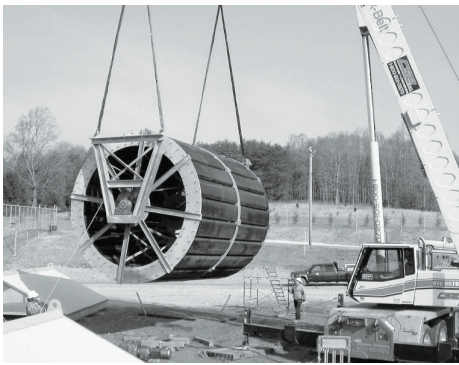


### COMBINATION OF INTEGRATED FIXED FILM & ACTIVATED SLUDGE

H<sub>2</sub>O Innovation's Bio-Wheel is an integrated fixed-film activated sludge (IFAS) rotating aerator. The Bio-Wheel is made of a steel frame containing corrugated plastic plates and is integrated into an activated sludge tank. The plastic plates are configured to trap air as the wheel turns and release it beneath the surface of the activated sludge to impart oxygen into the liquid phase.



A frame support: no projections or corbels needed, simplified forming and reinforcement equal reduced cost



Town of Manhattan, Montana, USA 1,515 m<sup>3</sup>/d (278 gpm) Montana Grand Project Award winner



Corrugated plastic plate

### SYSTEM DESIGN

The Bio-Wheel combines the advantages of activated sludge process with the stability and simplicity of fixed film processes in a single tank. It provides process aeration through rotation of the wheel eliminating the noise and energy loss associated with process blowers.

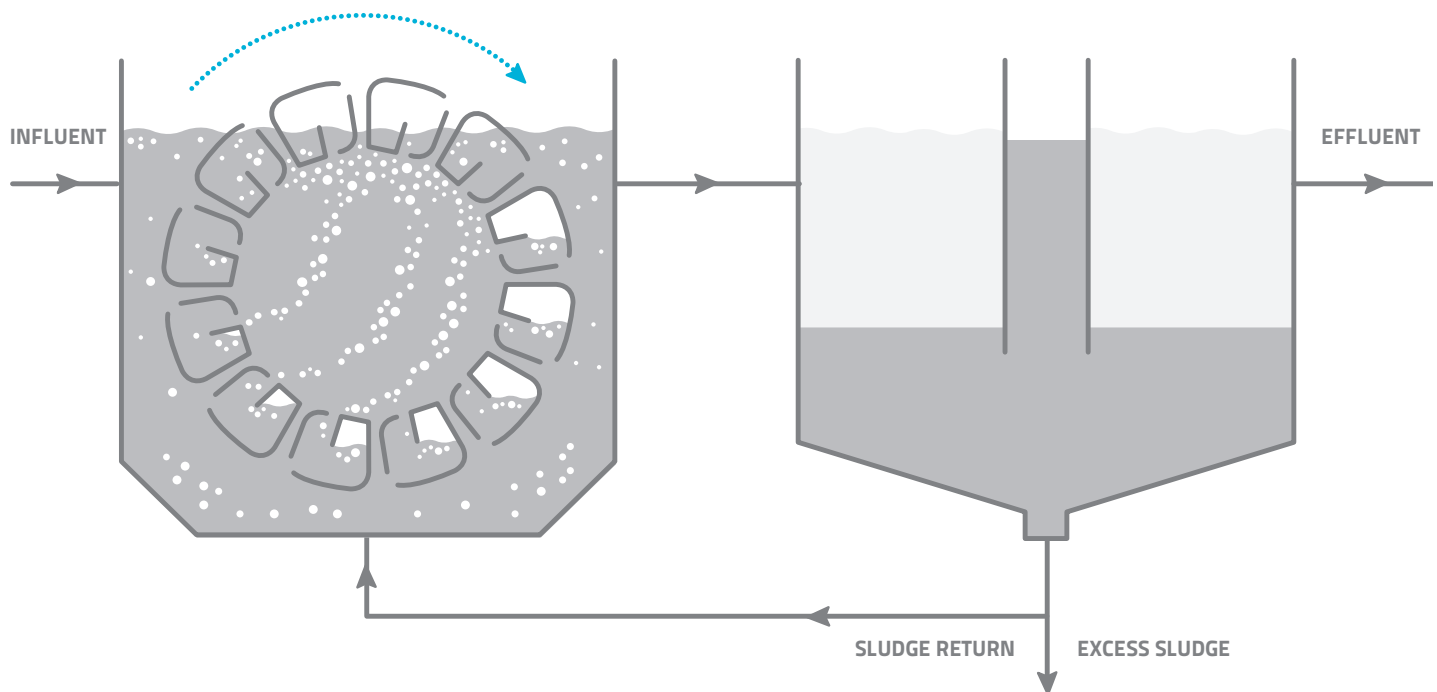
The Bio-Wheel is a green technology allowing the minimization of energy required for activated sludge aeration. The patented corrugated plastic plates are stacked together and then assembled on the wheel frame. During rotation of the Bio-Wheel, the plates trap air within the wheel before releasing it in the bioreactor. The Bio-Wheel surface area is used for the development of fixed-film bacteria that enhance nutrient removal and increase the average SRT of the system. The biofilm is exposed to environmental air as the wheel turns further enhancing oxygen transfer to the biomass.

## AERATION AND MIXING

IN THE BIOREACTOR WITH  
THE ROTATING BIO-WHEEL

## CLARIFICATION

WITH SLUDGE RECYCLING  
TO THE BIOREACTOR AND  
WITHDRAWAL OF EXCESS SLUDGE



## ADVANTAGES

- Minimized energy requirements through the elimination of blowers
- Simple operation
- Improved nutrient removal
- Reduced plant footprint
- Resistance to shock loads
- Reduced sludge production
- No offensive odours