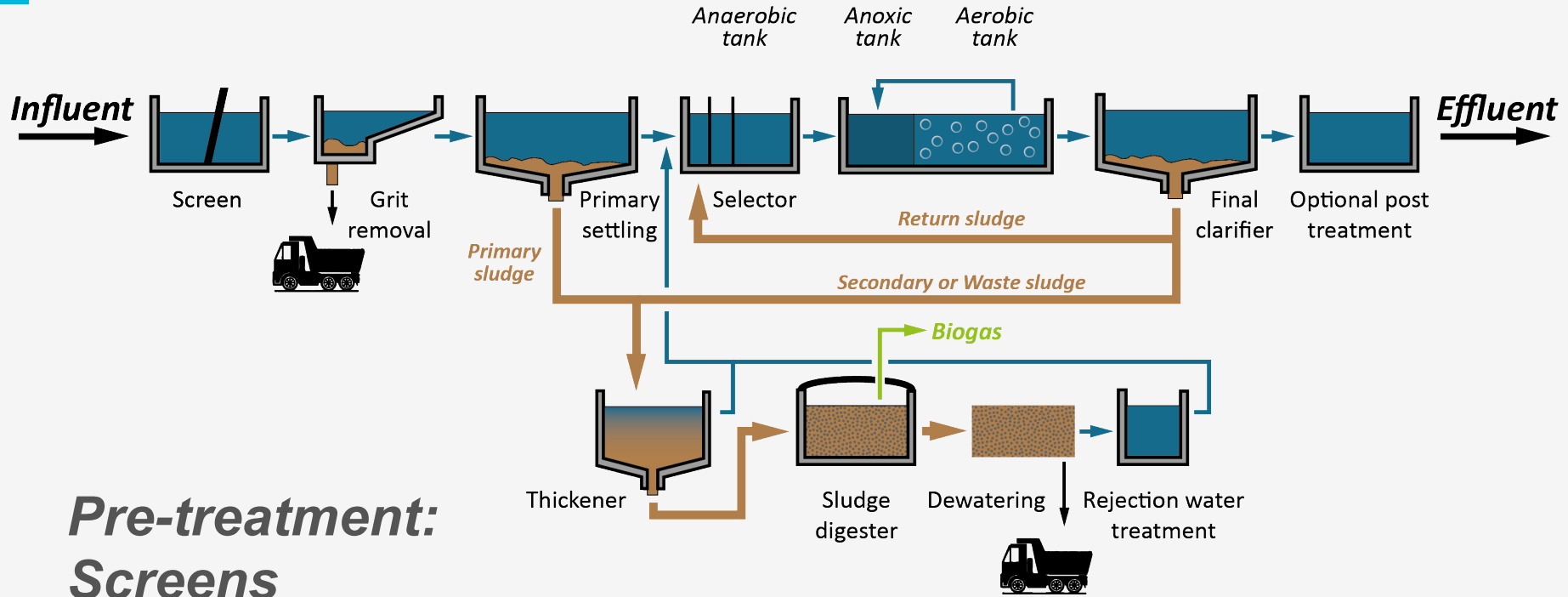


# Screen design

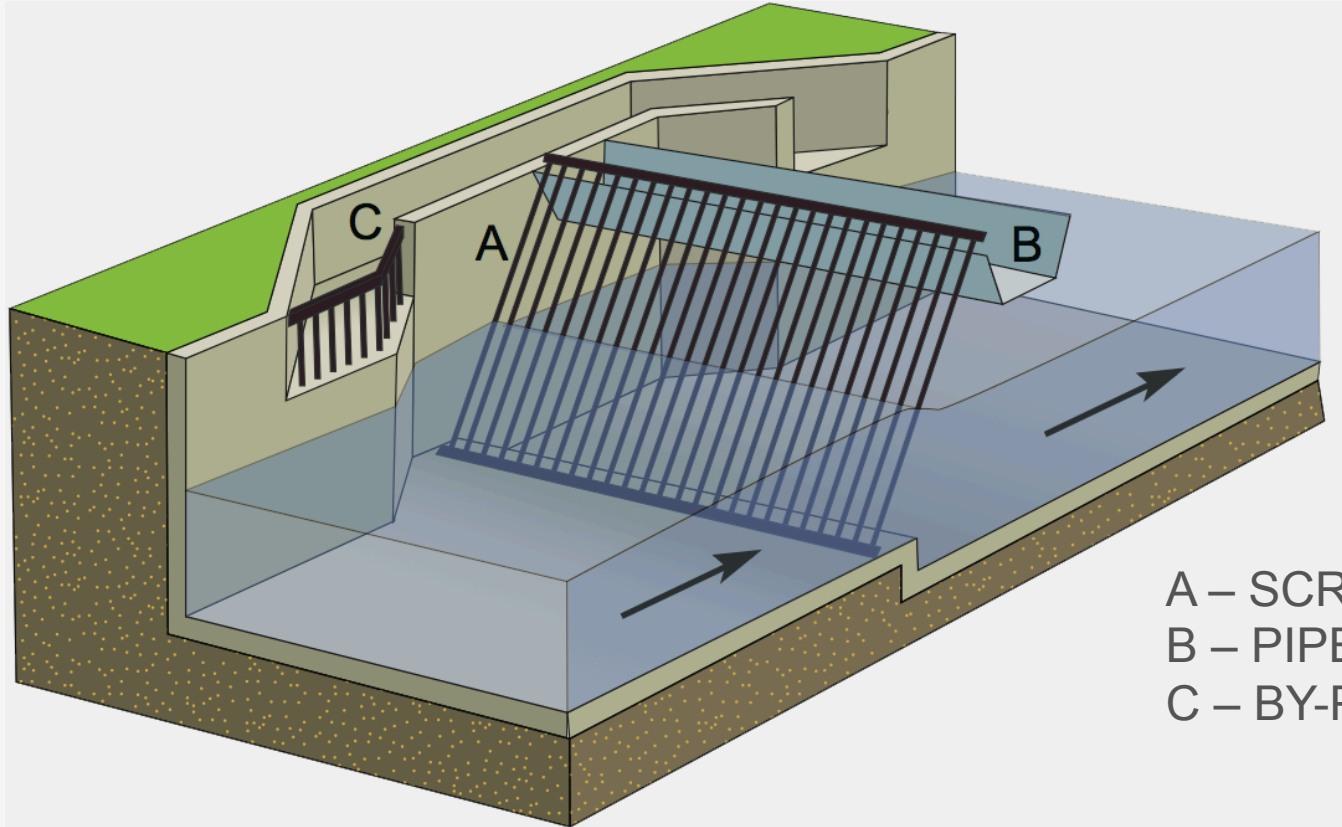
*CTB3365x Introduction to water treatment*

Prof.dr.ir. Jules B. van Lier

# Sewage Treatment Plant, Basic Process Units



# Bar screens



A – SCREEN  
B – PIPE  
C – BY-PASS PIPE

# Screens

Coarse screens  
50-100 mm

Micro screens  
< 0.5 mm

Fine screens  
3-20 mm

Hand  
cleaned

Mechanically  
cleaned

Continuous  
belt screen

Reciprocating  
rake screen

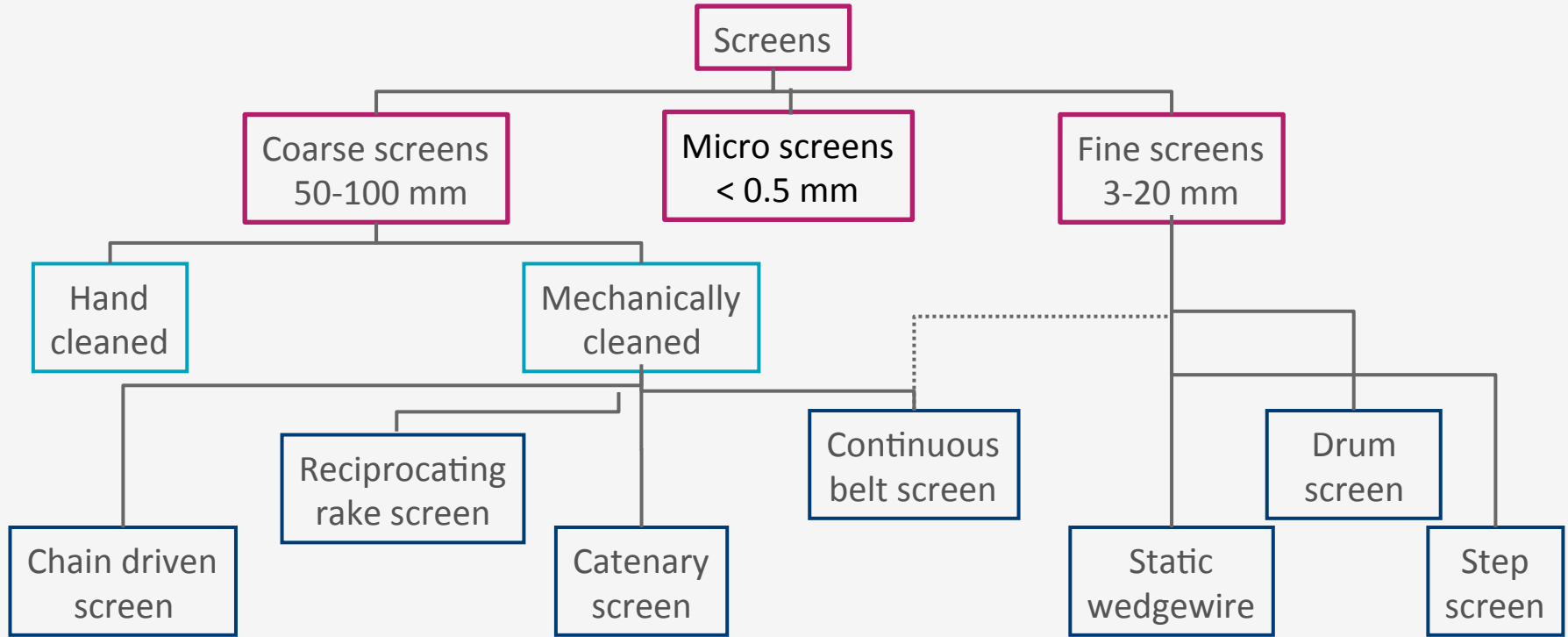
Chain driven  
screen

Catenary  
screen

Static  
wedgewire

Drum  
screen

Step  
screen



# Types of screens

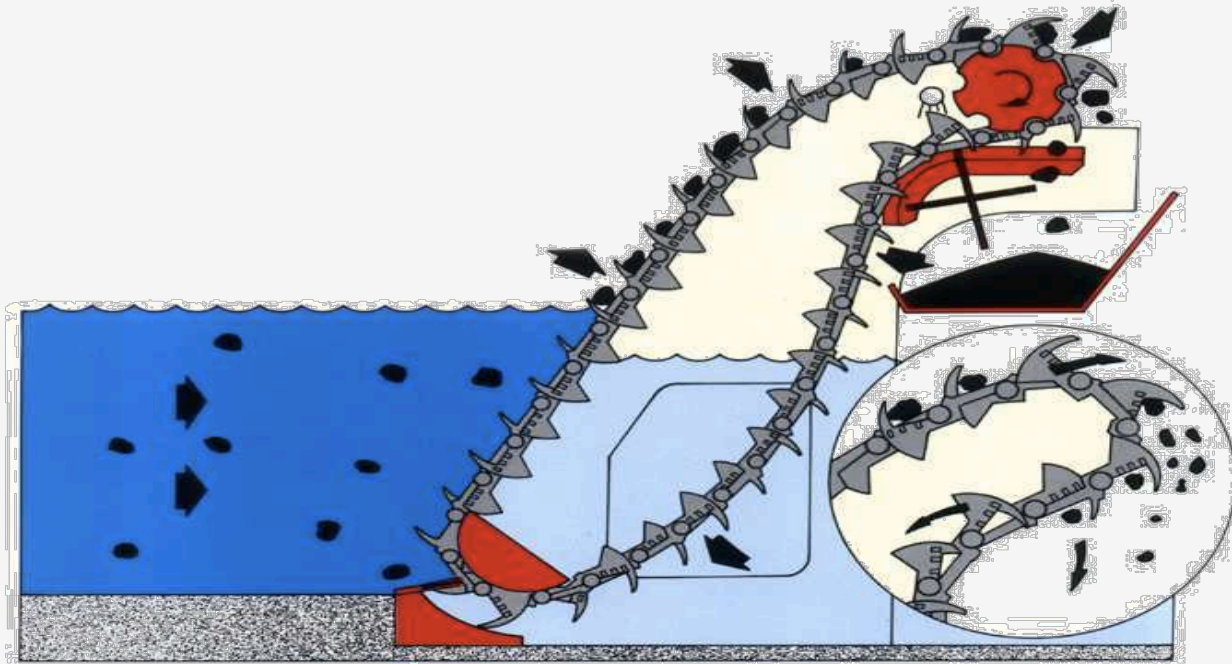
Reciprocating screen

Chain driven screen

Catenary screen

Continuous belt screen

# Continuous belt screen

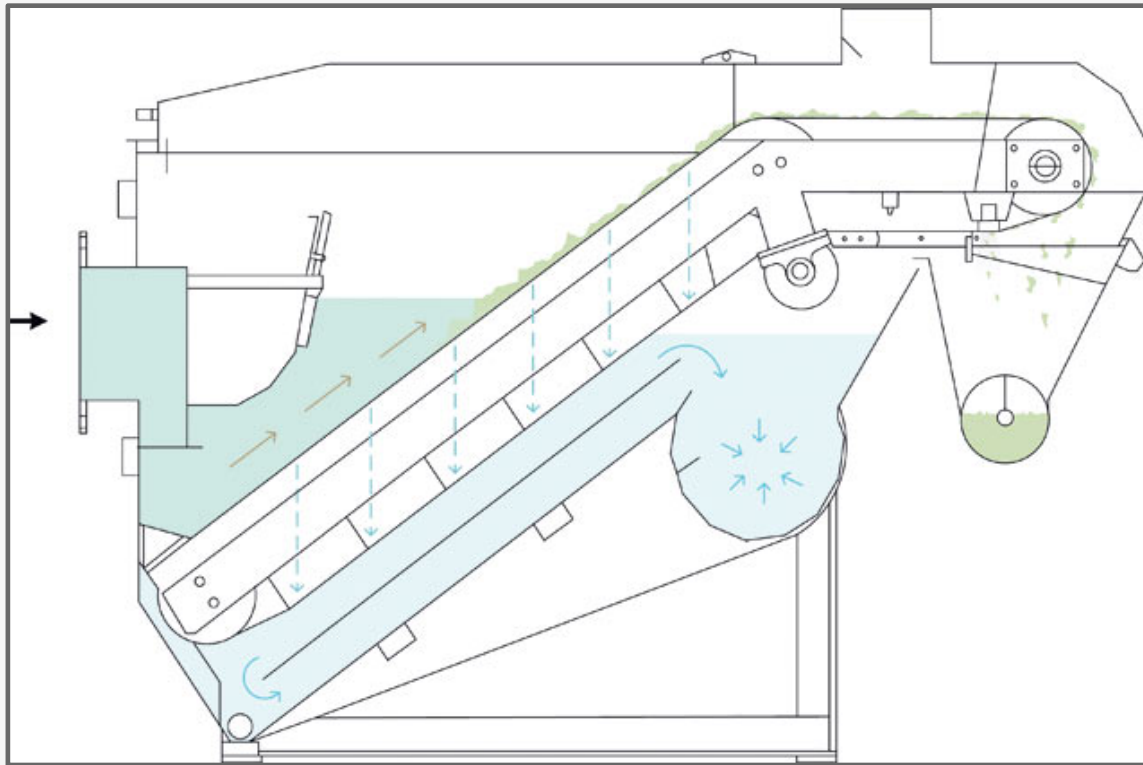


# Continuous belt screen





# Fine screen design





# Fine screen design



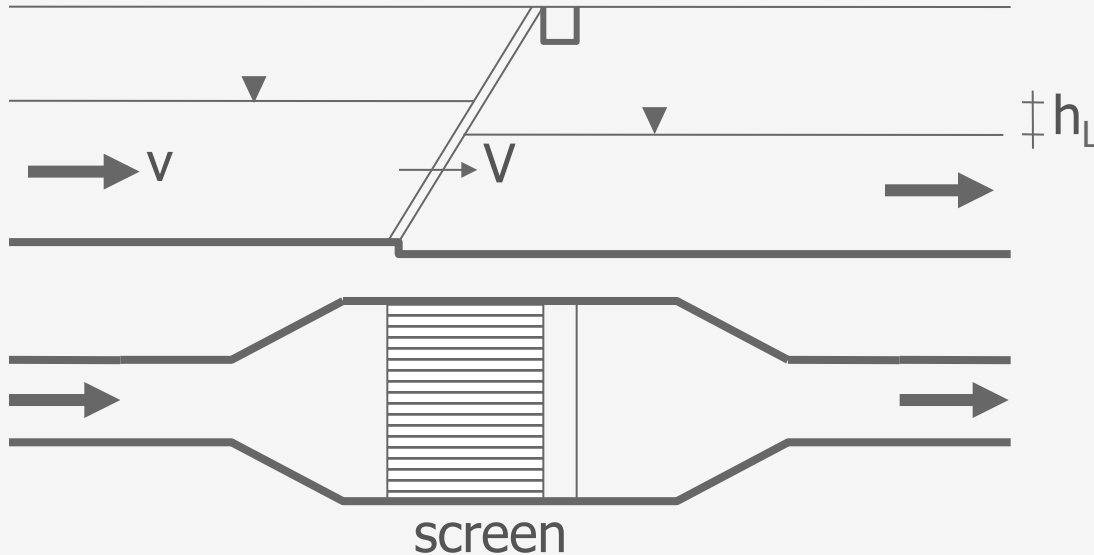
# Design

Located at entrance

Approach velocity  $> 0.4 \text{ m/s}$

Flow velocity  $< 0.9 \text{ m/s}$ ,

# Design



$C$  = friction coefficient  
 $v$  = approach velocity  
 $V$  = pass through velocity  
 $g$  = gravity acceleration

$$h_L = \frac{1}{C} \left( \frac{V^2 - v^2}{2g} \right)$$

$C = 0.6$  (clogged)  
 $0.7$  (clean)

# Design features

## Screenings handling

Storage containers  
Presses  
Conveyer belts

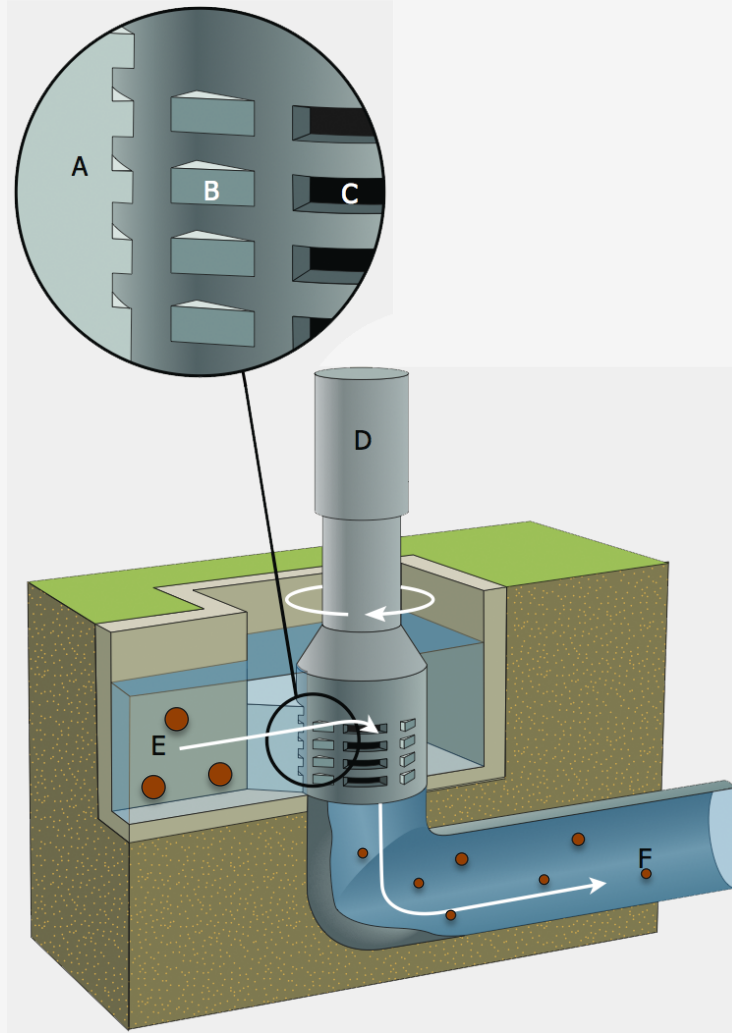
## Control equipment

Timers  
Automated switches  
Headloss control

**VOLUME ~ 50 L/1,000 capita per day**

# Grinders

- A – Teeth ridge
- B – Cutting tooth
- C – Opening for effluent
- D – Motor
- E – Influent
- F – Effluent



# Screen design

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