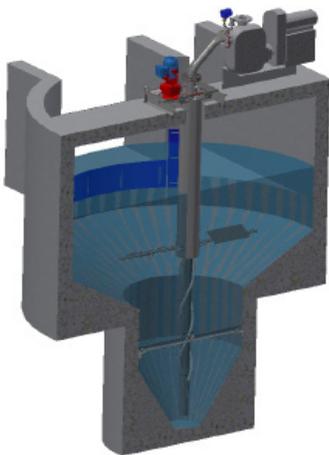


# Retrofit of MECTAN®

## Retrofit of MECTAN® Into Existing Vortex Grit Chambers | Case Study

Whether it is due to the age of the installation, the decreased grit removal performance or the complexity and cost to maintain the equipment, many customers want to upgrade their existing grit system while keeping the same footprint.

Retrofitting a MECTAN® Grit Removal System in an existing concrete vortex grit chamber is achievable with minimum modifications. Assuming the flowrate is still adequate to the grit chamber size, the transition from other manufacturers' grit chamber to a MECTAN® is simple, both in terms of engineering and civil adaptations.



VEOLIA, previously known as John Meunier Inc. has been serving North American municipalities and industries since 1948. The MECTAN® vortex grit removal systems have been supplied since 1981, with over 500 installations worldwide.

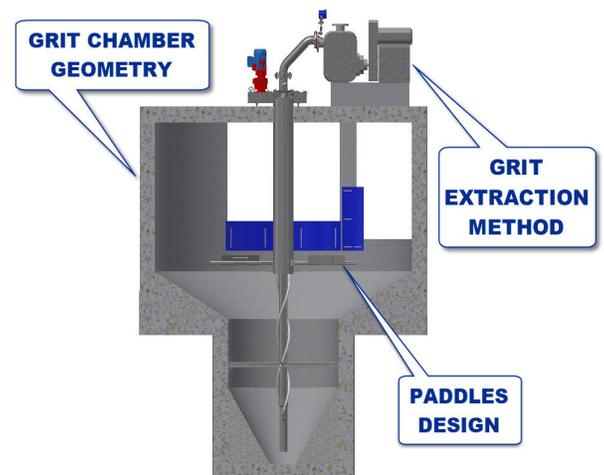
Despite using an apparent similar vortex separation principle, several grit chamber designs were developed concurrently, including two major concepts: sloped vs flat transition between the top chamber and

The MECTAN®, which has a sloped floor concept, uses the vortex principle as the primary means of grit capture. The physics behind the vortex mixed with grit chamber sizing, will create ideal retention time and settling velocities to efficiently capture the grit particles and separate organics. Contrarily, grit chamber designs using a flat transition floor rely on the use of several mechanical devices and extensive grit extraction to draw grit particles into the grit well. Nonetheless, both sloped and flat floor concepts require the same grit chamber sizes.

## Advantages of the MECTAN® Grit Chamber Design

### ● Grit Chamber Geometry

- **Diameters of top and bottom chambers** – Engineered to enhance the vortex separation effect and to target ideal settling velocities and retention time without short-circuiting of grit particles.
- **Sloped floor** – Helps grit to freely settle in the bottom grit well, without requiring any additional mechanical components.
- **Size of grit well** – Depth and diameter sized to store an optimized amount of grit between extraction cycles.



# Retrofit of MECTAN<sup>®</sup>

## Advantages of the MECTAN<sup>®</sup> Grit Chamber Design (Continued)

### ● Paddles Design

- **Top chamber installation** – Easily adjustable, for an increased organics separation efficiency.
- **No mechanical apparatus** (propellers, central baffles, floor plate, etc...) separating the top and bottom chambers is required to assist in drawing the grit into the bottom grit well. The passage between the two chambers is fully open, thus eliminating risks of blockages as well as maintenance due to wear on moving parts directly in contact with grit.
- **No moving parts** (propellers, vanes, etc...) for fluidization in the grit well, which also reduces operating costs.

### ● Grit Extraction Method

- **Top or bottom grit extraction using self-priming heavy-duty pump** – Designed for severe waste-water applications, the pump allows passage of solids up to 3 inches and is fitted with wear resistant internal components. Easy to service, this type of pump do not require any external vacuum primed pumping system.
- **Scheduled grit extractions** – The self-priming pump allows for intermittent extractions with shorter duration, which reduces wear and operating costs while keeping a very high level of grit capture and removal.

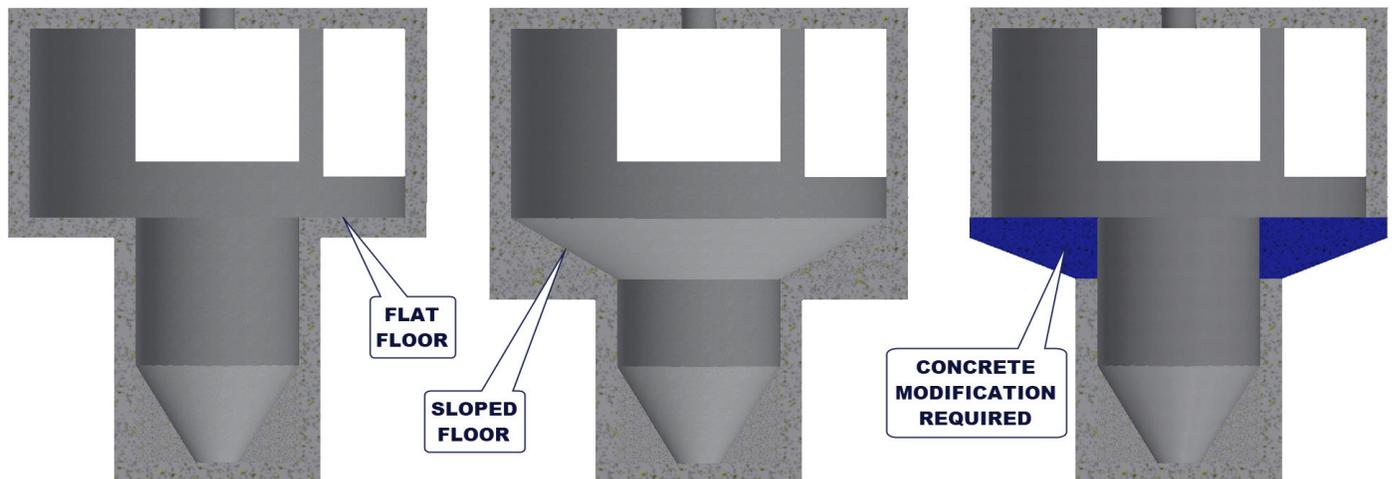
## Retrofit Example: MECTAN<sup>®</sup> in a Flat Floor Design Concrete Grit Chamber

Civil changes to the existing grit chamber are minor. The following shall be considered:

- Break a portion of the top chamber flat floor to create a sloped floor. Fine grout can be used for the slope.
- Possibly add grout at the bottom of the unit (the MECTAN<sup>®</sup> rarely needs to be deeper than the existing flat floor unit).

Chambers diameters, inlet and outlet channels dimensions as well as the grit well conical bottom do not need to be altered. Therefore, the concrete volume requirement remains very minimal.

Although this study mainly discusses retrofitting the MECTAN<sup>®</sup> into a flat transition floor grit chamber design, it is safe to say that retrofitting the MECTAN<sup>®</sup> into a grit chamber that already has a sloped floor can be even simpler.



Most Wastewater Treatment Plants that wish to change their flat-floor design grit removal system often complain about grit extraction issues, and an overall poorly functioning system. For cases like these, we recommend transitioning to a sloped-floor design with a few simple steps. Our MECTAN<sup>®</sup> vortex grit chamber will bring several improvements to your grit removal system, as explained in the previous sections and will improve the general operation of the grit system, while reducing maintenance costs.