

INTRODUCTION

Dynamic Wet Pressure (DWP) is a very important characteristic in selecting, evaluating and monitoring fine bubble diffusers. It is applicable to both porous ceramic and flexible membrane diffuser materials. DWP is the pressure differential (headloss) across the diffusion element when operating in a submerged condition. It is frequently expressed in inches of water column at some specified air flow rate.

The SANITAIRE Pressure Monitoring feature allows the plant operator to measure the diffuser DWP of a typical diffuser in the aeration grid and indirectly measure the air flow rate to that diffuser. This information can be used to monitor the fouling or aging of the diffusers. It will also indicate the need for cleaning or replacement and ultimately leading to significant power savings. The air flow rate measurement can also be used as a process tool to balance air flows between aeration grids and to cross check other plant air flow meters.

Over time, fouling of the diffusers can be indicated by a gradual increase in DWP. Typically, cleaning of the diffusers will restore the like-new DWP. With membrane diffusers, DWP not recovered through cleaning indicates a permanent change in diffuser performance due to material changes.

System designers will often specify and furnish pressure monitoring capabilities on a portion or all of the fine bubble aeration grids to provide system headloss information to the plant operator. A "grid" of diffusers is defined as a group of diffusers that is served by a single manifold, dropleg and isolation or throttling valve. A grid may consist of a few hundred to a few thousand diffusers. An aeration tank may contain one or several grids. The SANITAIRE Pressure Monitoring feature can be used alone. However, it is required hardware for the SANITAIRE In-Place Gas Cleaning System.

For applications without an In-Place Gas Cleaning System, it is recommended that the pressure monitoring feature be used on one aeration grid per tank. Fouling or aging of diffusers in one grid has been found to be representative of the entire basin.

When used in conjunction with the In-Place Gas Cleaning System, the Pressure Monitoring feature must be applied to every aeration grid. The DWP measurements are used to initiate and terminate the gas cleaning cycle.

Typical Air Flow-Pressure Characteristics
Ceramic Disc Diffuser

