Landscape-friendly compressor technical building

Surface trail left by bubble plumes

DAD

DIFFUSE AERATION
DESTRATIFICATION

Basic principle

The DAD, or Diffuse Aeration-Destratification system, is used to oxygenate eutrophic lakes and reservoirs by slow, top-to-bottom mixing of the water column. The result is year-round top-to-bottom uniformity of temperature and water quality of the entire lake water body.

Benefits of aeration by destratification

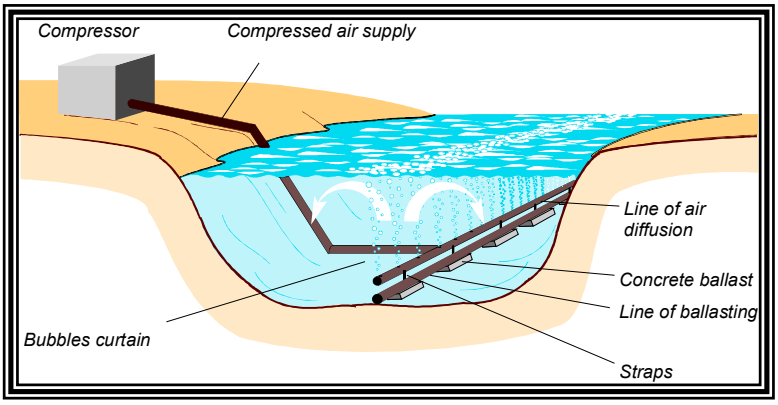
By slowly mixing the water column and bringing the bottom water layers into contact with the atmosphere, aeration by destratification prevents from eutrophication in lakes and reservoirs of depths of up to 25m:

The deep water layers are once again a viable habitat for fishes.
The growth of nuisance algae is curbed.
All of the lake can be used for effective reservoir purposes.
Treatment plant operation is facilitated by:

- The availability of a constant-quality supply source throughout the year.
- Lower iron, manganese and ammonia concentrations.
- The need for less frequent filters washing.

How it works

Compressed air is delivered to a network of diffuser pipes anchored to the lake bottom and perforated at suitable intervals. These diffusers, which may be several kilometres in length, send up plumes of bubbles which entrain upwards large quantities of water by an air lift effect.



Schematic of destratification process

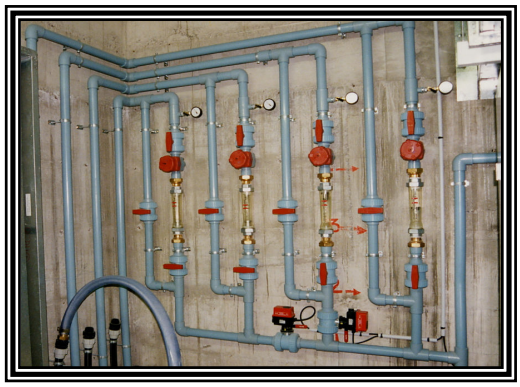
Compressed air pipes entering the reservoir

Aeration of the bottom waters is produced not only by contact with the bubbles but to a greater extent by contact with the atmosphere. The deeper layers are thus progressively lifted upwards and oxygenated at the surface before returning to the bottom.

The DAD is used during the period of thermal stratification, which generally occurs between April and October. During this period, the colder denser layers stagnate at the bottom of the water body and are rapidly depleted of oxygen. Depending on lake water quality and morphology, the system will function either continuously or intermittently.

Air Supply

This is provided by an electrical compressor installed in a soundproof pre-erected technical building. The air delivered is oil-free.



Distribution of compressed air to bubble diffusers

Maintenance

Compressor

Once-yearly replacement of filters and draining of the compressor.

Bubble diffusers

- The diffusers should be inspected by divers every 3 to 5 years.
- They can be easily removed whenever the water body is drained for decennial inspection.

Installation of bubble lines

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