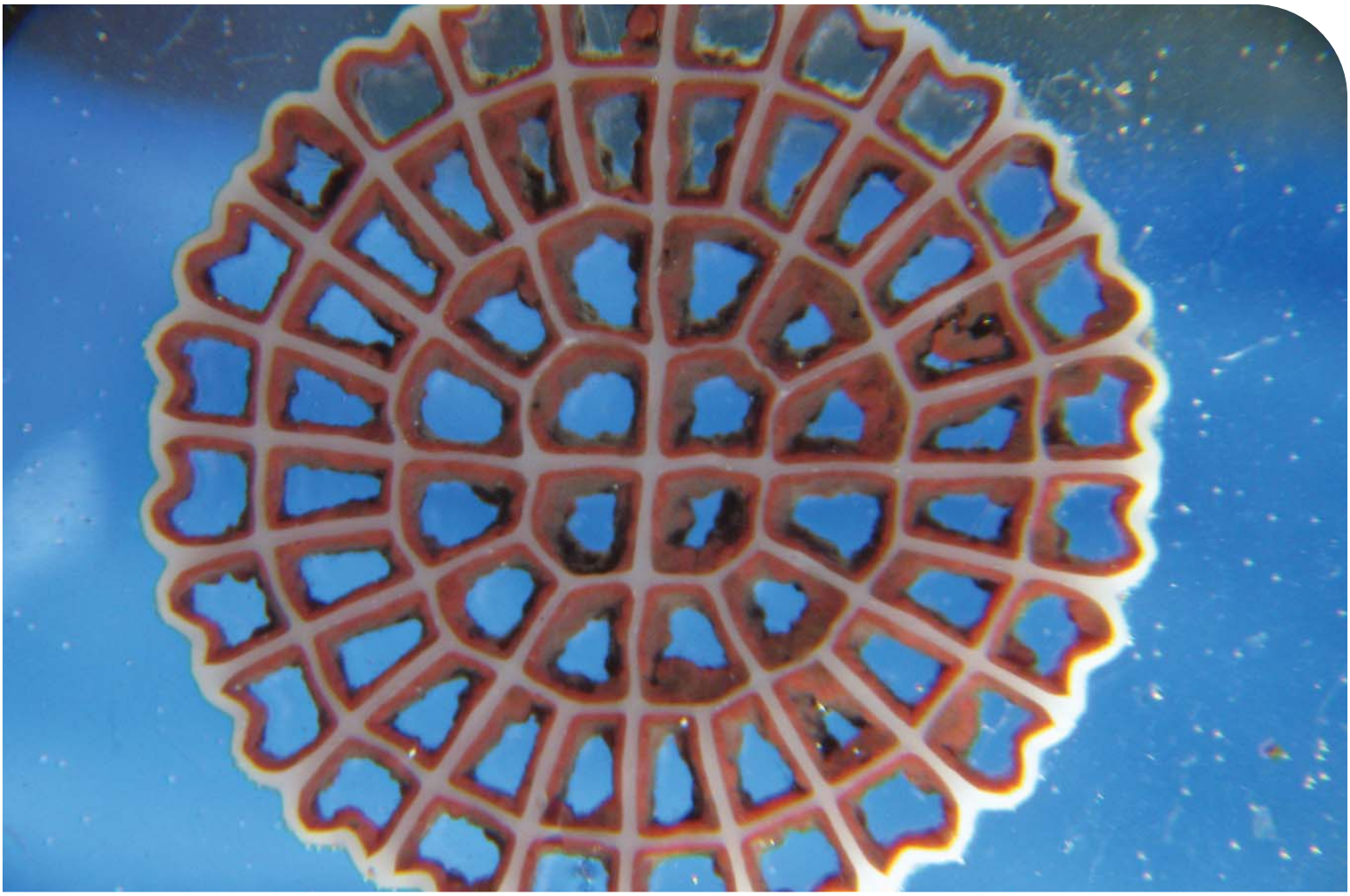


VEOLIA

ANITA™ Mox

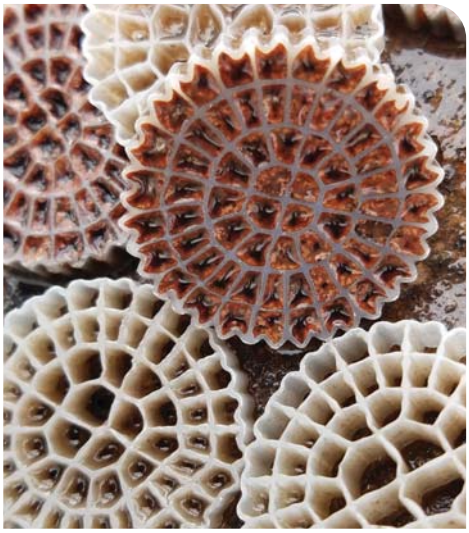
Deammonification Process
Simple, Stable and Robust

WATER TECHNOLOGIES

ANITA™ Mox

Sidestream Deammonification

ANITA™ Mox is a robust, single-stage ammonia and total nitrogen removal biofilm process based on the Moving Bed Bioreactor (MBBR) or Integrated Fixed-film Activated Sludge (IFAS) platform. It utilizes the AnoxK™ 5 media to cultivate anaerobic ammonia oxidizing bacteria (anammox) and ammonia oxidizing bacteria (AOB) enriched biomass for both mainstream and sidestream deammonification applications. It is the simplest and most stable technology in the market in terms of operation and maintenance in treating centrate or filtrate from either conventional anaerobic digestion (AD) or AD following thermal hydrolysis process (THP).



Sidestream Benefits Compared to Conventional Nitrification/ Denitrification

- 3x lower in total cost per pound of nitrogen removed
- Much smaller footprint with high loading/removal rates
- 90% less sludge production
- 60% less in energy consumption
- No external carbon required; less carbon footprint

System Configuration

- **MBBR** - for centrate from conventional anaerobic digestion
- **IFAS** - for centrate from thermal hydrolysis process + anaerobic digestion
- **Phased IFAS** - for centrate from any anaerobic digestion

Unique Advantages

- The simplest and most stable technology in the market
- Robust and forgiving design/operating parameters
- 90% ammonia removal and 80% TIN Removal
- Can work with both shallow (< 10 ft) and high side water depth (> 26 ft)
- Media-based solution eliminates the risk of anammox washout without the need for anammox/MLSS separation equipment
- Small footprint and easliy expandable by adding media or converting MBBR to IFAS with higher loading rates.
- Zero maintenance needed for in-basin components such as SS media screens, SS medium bubble diffusers and media carriers.
- Seed media readily available from multiple large US-based bio-farms for quick startup
- No need for media replacement

Full scale performance data has demonstrated ANITA Mox's ability to withstand:

- High TSS and swings in TSS (between 1,500 and 17,000 mg/L) without the need of pretreatment unit process
- High polymer residual
- Wide DO concentration and PH ranges
- Variations in dewatering schedules and dewatering starts/stops
- Extended shutdowns due to dewatering equipment maintenance
- High NO2-N residual with less NOB suppression requirements
- Inhibitory effects of recalcitrant COD and complex nitrogen compounds generated by THP or other special processes

Mainstream Deammonification

Paving the Way for Energy Neutrality

ANITA Mox is now offered as a compact and robust media based process for ammonia and nitrogen removal in mainstream applications while unlocking the possibility for energy production through COD diversion to digestion.

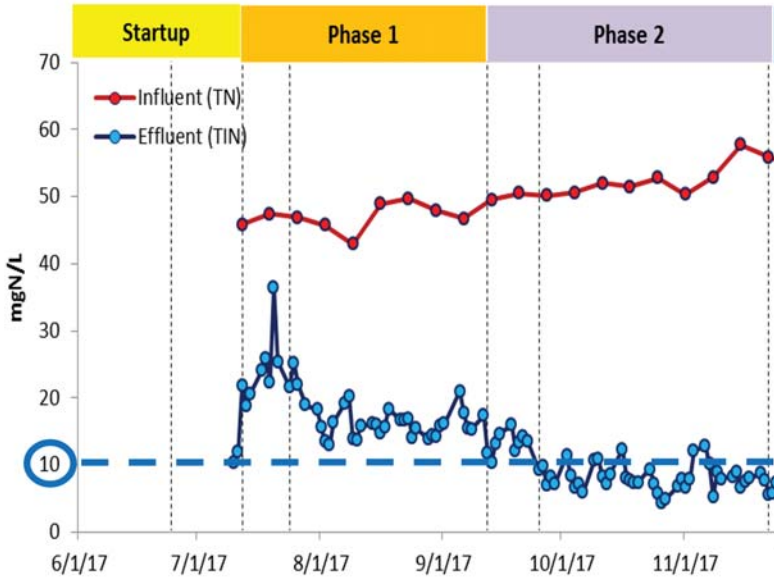
For mainstream deammonification, ANITA Mox provides an easy and purely mechanical solution to securely retain anammox biomass with the combination of biofilm carriers and retention screens. This simple and maintenance-free physical separation between anammox-rich biofilm carriers and nitrifier-rich suspended sludge allows for easy control of the sludge and therefore better AOB selection and control and better selective wash-out of NOB while retaining anammox.

Compared to conventional BNR treatment, Mainstream ANITA™ Mox reduces aeration demand by 60% and eliminates the need for carbon. Minimizing the operating cost of nitrogen removal and generating power through COD diversion, Mainstream ANITA™ Mox makes it possible for facilities to achieve energy neutrality.

Benefits of Mainstream ANITA™ Mox

- Eliminates carbon needs, enables power generation through COD diversion
- 60% less aeration required
- Targets 10-15 mg/L effluent TN concentration
- Works at low temperatures (15°C)
- Simple to control and operate
- Retains anammox easily
- Sidestream/Maintstream ANITA™ Mox ecosystem

Proven Results



Pilot Services

Veolia offers the following Pilot Services:

- On-site pilot testing trailors
- Startup and remote data collection
- Monitoring through Veolia's Aquavista™ smart water management system

Resourcing the world

Veolia Water Technologies
Kruger / 4001 Weston Parkway / Cary, NC 27513
Phone: 919.677.8310 • Fax: 919.677.0082
usmunicipal@veolia.com • www.veoliawatertech.com