

NEW AIR COMPRESSOR CONTROL SYSTEM KEEPS BUBBLE STRUCTURE OF FIRE FIGHTING FOAM STABLE THROUGHOUT THE ENTIRE DISCHARGE PRESSURE RANGE OF C.A.F.S.

Working in collaboration with the National Interagency Fire Center; located in Boise Idaho, Pneumotech Incorporated has devised a compressed air control system for the air compressors utilized in compressed air foam systems “CAFS”. This unique control system maintains foam bubble integrity preventing collapse in the bubble structure during changes in the foam dispensing hose flows and pressure. The more common well known foam fire fighting techniques incorporate the actual foaming agent as a method of smothering or removing the oxygen available that allows for further combustion, such as those used in oil or gasoline fires. However the foam agents used in wild-land firefighting applications are used foremost as a wetting and cooling agent to assist in preventing combustion of materials in the surrounding area to an existing fire, basically the foaming of the surrounding area next to an existing fire helps contain the fire.



When a firefighter at the end of the hose closes the discharge nozzle to move to another area, the standard or current compressed air foam system builds pressure in the hose until the water pump reaches bypass pressure. Since water doesn't compress but air does, the bubble's collapse “they become smaller and packed tighter together” turning the foam into a fairly thick slurry. When the firefighter at the end of the hose opens the nozzle back up, the first thing discharged from the nozzle is a slurry instead of the preferred adequately aerated foam. The length of time that a slurry, instead of a well-structured aerated foam is discharged is dependent both on the length of the hose and the amount of time the hose nozzle has been shut off. The slurry neither covers as much area “due to the collapsed bubbles” nor does it do near as adequate of a job as a wetting agent “due to the smaller bubble structure” as that of a properly aerated foam.



Because of these issues, keeping the bubble structure intact during the on and off cycling of the hose nozzle is of paramount importance, not only for the fire fighters safety but also for the conservation of water “conserving water being the biggest reason to use foam enhancement instead of just straight water”. Conservation of water with aerated foam by





extending the waters natural ability to dampen and cool what it comes in contact with, is of prime importance in a wild-land fire fighting application. It can however, be of great help in a structural situation, such as by cooling and wetting an adjacent wall to a burning room; thus minimizing the chances of a rapid burn-through.

The newly designed and configured control system by Pneumotech Incorporated maintains the integrity and structure of the bubble, this controllability not only enhances the effectiveness of the foam as a wetting agent, but also increases safety of the operator as well as the amount of coverage area for the available foam/water. Due to the control advancement of this fire fighting apparatus consistently maintaining a high quality wetting agent, aerated foam enhancement of water, now becomes a cost effective and viable option for the structural fire fighter as well as the wild-land fire fighters.

