals. Anti-foaming chemicals are pumped to the stock directly as an Add-on de-foaming



Other methods of de-foaming are spray and shower, which are



handy and economical if the problem is localized. Add-on is the more prevailing method. The anti-foaming agent is generally added to the White Water silo or the Wire Pits.

The efficiency of a treatment program can be monitored by using a equipment called Entrained Gas



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Tester (EGT) which measures directly the percentage of air in water. Modern on-line EGT makes use of sonic signal to measure percentage air continuously. There are also indirect methods to determine whether the Defoaming program is working as expected. The Fan Pump will record a drop in RPM, once anti-foam is added to the white water system. At the Short Loop, the water level will decrease if foam is reduced. Another clear sign of anti-foam action is the Wet Line on the Wire; it moves closer to the Head-box than before treatment.

The chemistry of Anti-foam can be briefly classified

as surface-active. Bubbles are originated by surface active chemical forming a stable air/water interface. Anti-foam or defoamers act to de-stabilizer this interface by tiny droplets or particulates. To perform this piercing or coalesce actions, a defoamer needs to form water insoluble tiny droplets, as in the case of many fatty acid types of defoamer. The action of Silica or particulates is akin to piercing method where the foam de-stabilizer is solid. Both defoamer needs to be an emulsion in order to de-foam.

Since defoamers are surface active agent and so do wet strength and sizing agents, it is critical to limit the dosage of this chemical so as not to create more problem. Over-dosing of defoamer can cause sticky problem too.

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