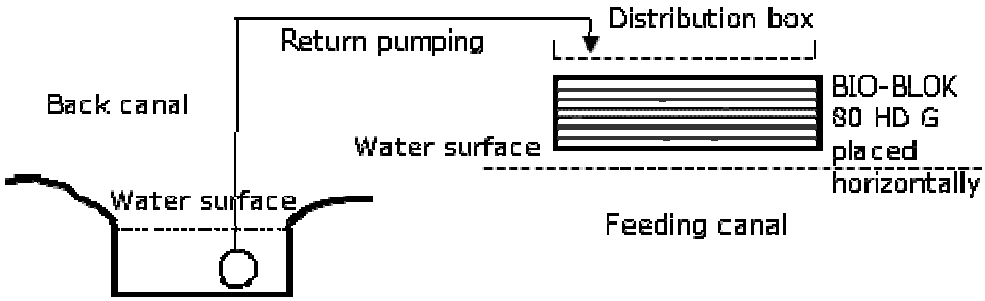
BIO-BLOK® INTELLIGENT FIXED FILM BIOLOGICAL FILTER MEDIA

3.2.2. Case Studies

1. Aeration/degassing of fishfarm water

Technical information	Aerating unit
Type	BIO-BLOK® 80 HD G
Client	Danish Fish Farmers
Consulting Engineers	BioMar A/S Tel.: +45 97 18 07 22 Danaq Consult Tel.: +45 59 56 00 50



Process diagram

Brief description of plant and process

An aerating unit can be constructed in different ways. In Denmark aerating units are normally constructed as shown above and almost always in connection with return pumping of waster from the back canal to the feeding canal. Thus a high oxygen level and a good water flow through the fish farm are ensured, disregarding the stream flow of the small river.

BioMar has carried out measurements on aerating units since 1994, and today it is concluded that it is a matter of an extremely effective technology.

In the aerating unit the air is drawn through horizontal net tubes (BIO-BLOK® 80 HD G), and it thus gets in contact with millions of drops of water. This ensures an effective aeration and degassing of the water.

Experience shows that an effective degassing promotes the effect of oxygen supply and that it is possible to achieve almost 100% oxygen saturation through aeration with atmospheric air by using aeration units.

Treatment results

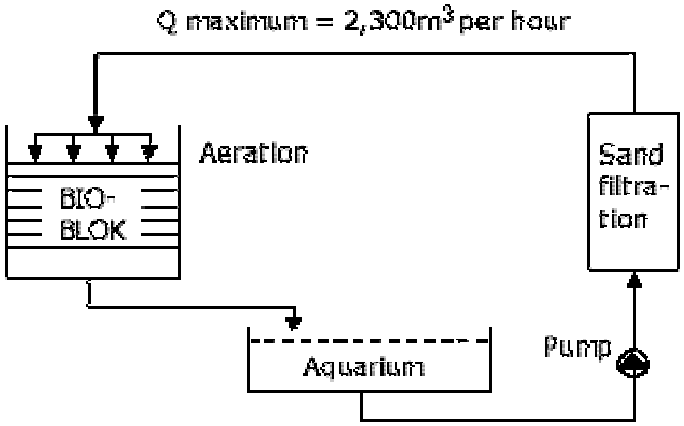
From the curves it appears that the price per kg transferred oxygen is higher the bigger the content of oxygen in the inlet water is.

The aeration unit can, by an oxygen saturation of 50%, transfer approx. 1.05 kg oxygen at the kilo price of approx. DKK 0.30 per kg oxygen. By an oxygen saturation of 90%, only 0.21 kg oxygen is transferred corresponding to a kilo price of approx. DKK 1.50 per kg oxygen.

Aeration effect in aeration unit by Sdr. Karstof Fish Farm

2. Aeration and degassing of aquarium water

Technical information	Aeration and degassing plant constructed in 1997
Type	BIO-BLOK® 100
Client	Nordsø Akvariet, Villemosevej, DK-9850 Hirtshals
Consulting Engineers	Viggo Folmer A/S Studsgade 22 DK-8100 Århus C Tel.: +45 86 12 10 11 / Fax: +45 86 12 73 00



Process diagram

Brief description of plant and process

After the aquarium water has been sand filtrated, the waster is dispersed over three layers of horizontally placed BIO-BLOK® 100 (in smooth version) by means of a distribution tray. The aeration and de-gassing plant has been dimensioned to a maximum supply of water of 2.300m3 water per hour. The hydraulic surface load by this volume of water is 211 metre per hour.

The BIO-BLOK® 100 has been chosen based on the fact that it is the filter medium that breaks the water most possible when the jets of water passes through the filter. Thus the water gets much contact with the air in the filter, at the same time, the water is aerated most possible so that volatile gasses in the water can be aired efficiently.

Treatment results

Currently, the plant has not be completed. When the water runs through above system, an oxygen saturation in the water of 95% to 98% can be expected. Noxious gasses, if any, which come into existence in connection with sand filtration and pumping of the aquarium water will be effectively aired.

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