

Dust Abatement System

FCT Dust Supression Systems

This system is part of an engineered system approach to control fugitive dust. An engineered foam is directed under pressure to capture dust not normally captured by other methods such as water or water/surfactant spray.

FCT Dust Abatement Systems are designed for easy integration into any existing plant control loop. A powerful programmable logic-controller allows the operation of the system to be tailored to exact facility conditions. This allows the foam to be directed and applied as needed to provide superior dust control.

| Specifications | |
|--------------------------------|--|
| Air Requirement: | 5 to 200 CFPM 60 to 100psig |
| Water Requirement: | 1 to 40 gpm 10 to 150 psig |
| Electrical Requirement: | 120 VAC/60/20 A |
| Enclosure: | Generator: NEMA 12 Cabinet NEMA 4X Stainless Steel Cabinet Fiberglass Environment Shelter Electrical: Explosion proof, NEMA 4, 7, 9 Group D,II Stand alone Group E, F, G |
| Control: | PLC, Networkable Remote, CRT |
| Switches: | NEMA Type 4/13 Water tight/Oil tight |
| Chemical Metering Pump: | Heavy Industrial Hydraulic diaphragm type +/- 1% volume under CTP |

FCT Water Treatment

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Production of Dust-Control Foam

Foam is produced by the turbulent mixing of chemical solution (foaming agent plus water) and air. If the foam production process was 100% efficient then:

$$\text{SOLUTION} + \text{AIR} = \text{FOAM}$$

Because foam production is not 100% efficient, not all of the air supplied contributes to the production of foam:

$$\text{SOLUTION} + \text{AIR} = \text{FOAM} + \text{AIR}$$

Some amount of air is always wasted in the foam production process. The quantity of wasted air depends on many variables, such as foam-generating equipment, foaming agents, etc. The ratio of the volume of air in foam (foam volume minus solution volume used to generate foam) compared to the volume of air supplied multiplied by 100% is defined as the air efficiency (E_{au})

$$E_{au} = \frac{\text{Air in foam}}{\text{Air Input}} * 100\%$$

The expansion ratio of foam is the ratio of foam produced per unit volume of solution (foaming agent plus water) see **Figure 2**.

Expansion ratio must be measured since air efficiency is never 100%. The measured expansion ratio is always lower than the theoretical expansion ratio.

Figure 2: The expansion of a chemical solution

