

# Kitchener, Ontario

City of Kitchener Wastewater Treatment Plant | Case Study

## The Client

The City of Kitchener is located in central southwestern Ontario, 105 km southwest of Toronto. It covers an area of 136.86 square kilometres and has a population of approximately 240,000.



## Key Technologies

- John Meunier ESCALATOR® Fine Screen
- John Meunier MECTAN®V 360 degrees forced Vortex Grit Removal System
- John Meunier SAM® Type GDS

## The Client's Needs

The City's WWTP required a new headworks system as part of a general upgrade strategy, originally identified in the region's 2007 wastewater master plan that provided strategic long-term planning for the Region's wastewater treatment services to accommodate future population growth, meet level of treatment needs, enhance operations and reduce energy use.

The project was designed to reduce odours, further improve effluent quality and increase the efficiency and reliability of the WWTP.

## Our Solution

Veolia Water Technologies Canada (VWTC) supplied pretreatment equipment for the 430 MLD (113.6 MGD) plant headworks system. The equipment was located upstream of an Energy Dissipation Chamber.

The list of equipment is as follows:

- **4x ESCALATOR®** perforated plate fine screens to remove solids above 0.24-inch / 6 mm and to each handle a peak flow of 143.33 MLD/ 37.87 MGD. They are set in 2.5 m wide by 2.25 m deep channels at an inclination of 75°.
- **2x MECTAN®V** 60 m diameter induced vortex grit chambers with tangential entry and 360-degree flow pattern, equipped with a bottom suction self-priming transfer pump for grit extraction.
- **2x SAM® Type GDS** grit dewatering screw with cyclone separator to increase scouring and separation level.

Veolia Water Technologies Canada is able to provide invaluable assistance to consultants in hydraulic design as well as tailor fit each component to provide an efficient and reliable headworks train.

The equipment have been successfully commissioned in 2014. Performance tests for MECTAN®V were successfully achieved in 2019.

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## The Technologies

### John Meunier ESCALATOR® Fine Screen

- High screenings capture performance of 79% using travelling elements with 6 mm perforations
- Versatile for wastewater, stormwater and surface water applications
- Heavy duty, stainless steel construction
- Intermediate integral grid supports
- Industry leading tight-tolerance construction
- Positive sealing at foot via double full-width brushes and neoprene sealing flap
- Superior cleaning with combined spray wash and mechanical high-speed self-adjusting brush
- All maintenance from operating floor
- Available pivoting design



### John Meunier MECTAN®V 360 degrees forced Vortex Grit Removal System

- The **MECTAN®V** achieves grit removal performance equivalent to or better than all other vortex grit removal systems available on the market.
- Unlike some other grit removal systems that rely purely on hydraulic energy to separate grit, our **MECTAN®V** uses both hydraulic energy and mechanically driven paddles to create a vortex. This delivers excellent grit removal, and grit separation from organics, at all flow rates (from zero up to the unit's rated maximum). It also results in improving removal performance as flow rate reduces, unlike purely hydraulic systems, which have reducing performance at lower flow rates.

96% removal of grit ≥ 50 mesh [300 microns] particle size;  
87% removal of grit ≥ 70 mesh [210 microns] & < 50 mesh [300 microns] particle size;  
75% removal of grit ≥ 100 mesh [150 microns] & < 70 mesh [210 microns] particle size;  
68% removal of grit ≥ 140 mesh [100 microns] & < 100 mesh [150 microns] particle size;

**95% total removal of all grit down to 140 MESH [100 microns]**



### John Meunier SAM® Type GDS Grit Dewatering Screw

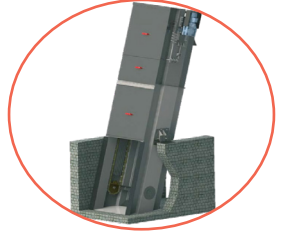
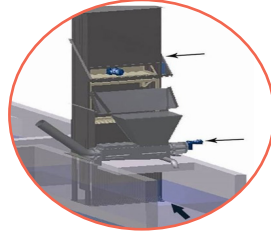
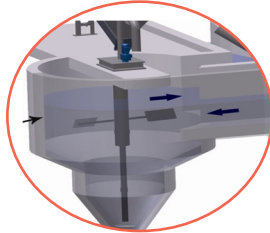
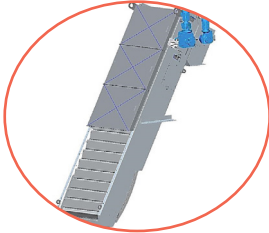
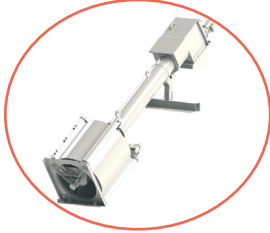
- Totally pre-assembled and tested
- Very simple and robust design
- Provides grit with very little free water
- Uses Archimedes screw with shaft
- Minimum operating and maintenance costs
- No screw to trough contact eliminates need for liner
- Available in epoxy painted carbon steel and stainless steel construction
- Completely enclosed system controls odor
- Supplied with air separator or cyclone separator
- Unique trough design promotes high level dewatering



**The region said upgrades to plant 2, completed in 2013, have already significantly improved the quality of the effluent discharged into the Grand River. - Source: Daily Commercial News**

**The plant has the capacity to treat approximately 120-million litres of wastewater per day. It is currently operating at 60 per cent of its capacity. - Source: Daily Commercial News**

# The Complete John Meunier Headworks Set-up



## Coarse and Fine Screens, bar type

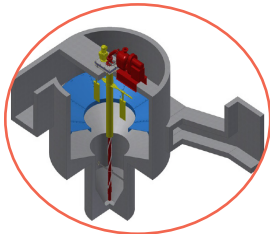
CONT-FLO® type CF Vertical Bar Screen  
CONT-FLO® type ER Multi-Rake Bar Screen

## Fine Screens, mobile screening plate type

ESCALATOR® Fine Screen  
ROTARC® type SD Rotary Drum Fine Screen

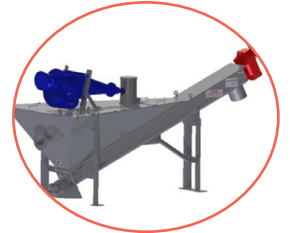
## Fine Screens, stationary screening plate type

ROTARC® type SB Shaftless Spiral Fine Screen



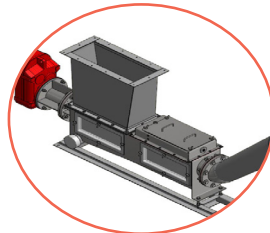
## Solids' Handling

ROTOPAC® type RPW Screw Washer Compactor  
ROTOPAC® type RCW Dual-Stage Screw Washer Compactor  
ROTOPAC® type RDW Shaftless Screw Compactor  
ROTOPAC® type RLK Screw Conveyor



## Grit Removal Systems

MECTAN® Vortex Grit Removal System  
SAM® type GDS Grit Dewatering Screw  
SAM® type GFW Grit Washer



## Combined Systems

SEPRAPAC® type PCS Pretreatment Combined System  
SEPRAPAC® type SRS/SCS Septage Combined System



Veolia Water Technologies Canada is the final choice for the design, manufacture and servicing of wastewater pretreatment works. We target excellence and innovation. We also invest in R&D to meet growing environmental regulations and market needs.

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