

MOVING BED BIO - REACTOR SYSTEM (MBBR)



Description of MBBR Technology

Colloide's Moving Bed Bioreactor System provides a highly effective treatment solution using biofilm to provide organic carbon removal and nitrification / de-nitrification where necessary.

The process forms a highly reliable and robust solution for wastewater treatment.

The process uses biofilm carriers in the treatment tanks on which the biomass grows.

Aeration then supplies the energy to disperse the carriers.

MBBR configurations

This MBBR process can be used in a variety of configurations (standard MBBR, IFAS BNR etc) to achieve the necessary treatment. With standard MBBR, wastewater is treated only with carriers ie. no suspended biomass involved.

This leaves a very simple process involving a once-through flow, no recycle for carbonaceous BOD removal, followed by solids removal eg. DAF unit, clarifier.

More specialised process with internal recycles are used for nutrient removal. IFAS processes use both carriers and suspended biomass to carry out the treatment.



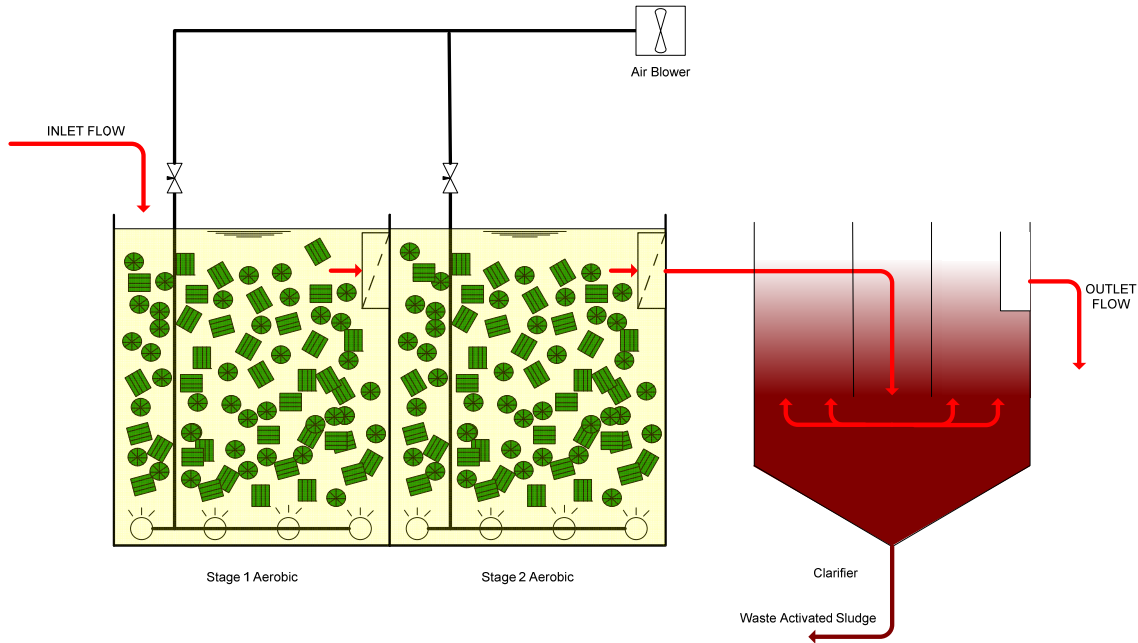
Colloide Engineering Systems Ltd

Cookstown Enterprise Centre, Derryloran Ind. Est, Cookstown, Co. Tyrone, N. Ireland BT80 9LU.

Tel: + 44 (0) 28 8675 8638 Fax: +44 (0) 28 8675 8640

Email: info@colloide.com Website: www.colloide.com

MOVING BED BIO - REACTOR SYSTEM (MBBR)



The diagram above illustrates the basic components of the MBBR plant suitable for BOD/COD removal.

The process configuration designed for BOD removal is a once-through design, with 1 to 2 process stages in series, the number of stages determined according to the required effluent quality. In this configuration, there is no sludge recycle to the aeration tank, and all of the biological activity takes place in the bio-film on the carriers.

The wastewater is delivered into the two stage aerobic tank system. The biofilm on the carriers break down the wastewater while air is fed into the base of each of the reactor tanks to provide oxygen for the biofilm while also providing mixing of the tank.

The water exits each of the reactor tanks via a mechanical screen which is used to retain the carriers within each of the tanks.

When Nitrogen and/or nutrient removal is also required, the process will include a larger number of process stages, and an internal circulation of effluent to a pre-denitrification tank, but other than this, there is no sludge recycle from the solids separation unit.

The MBBR system can also be used in series with conventional activated sludge system or as a hybrid system with biofilm carriers used in the same tank as conventional activated sludge.

All of this leaves the MBBR system a highly flexible system whether for a new plant or the upgrade to an existing one.



Colloide Engineering Systems Ltd

Concorde House, Trinity Park, Solihull, Birmingham B37 7UQ

Tel: + 44 (0) 21 635 5415 Fax: +44 (0) 121 635 5416

MOVING BED BIO - REACTOR SYSTEM (MBBR)



Benefits of Colloide's MBBR System

- Very good effluent quality (20BOD/ 30SS/ Ammonia)
- Low capital cost
- Simple, robust design
- Energy efficient
- Ease of installation and operation
- Capacity of existing works can be quickly and easily increased
- Low operating cost
- Small footprint for new works
- Upgrade of existing works—simultaneously increase capacity and improve effluent quality

MBBR can be added to current systems, or designed and constructed as a stand alone treatment plant.

Applications of Colloide's MBBR Technology

- Upgrading of existing conventional activated sludge plants in both industrial and municipal wastewater treatment
- New municipal and industrial plants as either full or partial treatment
- New or upgraded leachate treatment plants
- Package wastewater treatment plants

MBBR technology is an economical, simplistic and effective solution to solve the following issues with current waste water treatment facilities:

- Increasing stringent effluent requirements to remove pollutants
- Urbanisation creating growth in volumes of wastewater to be treated by existing facilities

Treatment capacity for municipal plants can be increased, and the effluent quality upgraded, with minimal civil works, and little / no increase to treatment volume.

Carriers can be added to the tanks in a quantity calculated for the required loads.

Increases to the treatment capacity can be achieved by simply adding more carriers to the process.



Colloide Engineering Systems Ltd

Cookstown Enterprise Centre, Derryloran Ind. Est, Cookstown, Co. Tyrone, N. Ireland BT80 9LU.

Tel: + 44 (0) 28 8675 8638 Fax: +44 (0) 28 8675 8640

Email: info@colloide.com Website: www.colloide.com