



**WHY  
SSI  
MBBR?**



BOB FREUDENBERG  
DIRECTOR

[Bob@SSIAeration.com](mailto:Bob@SSIAeration.com)



JASON BOWMAN  
MANAGER

[Jason@SSIAeration.com](mailto:Jason@SSIAeration.com)



KELSEY BENNETT  
PROCESS ENGINEER

[Kelsey@SSIAeration.com](mailto:Kelsey@SSIAeration.com)

SSI PROCESS TEAM



# Innovation is at our core.

---

Here at SSI we refuse to fall into a comfort zone. We are always striving to develop new products and solutions for YOU, our customers. Whether it is improving price points, life expectancy, or ease of installation – we are always looking to improve the experience for our customers.

With the expansion of our process team SSI has implemented our aggressive R&D strategy on the MBBR system.



# MBBR BACKGROUND

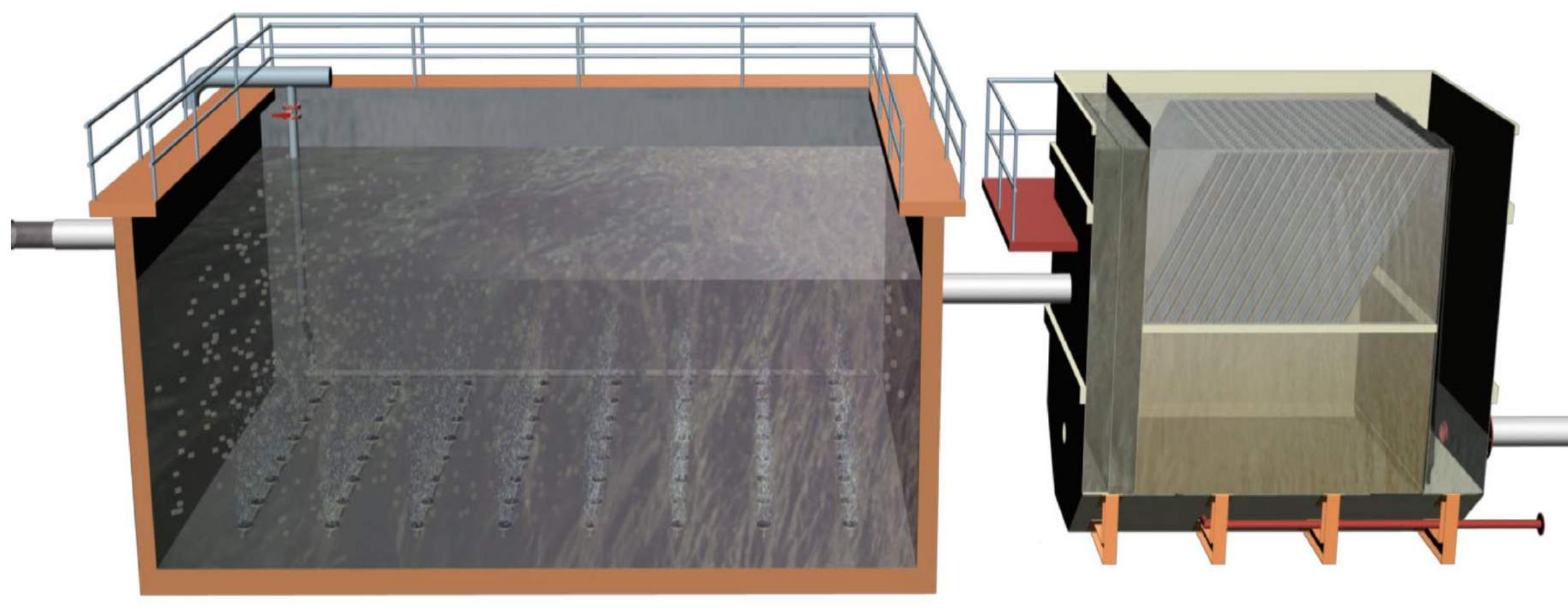
## Historical Benefits:

- Allows for smaller footprint
- Easy Retrofit to expand plant capacity

## Historically Paired with Coarse Bubble Aeration

- Challenge to access aeration grids

## NOW: INNOVATION WITH PTFE MEMBRANES



# PROCESS

- Biology is attached, not suspended
- No Return Activated Sludge (RAS)
- No Monitoring of MLSS, F:M, or Sludge Age
- “Staging” of Biology

## With Fine Bubble Aeration:

- Higher Oxygen Transfer Efficiency (OTE) -> Less Air
- Better Mixing
- Less Particulate Break Down

# BENEFITS

- Simpler Operations
- Resiliency to
  - Fluctuations in flow and loads
  - No Washout
- Volumetrically Efficient
  - ➡ Smaller Tank Size
- More Energy Efficient
  - ➡ Operational Savings
- Rapid Settling in Clarifier
- *Further* Reduction in Footprint



A photograph showing rows of SSI PTFE Fine Bubble Disc Diffusers in a warehouse. The diffusers are white, cylindrical, and arranged in neat rows on a concrete floor. In the background, there are stacks of materials and industrial equipment.

# SSI EEVolved™ MBBR

---

Energy Efficient, Volumetrically Optimized  
Low Volatile Effluent Discharge

## A Match Made in Heaven

---

SSI PTFE Fine Bubble Disc  
Diffusers with 2mm Slits

+

SSI MBBR Media

+

Effluent Media Retention Screens



# WHY DID SSI DECIDE TO MAKE OUR OWN MEDIA?

SSI INNOVATED OUR MEDIA DESIGN TO  
OPTIMIZE GEOMETRY  
FOR PERFORMANCE WITH FINE BUBBLE  
DIFFUSERS

KEEPING PRODUCTION IN-HOUSE  
ALLOWS US TO  
CONTROL QUALITY AT EVERY STEP

SSI IS ISO 9000:2015 CERTIFIED





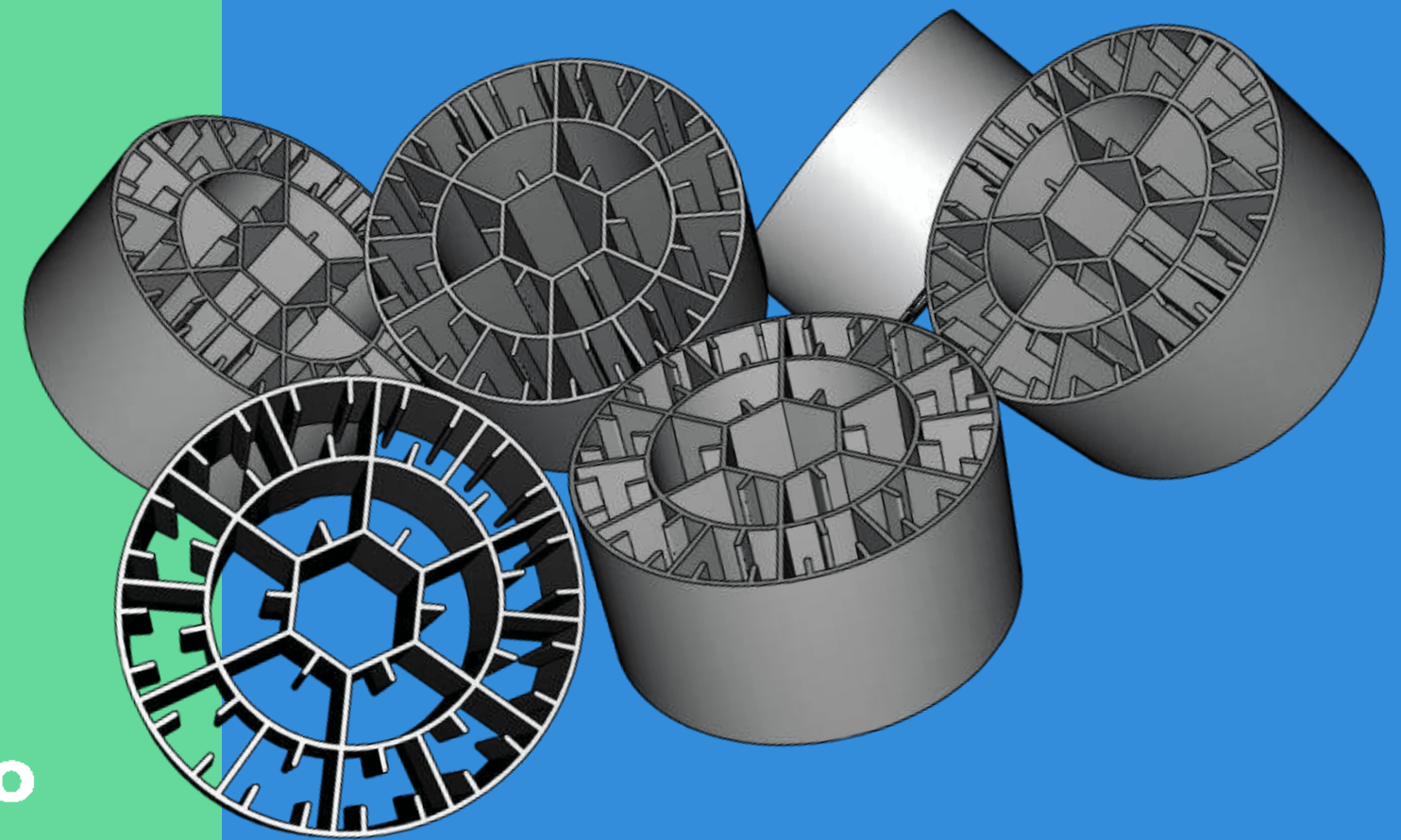
# WHAT MAKES OUR MEDIA DIFFERENT?

---

## HIGH QUALITY VIRGIN HDPE

- Wall Thickness
- Geometry
- "Effective" surface area
- Specific Gravity
- Wet Time
- Mixing
- Strength (property of HDPE material)

**It takes a fine balance of these objectives to  
create a good media**

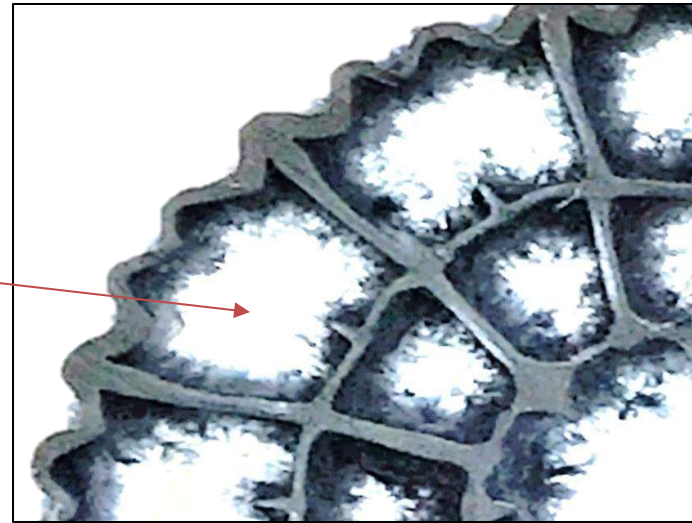




# MBBR IS NOT PLASTIC, IT'S ENGINEERED

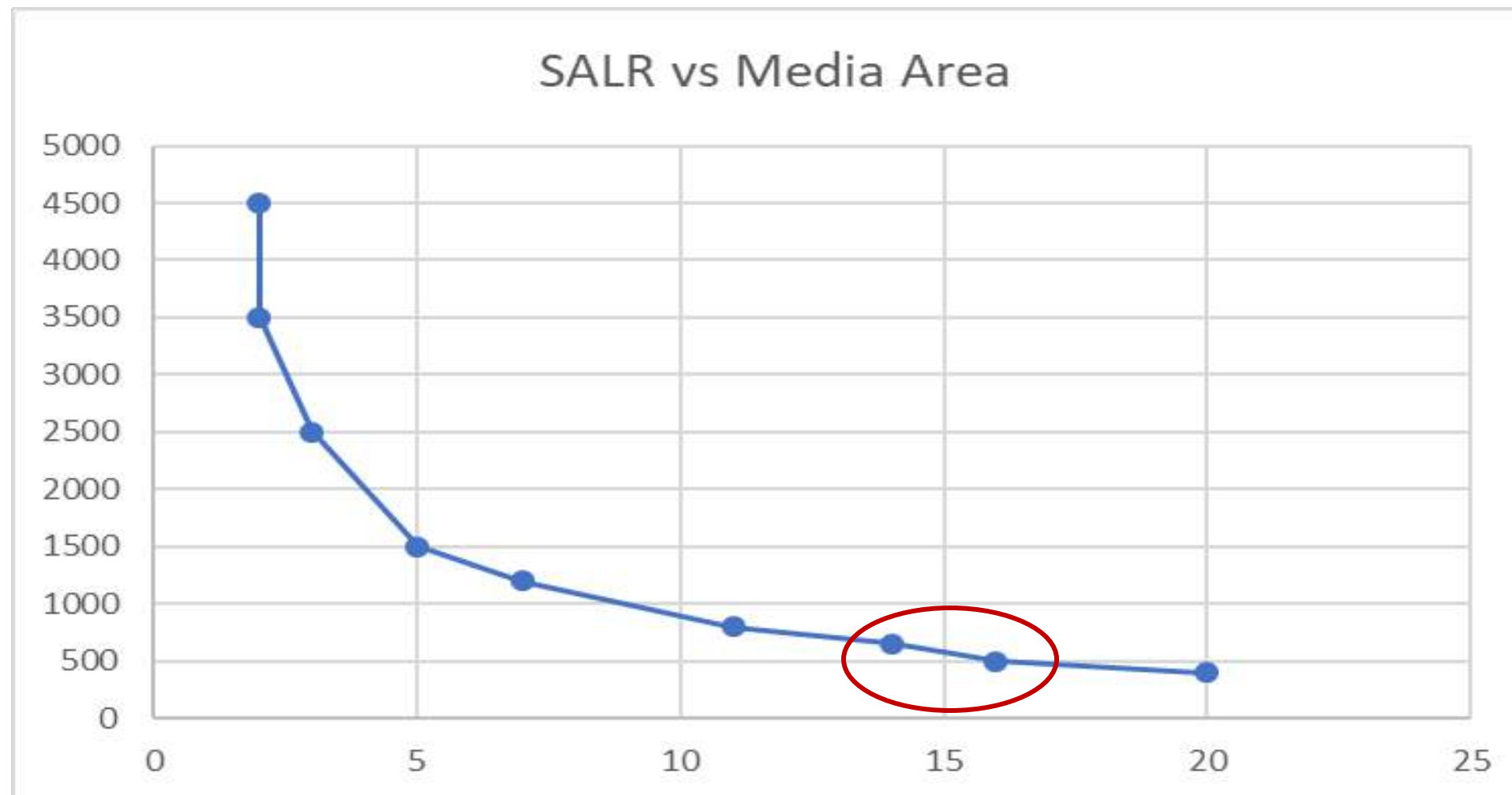
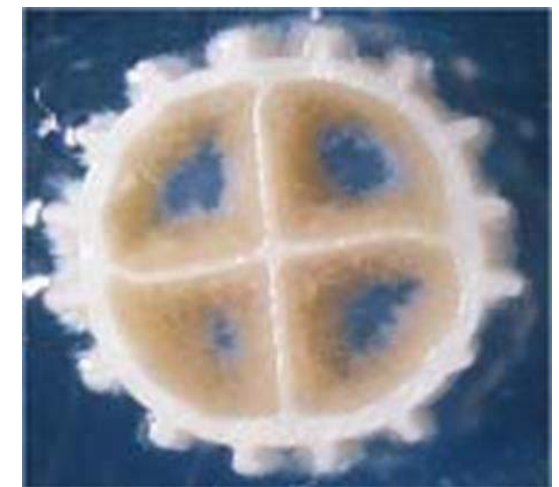
Proper MBBR Media Design is Imperative

- High % open area
- Optimized diffusion area
- Optimal biofilm control
- Highest diffusion
- Consistent and stable treatment



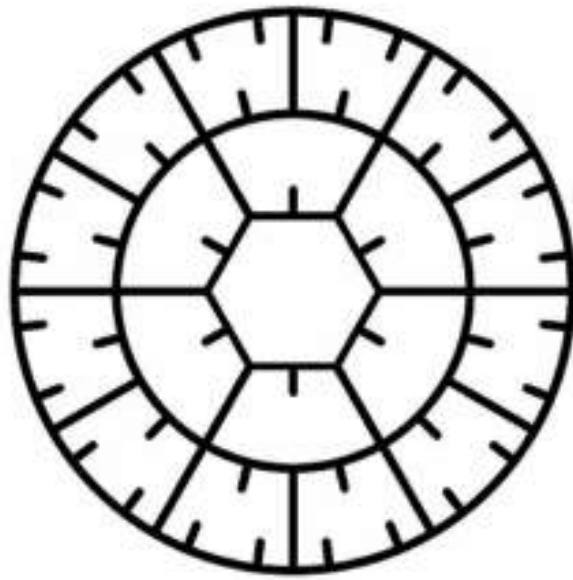
Examples of:

Loss of internal diffusion  
Lower efficiency  
Reduced organic removal rate



# CURRENT MEDIA OPTIONS

## EEVE630™ Moving Media



### Physical Properties:

Material: Virgin High Density Polyethylene (HDPE)

Specific Gravity: 0.96 +/- .01

Bulk Density: 115 +/- 5 Kg/m<sup>3</sup>

### Media Dimensions

Outer Diameter: 25 mm

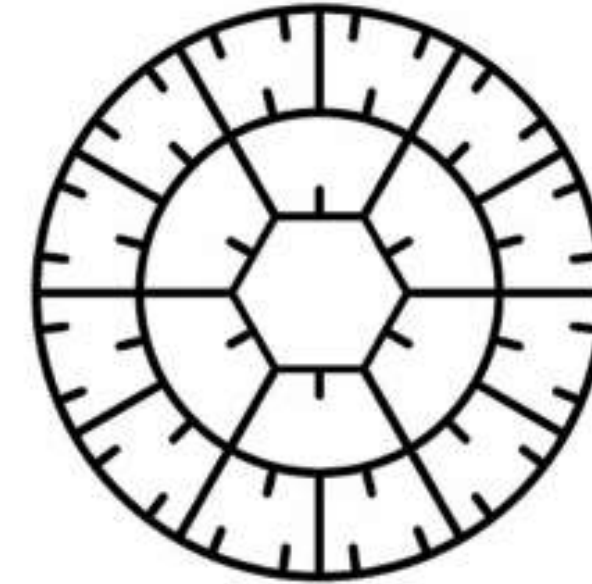
Cylinder Length: 8 mm

### Performance Characteristics

Total Surface Area: 630 m<sup>2</sup>/m<sup>3</sup>

Protected Surface Area: 530 m<sup>2</sup>/m<sup>3</sup>

## EEVE675™ Moving Media



### Physical Properties:

Material: Virgin High Density Polyethylene (HDPE)

Specific Gravity: 0.96 +/- .01

Bulk Density: 125 +/- 5 Kg/m<sup>3</sup>

### Media Dimensions

Outer Diameter: 25 mm

Cylinder Length: 12 mm

### Performance Characteristics

Total Surface Area: 675 m<sup>2</sup>/m<sup>3</sup>

Protected Surface Area: 575 m<sup>2</sup>/m<sup>3</sup>





# MEDIA ONLY SALES OR FULL PROCESS SOLUTIONS

---

OUR TEAM CAN SUPPLY FOR A WIDE VARIETY OF NEEDS,  
FROM MEDIA ONLY TO FULL TURN-KEY PROCESS SOLUTIONS.

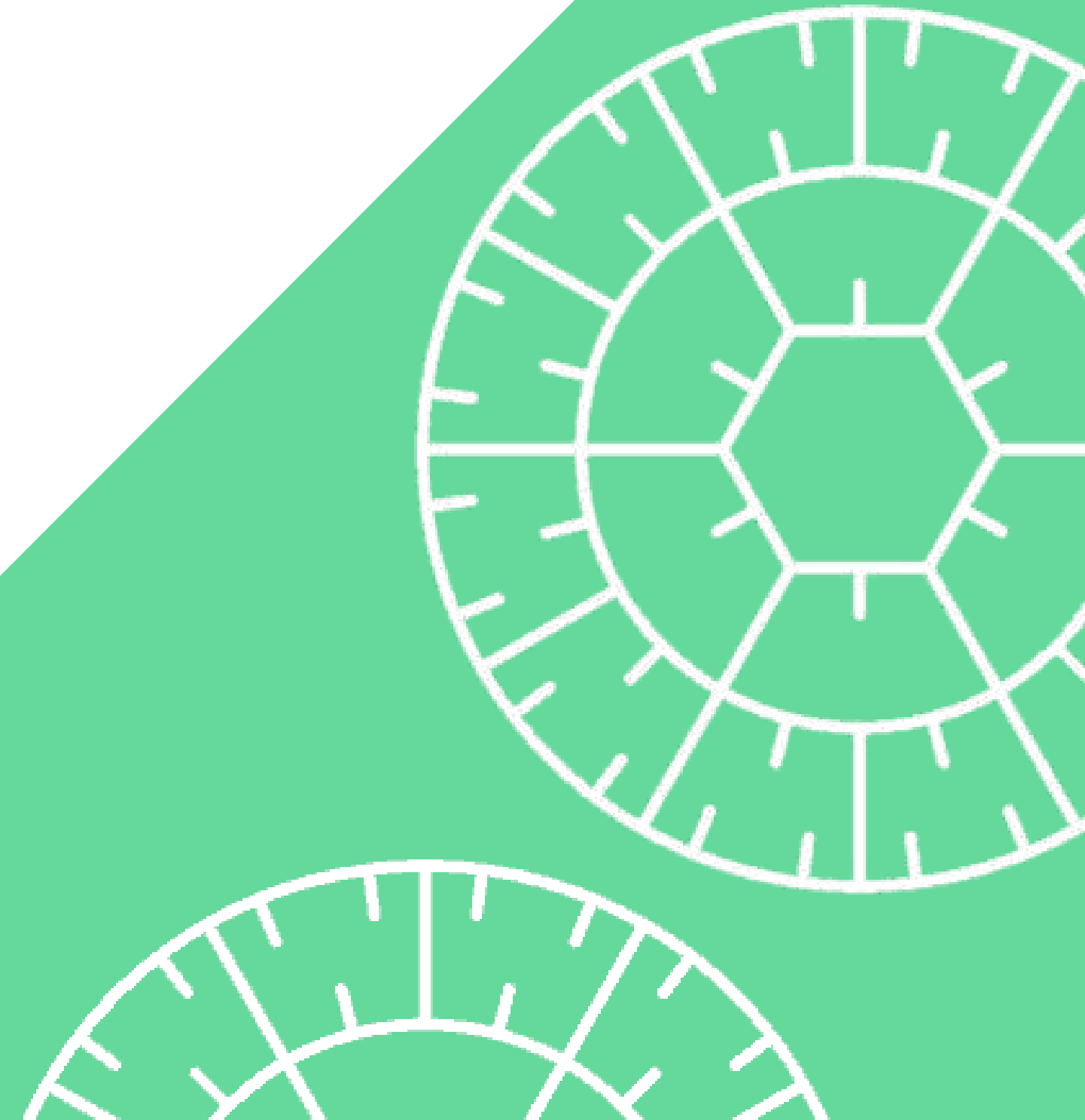
# OUR EXPERTISE

---

SSI is the only company in the world that combines expertise of MBBR design with its own in-house extrusion.

EVERY WASTEWATER IS *DIFFERENT*

Our design experts are experienced in a wide variety of industries!





## FULL ETP DESIGN AND DELIVERY

Full ETP design with  
electromechanical  
equipment supply

## PACKAGE PLANTS

Compact, robust treatment  
solutions that are easily  
expandable

## CORE MBBR DESIGN AND DELIVERY

MBBR Media, Aeration,  
and Retention Screens

## WIDE VARIETY OF EQUIPMENT

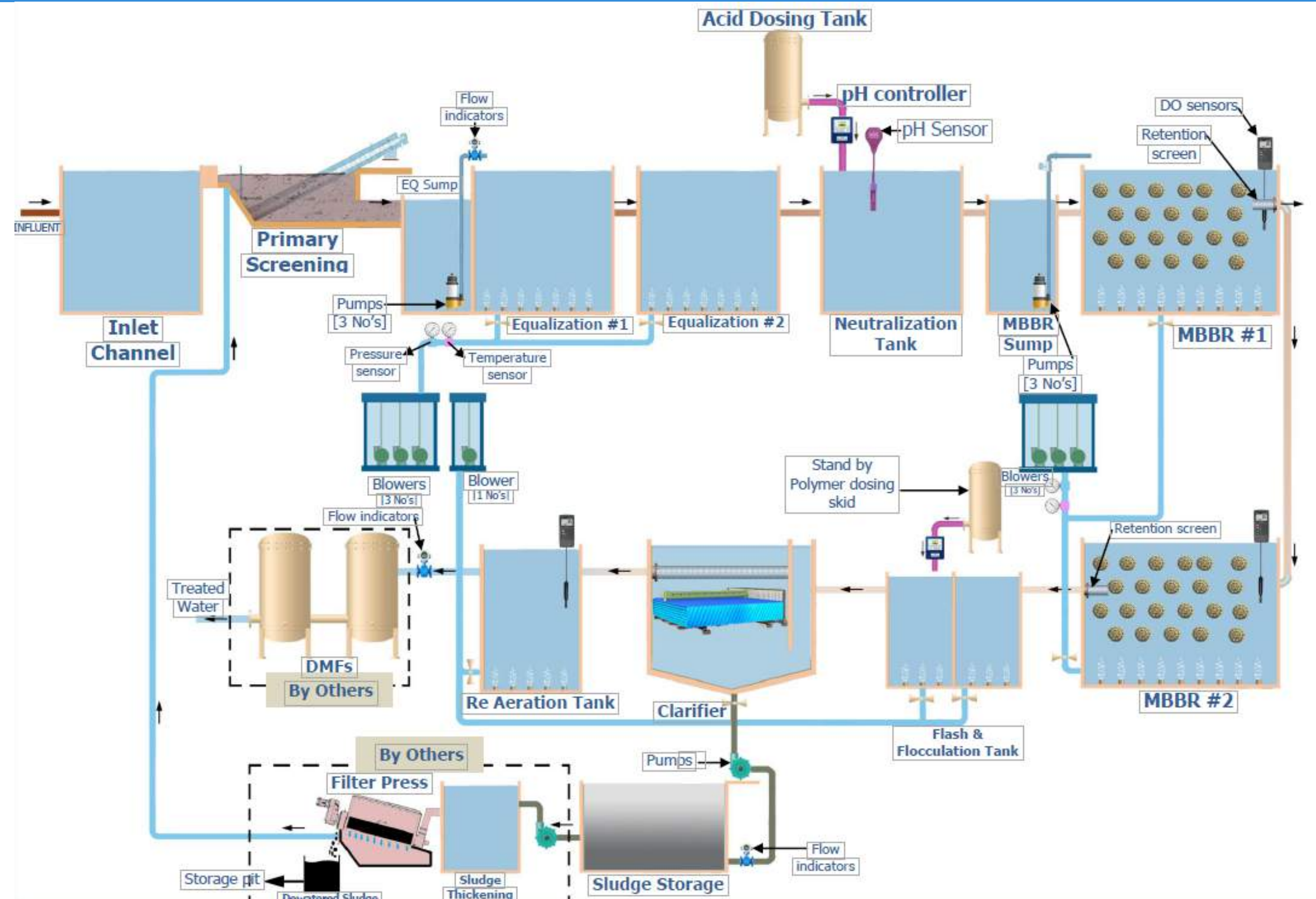
Our process experts  
understand the full needs  
of your plant

# WHAT CAN OUR PROCESS TEAM DO FOR YOU?



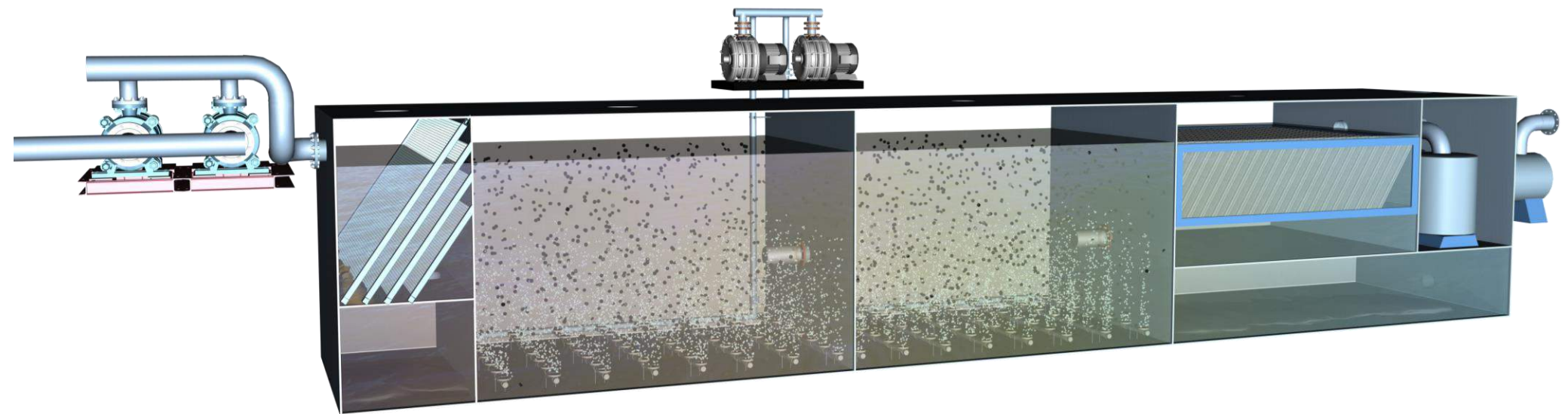
## EXAMPLE PROCESS FLOW DIAGRAM.

EACH PROJECT  
ONE IS  
*DIFFERENT*  
AND  
CUSTOM.





# PACKAGE PLANTS





## LUNCH AND LEARNS

Our Process team is available to provide technical presentations to your team and clients.



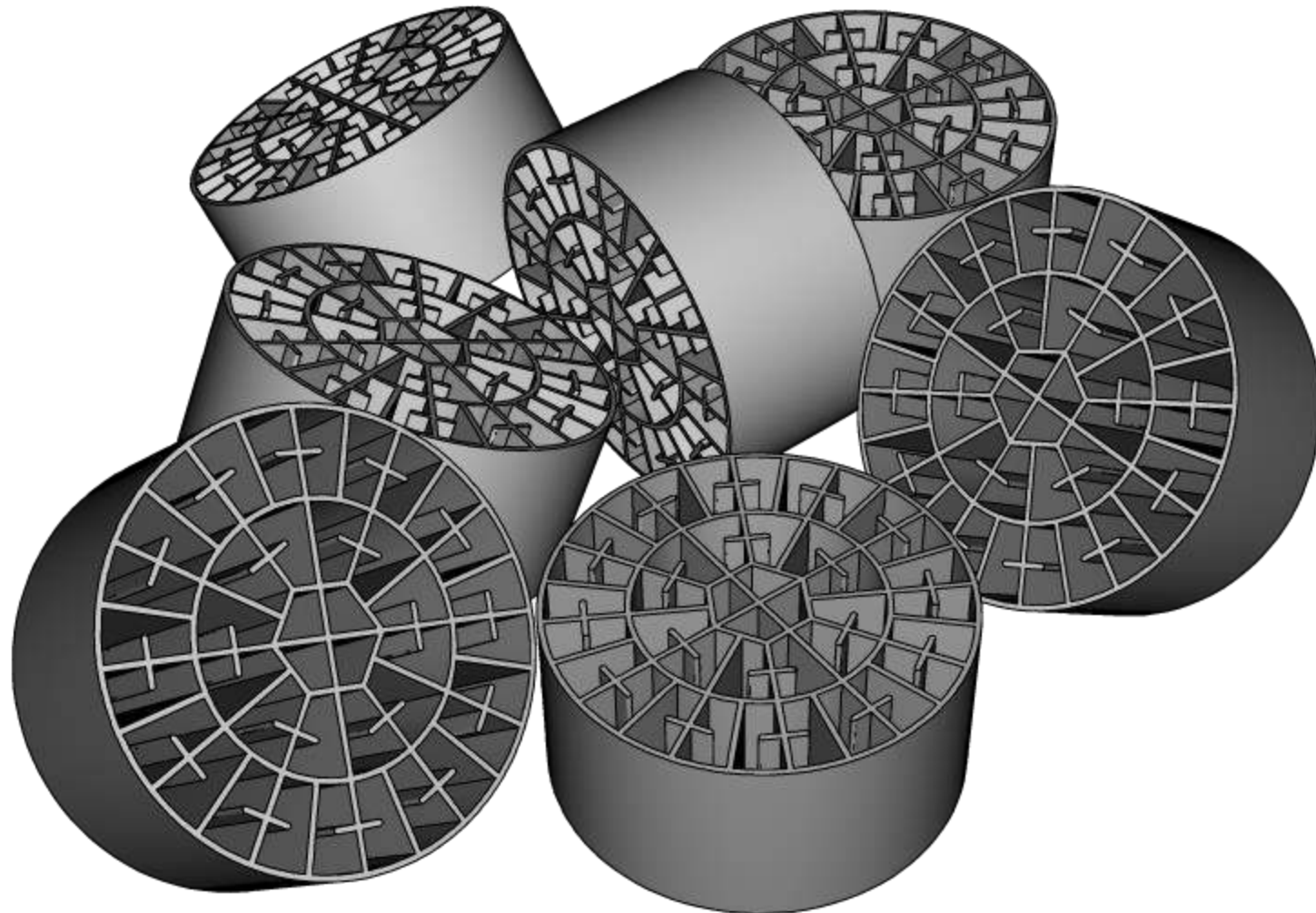
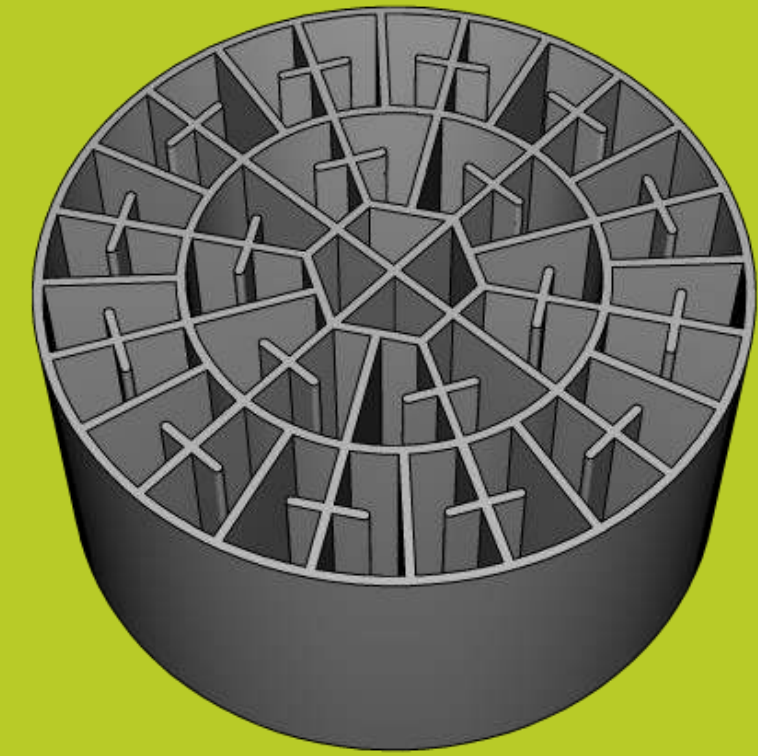
## TECHNICAL SUPPORT

Our team is available for virtual consultations or on-site support.





# WHAT'S NEXT?



## NEW HIGHER SURFACE AREA MBBR MEDIA

We will always continue to *innovate* and *improve*

# THANK YOU!

Have any questions? Stay around after the presentation for a live Q&A session. Feel free to raise your hand or submit questions using the chat box.

Prefer to email us? Reach out to us at [info@ssiaeration.com](mailto:info@ssiaeration.com)

Please keep an eye out for our upcoming Webinar:

## MBBR Design Considerations and Case Studies

