Since in 1969, Vainer Marchesini, founder and current Chairman and C.E.O. of the Group, manufactured his first Screw Conveyor the name WAM® has come to stand for innovation in Bulk Material Handling Technology and Equipment Supply.
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FACTS & FIGURES SUMMARY

20 MANUFACTURING & ASSEMBLY PLANTS WORLD WIDE

WAMGROUP® CURRENTLY PRESENT IN 85 COUNTRIES

▷ 50 SUBSIDIARIES AROUND THE WORLD
  8 AMONGST FOREIGN SUBSIDIARIES INCLUDE PRODUCTION (ASSEMBLY LINES FOR MAJOR PRODUCTS)

▷ DEALERSHIP AGREEMENTS IN THOSE COUNTRIES WITHOUT A WAMGROUP® SUBSIDIARY

5 SENIOR DEALERS
Product Range

- Bulk Solids Conveying
- Air Filtration
- Bulk Solids Flow Interception
- Bulk Solids Discharging
- Bulk Solids Feeding & Metering
- Level & Pressure Monitoring Silo Safety
- Pneumatic Conveying
- Vibration Technology Aiding of Material Flow
- Mixing – Conditioning Agglomerating – Granulating
- Waste Water & Sludge Treatment
Waste Water = water that has been used, as for washing, flushing, or in manufacturing processes, and so contains waste products.

Waste water also referred to as sewage.
Waste Water
Waste Water Treatment

EQUIPMENT FOR:

- SOLID/LIQUID Separation
- GRIT Removal
- GREASE Removal
- SLUDGE
Waste Water Treatment PLANT

1. Mechanical Preliminary Treatment
2. Sedimentation Tanks
3. Sludge Treatment
4. Micro-Screening and Filtration
Waste Water Treatment

Mechanical Preliminary Treatment

SOLID/LIQUID Separation
Screw Screens

WASTEMASTER®
GCP/GCE

- Fine screening in channel application
- Automatic removal of the suspended solids from waste water
- Different flow rates and size of screenings to be removed
Waste Water Treatment (8100 - 8200)

WASTEMASTER® GCP/GCE
Waste Water Treatment (8100 - 8200)

WASTEMASTER® GCP/GCE
Waste Water Treatment (8100 - 8200)

WASTEMASTER® GCP/GCE
Waste Water Treatment (8100 - 8200)

WASTEMASTER® GCP/GCE
Waste Water Treatment (8100 - 8200)

WASTEMASTER® GCP/GCE
Waste Water Treatment (8100 - 8200)

... in Technical Catalogue:

- Overall dimensions
- Extracting performance
- Feeding performance
- Motor information
- Gear reducer information
Main information for correct sizing:

Type and quantity of material to handle:
e.g.: suspended solids and removal of solids, inlet flow rate

Screen basket mesh:
e.g.: round perforation, wedge wire

Compaction required?
e.g.: optional built in compactors

Flow rate, channel width, channel depth:
e.g.: define size of GCP/GCE (300, 400, 500, 600, 700mm)

Place of installation:
e.g.: existing channel or dedicated tank

Combination of materials
e.g.: 304/304 SS, 304 SS/mild steel, 316/316 SS, etc.
Waste Water Treatment

Mechanical Preliminary Treatment

SOLID/LIQUID Separation
Drum Fine Screens

SPIRAMATIC

- Finest screening in channel application
- High capacity flow
- Different flow rates and size of screenings to be removed

$Q = 30 \sim 1550 \text{ l/s}$
How does it work?

Wastewater flows into the upstream side of the unit and debris is captured on the inside of the rotating drum.

As the drum rotates, a spray bar cleans the debris from the inside of the drum, depositing it into the auger trough. A nylon brush removes any additional material from the outside of the drum.
Waste Water Treatment
Waste Water Treatment

Perforated plate from 1 to 6 mm
Waste Water Treatment

Wedge Wire from 5 to 10 mm
Waste Water Treatment

Mesh from .5 to 1 mm
Waste Water Treatment

Screen drum cleaning brush

Screen drum spray bars
Basket Support Rollers
Waste Water Treatment
Waste Water Treatment
Main market needs:

- Automatic removal of suspended solids from waste water
- Robust and durable
- High flow rate and size of screenings to be removed
- Low maintenance

Main points:

- 40% volume reduction with built-in compactor (option)
- Heavy-duty shaftless screw conveyor
- Self-supporting turntable/wheel for drum and screw
- Specialised machine for both civil and industrial application
Waste Water Treatment (8100 - 8200)

... in Tech-Info and drawings:

- Overall dimensions
- Extracting performance
- Feeding performance
- Motor information
- Gear reducer information

<table>
<thead>
<tr>
<th>Size</th>
<th>Max flow rate* [l/s]</th>
<th>Installed power [kW]</th>
<th>Solid extraction [m³/h]</th>
</tr>
</thead>
<tbody>
<tr>
<td>800</td>
<td>35 - 210</td>
<td>1.5</td>
<td>1</td>
</tr>
<tr>
<td>1000</td>
<td>60 - 230</td>
<td>1.5</td>
<td>1</td>
</tr>
<tr>
<td>1200</td>
<td>80 - 305</td>
<td>2.2</td>
<td>7</td>
</tr>
<tr>
<td>1400</td>
<td>120 - 530</td>
<td>2.2</td>
<td>7</td>
</tr>
<tr>
<td>1600</td>
<td>155 - 920</td>
<td>2.2</td>
<td>7</td>
</tr>
<tr>
<td>1800</td>
<td>240 - 1140</td>
<td>3.0</td>
<td>15</td>
</tr>
<tr>
<td>2000</td>
<td>300 - 1550</td>
<td>3.0</td>
<td>15</td>
</tr>
</tbody>
</table>

*Depending on the screen mesh
Main information for correct sizing:

Type and quantity of material to handle:
  e.g.: suspended solids and removal of solids, inlet flow rate

Screen basket mesh:
  e.g.: round perforation, wedge wire, bars

Compaction required?
  e.g.: optional built-in compactor

Flow rate, channel width, channel depth:
  e.g.: define size of FTR (800, 1000, 1200, 1400, 1600, 1800, 2000mm)

Place of installation:
  e.g.: existing channel or dedicated tank

Combination of materials:
  e.g.: 304/304 SS, 304 SS/mild steel, 316/316 SS, etc.
Waste Water Treatment

Mechanical Preliminary Treatment

SOLID/LIQUID Separation
Screw Screens

WASTEMASTER®
GCPC/GCEC

Q = 30 ~ 300 l/s (63 ~ 635 cfm)

- Fine screening in TANK application
- Automatic removal of the suspended solids from waste water
- Different flow rates and size of screenings to be removed
Waste Water Treatment (8100 - 8200)

WASTEMASTER® GCPC/GCEC

Insulated Discharge Module

GCEC and GCPC Outlet Sections

Inlet Screen Basket with Splash Guard

GCPC Outlet Top View
In-Piping Screw Screen
Waste Water Treatment

WASTEMASTER® GCPC/GCEC
Waste Water Treatment
Waste Water Treatment
Waste Water Treatment
Waste Water Treatment
Waste Water Treatment
Waste Water Treatment

Main market needs:

• Automatic removal of suspended solids from waste water feeding pipe
• Robust and durable
• Different flow rates and size of screenings to be removed
• Low maintenance

Main points:

• Completely bolted assembly; tank supplied with different side outlets
• 40% volume reduction with built-in compactor
• Heavy-duty shaftless screw conveyor
• Heavy resistant brush segments and bearing support for cleaning and protection of screen basket
• Specialised machine for both civil and industrial application
Waste Water Treatment

... in Technical Manual and drawings:
- Overall dimensions (drawings)
- Extracting performance
- Feeding performance
- Motor information
- Gear reducer information
Main information for **correct sizing**:

**Type of material to handle:**
e.g.: suspended solids and removal of solids, inlet flow rate

**Compaction required?**
e.g.: optional built-in compactor

**Flow rate, outlet side:**
e.g.: define size of GCPC (300, 400, 500, 600, 700mm) on the flow rate

**Place of installation:**
e.g.: indoors or outdoors

**Combination of materials**
e.g.: 304/304 SS, 304 SS/mild steel, 316/316 SS, etc.
Waste Water Treatment

Mechanical Preliminary Treatment

SOLID/LIQUID Separation
Waste Water Treatment

Mechanical Preliminary Treatment

SPECO®
Waste Water Treatment

Vertical Screw Screens

GCV

• Space-saving in PIT application
• High efficiency solid removal
• Use as protection for pumps

Q = 36 ~ 70 l/s (76 ~ 148 cfm)
Waste Water Treatment

WASTEMASTER® GCV

Insulated discharge module

Highly efficient outlet spout in plastic material

Inlet spout and split screen basket

Washing tube
Waste Water Treatment
Waste Water Treatment
Main market needs:

• Automatic removal of suspended solids from a pipe inside deep pit
• Robust and durable
• Different flow rates and size of screenings to be removed
• Low maintenance

Selling points:

• 40% volume reduction with built-in compactor
• Wide range of accessories
• Heavy-duty shaftless screw conveyor
• Heavy resistant brush segments and bearing support for cleaning and protection of the screen basket
• Specialised machine for both civil and industrial applications
Waste Water Treatment (8100 - 8200)

... in Technical Manual and drawings:

- Overall dimensions (drawings)
- Extracting performance
- Feeding performance
- Motor information
- Gear reducer information

Note: These values are related to clean water. Anm.: Diese Werte beziehen sich auf Reinwasser. Remarque: Ces valeurs se réfèrent à de l'eau propre. Nota: questi valori si riferiscono ad acqua pulita.
Main information for **correct sizing:**

**Type of material to handle:**

- e.g.: suspended solids and removal of solids, inlet flow rate

**Flow rate and pit depth:**

- e.g.: define size and length of GCV (200, 300, 500mm)

**Outlet side:**

- e.g.: define position of discharge point

**Combination of materials:**

- e.g.: 304/304 SS, 304 SS/mild steel, 316/316 SS, etc.
Waste Water Treatment (8100 - 8200)
Waste Water Treatment

Mechanical Preliminary Treatment

SOLID/LIQUID Separation
Waste Water Treatment

Multi-Rake Screen

GVB-GVF-GVS

- Removal of solids in High channel depth
- Available for channels up to 2 m wide
- 800 units installed worldwide
Waste Water Treatment

How does it work?

Wastewater flows into the upstream side of the unit and debris is captured on the bars.

The chain-driven rakes clean the bars and transport the material to the discharge point.

The material is removed from the rakes by the wiper and discharged into a dumpster, conveyor or compactor.
Waste Water Treatment
The three Multi-Rake models:

- **GVB multirake Coarse Bar Screen** - >12mm - 38 mm spacing

- **GVF multirake Fine Bar Screen** - 6mm-10mm spacing

- **GVS multirake perforated screen** - 3mm-6mm perforations
Waste Water Treatment

spacing

perforations
Waste Water Treatment
Drive sprockets and wiper
Waste Water Treatment

Drive chain
Waste Water Treatment
Waste Water Treatment

Mechanical Preliminary Treatment

SOLID/LIQUID Separation
Waste Water Treatment

Screw Compactors

CLE

- High Efficient de-watering
- Commonly known as “Duck Neck” compactor
Waste Water Treatment (8100 - 8200)

WASTECOM ™ CLE

Commonly known as “Duck Neck” compactor
Main market needs:

• Reduction of screenings volume: > 50%
• Reduction of transportation/disposal costs
• Draining liquids to reduce odours

Main point:

• For Waste Water Treatment plants > 150,000 p.e. in general
• Screw compactor
• SINT™ drainage module: zero clearance between trough and screw
• Jagged screw: high removal rate with difficult materials
• Specialised machine for civil applications
• Easy maintenance
... in Tech-Info and drawings:

- Overall dimensions
- Compacting performance
- Feeding performance
- Drive information

### Technical Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>A (mm)</th>
<th>B (mm)</th>
<th>C (mm)</th>
<th>E (mm)</th>
<th>Ht (mm)</th>
<th>Hs (mm)</th>
<th>I (mm)</th>
<th>L (mm)</th>
<th>Lt (mm)</th>
<th>N</th>
<th>P</th>
<th>W (mm)</th>
<th>Ø IN (mm)</th>
<th>Ø OUT (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLE 200</td>
<td>180</td>
<td>571</td>
<td>600</td>
<td>550</td>
<td>2.050</td>
<td>1.000</td>
<td>1.000-1.500</td>
<td>1.880</td>
<td>2.050</td>
<td>1.500</td>
<td>4,100-4,600</td>
<td>350</td>
<td>177</td>
<td>700-1.200</td>
</tr>
<tr>
<td>CLE 300</td>
<td>180</td>
<td>571</td>
<td>600</td>
<td>650</td>
<td>2.050</td>
<td>1.510</td>
<td>1.000-1.500</td>
<td>1.500</td>
<td>4,100-4,600</td>
<td>450</td>
<td>277</td>
<td>700-1.200</td>
<td>323</td>
<td>406</td>
</tr>
<tr>
<td>CLE 400</td>
<td>180</td>
<td>571</td>
<td>600</td>
<td>650</td>
<td>2.300</td>
<td>1.750</td>
<td>1.250-1.750</td>
<td>1.850</td>
<td>4,500-5,250</td>
<td>550</td>
<td>377</td>
<td>950-1.200</td>
<td>406</td>
<td>508</td>
</tr>
</tbody>
</table>

For reference only; for detailed drawings please contact the manufacturer.

### Flow Rate

<table>
<thead>
<tr>
<th>Model</th>
<th>Flow Rate (m³/h)</th>
<th>Installation Power (kW)</th>
<th>Hopper Capacity (l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLE 200</td>
<td>1.5 - 2.0</td>
<td>1.5</td>
<td>70 ÷ 140</td>
</tr>
<tr>
<td>CLE 300</td>
<td>2.5 - 3.0</td>
<td>2.2</td>
<td>100 ÷ 200</td>
</tr>
<tr>
<td>CLE 400</td>
<td>4.0 - 4.5</td>
<td>3.0</td>
<td>200 ÷ 330</td>
</tr>
</tbody>
</table>
Main information for **correct sizing**:

**Type of material to handle:**
e.g.: screenings of other solids

**Organic matter removal is required?**
e.g.: if we should apply or not our machine

**Quantity**
e.g.: define screw size (200, 300, 400mm)

**How is the machine fed?**
e.g.: define hopper size or length of drainage module

**Place of installation:**
e.g.: with or without hopper, possible requirement for a conveyor

**Combination of materials**
e.g.: 304/304 SS, 304 SS/mild steel, etc.
Screw Compactors with **TRANSPORTATION**

**CPS**

- Efficient de-watering
- Self-adjusting outlet plug diaphragm
- Modular design facilitates access and parts replacement

\[ Q_{\text{max.}} = 12 \text{ m}^3/\text{h (4.7 cfm)} \]
Waste Water Treatment

WASTECOM™ CPS
• Solution for Compaction of solids after Vertical Bar Screen
Proposal for YCDC plant in Yangon

12/2014

• Solution for Compaction of solids after Vertical Bar Screen
Main market needs:

• Reduction of volume of screenings
• Reduction of transportation/disposal costs
• Draining liquids to reduce odours

Main points:

• Shaftless screw conveyor
• SINT™ drainage module
• SINT™ diaphragm with variable resistance
• Specialised machine for civil and industrial application
• Easy maintenance
Waste Water Treatment

... in technical manual:

- Overall dimensions
- Compacting performance
- Feeding performance
- Electric motor details
- Gear reducer details
Main information for **correct sizing**:

**Material to handle:**
e.g.: screenings, etc. define choice of bars or liner and type of screen mesh

**Quantity:**
e.g.: define screw size (200, 300, 400mm)

**Length of installation:**
e.g.: define total length of the machine

**Combination of materials:**
e.g.: 304/304 SS, 304 SS/mild steel, etc.

**Angle and place of installation:**
e.g.: avoid risk of incorrect installation and claim
Waste Water Treatment

Mechanical Preliminary Treatment

SOLID/LIQUID Separation
Waste Water Treatment

Mechanical Preliminary Treatment
Grit Separators

GRITSEP® DS

- A CLASSIC !!!!!
- Gravity Grit Classifier
- Shaftless Grit Classifier

$Q_{\text{max.}} = 36 \text{ l/s (76 cfm)}$
Waste Water Treatment

GRITSEP ™ DS

Settling tank

Water Injection

Safety Valve

Sand Washing
Main market needs:

• 90% grit removal

• High dryness of materials extracted

• Easy interface with standard grit chambers

Main point:

• In general for all Waste Water Treatment plants

• Heavy-duty shaftless screw conveyor

• SS bars or plastic/metal liner for zero clearance between trough and screw

• Low RPM for high removal rate

• Specialised machine for civil applications

• Easy maintenance
Waste Water Treatment
Waste Water Treatment
Waste Water Treatment

... in Technical Manual:

- Overall dimensions
- Extraction performance
- Feeding performance
- Motor information
- Gear reducer information

<table>
<thead>
<tr>
<th>DS Model Modell DS Modèle DS Modello DS</th>
<th>Flow Rate Fördermenge Débit Portata (l/sec)</th>
<th>Potential quantity of sand Potentielle Sandmenge Potentialité transport de sable Potenzialità trasporto sabbie</th>
</tr>
</thead>
<tbody>
<tr>
<td>DS400</td>
<td>5.00</td>
<td>0.22 0.06</td>
</tr>
<tr>
<td>DS1000</td>
<td>8.33</td>
<td>0.29 0.08</td>
</tr>
<tr>
<td>DS2000</td>
<td>22.2</td>
<td>0.29 0.08</td>
</tr>
<tr>
<td>DS3400</td>
<td>27.8</td>
<td>0.29 0.08</td>
</tr>
<tr>
<td>DS4000</td>
<td>36.0</td>
<td>1.30 0.36</td>
</tr>
</tbody>
</table>
Main information for a **correct sizing**:

**Type of material to handle:**
- e.g.: grit

**Organic matter removal required?**
- e.g.: should apply our machine or not?

**Flow rate and amount of grit to remove:**
- e.g.: define the size of the DS (400, 1000, 2000, 3400, 4000)

**Place of installation:**
- e.g.: to a grit chamber

**Combination of materials**
- e.g.: 304/304 SS, 304 SS/mild steel, etc.
Continuous Grit Separators

GRITSEP ™ FGC

- Fluid Dynamic grit classifier
- Special fluid dynamic separation surface
- Shaftless screw
GRITSEP™ FGC

Waste Water Treatment
Main market needs:
- 90% grit removal
- High dryness of extracted materials
- Easy interface with standard grit chambers

Main points:
- Higher sedimentation rate and removal: 95%
- System self-adjusting to different flow rates
- Heavy-duty shaftless screw conveyor
- SS bars or fixed pipe for high extraction efficiency
- Specialised machine for civil applications
- Easy maintenance
Waste Water Treatment

... in Tech-Info and drawings:

- Overall dimensions
- Extracting performance
- Feeding performance
- Motor information
- Gear reducer information
Main information for a **correct sizing**:

**Type of material to handle:**
- e.g.: grit

**Organic matter removal required?**
- e.g.: should we apply our machine or not?

**Flow rate and amount of grit to remove:**
- e.g.: define FGC size (005, 008, 015, 025, 036)

**Place of installation:**
- e.g.: grit chamber

**Combination of materials:**
- e.g.: 304/304 SS, 304 SS/mild steel, etc.
Waste Water Treatment

Mechanical Preliminary Treatment

SOLID/LIQUID Separation
Waste Water Treatment

Mechanical Preliminary Treatment
Combined Mechanical Effluent Pre-Treatment Plants

WASTEMASTER® TSF V01

- Highly efficient solids-liquid separation
- High flow rates and separation capacity
- Excellent price-performance ratio

$Q = 30 \sim 300 \text{ l/s (63 \sim 635 cfm)}$
Waste Water Treatment

WASTEMASTER®
TSF V01
Since in 1969, Vainer Marchesini, founder and current Chairman and C.E.O. of the Group, manufactured his first Screw Conveyor the name WAM® has come to stand for innovation in Bulk Material Handling Technology and Equipment Supply.
Waste Water Treatment

TSF 2 (without grease removal system)

TSF 3 (with grease removal system)
Waste Water Treatment

Degreasing system (TSF3)

Screw Screen

Bottom Screw

Extracting Screw
Waste Water Treatment

- Tank support
- Modules
- Bottom Screw
- Modules ready for transport
- Extracting Screw
- Flanges + gasket
Waste Water Treatment

Extracting Screw
Waste Water Treatment

- Reverse switch
- Floating scraper
- Slope for scraper
- Grease trap and discharging pipe
Waste Water Treatment

Floating scraper

Air injection

Low distance from ground
### TSF 2-3 RANGE

<table>
<thead>
<tr>
<th>SIZE</th>
<th>Module</th>
<th>Tank Lenght</th>
<th>Min l/s</th>
<th>Max l/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 1 0</td>
<td>1</td>
<td>2 m</td>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td>S 2 0</td>
<td>2</td>
<td>4 m</td>
<td>12</td>
<td>30</td>
</tr>
<tr>
<td>M 1 0</td>
<td>2</td>
<td>4 m</td>
<td>25</td>
<td>39</td>
</tr>
<tr>
<td>M 2 0</td>
<td>3</td>
<td>6 m</td>
<td>35</td>
<td>60</td>
</tr>
<tr>
<td>M 3 0</td>
<td>4</td>
<td>8 m</td>
<td>60</td>
<td>85</td>
</tr>
<tr>
<td>L 1 0</td>
<td>4</td>
<td>8 m</td>
<td>80</td>
<td>115</td>
</tr>
<tr>
<td>L 2 0</td>
<td>5</td>
<td>10 m</td>
<td>110</td>
<td>145</td>
</tr>
<tr>
<td>L 3 0</td>
<td>6</td>
<td>12 m</td>
<td>140</td>
<td>175</td>
</tr>
<tr>
<td>L 4 0</td>
<td>7</td>
<td>14 m</td>
<td>170</td>
<td>205</td>
</tr>
</tbody>
</table>

* 95% of sand sedimentation with a grain size of 0.2 mm and a Specific Gravity of 2.60-2.65 w/v
Main market needs:

- Modular design
- Possible on site assembly
- Best footprint-net volume ratio
- Durable heavy duty shaftless screws
- Self-adjusting scraper device
- Bolted wear bars
- Durable polymer brushes

Selling points:

- Machine designed for high density waste water
- Different configurations for both small and large tankers
- Heavy-duty shaftless screw conveyor with high resistance brushes and bearing support for cleaning and protecting the screen basket
Waste Water Treatment

... in Technical Manual and drawing:

- Overall dimensions (drawings)
- Extracting performance
- Feeding performance
- Motor information
- Gear reducer information
Main information for **correct sizing**:

**Type of material to handle:**
- e.g.: septic pit waste water

**Quality of material?**
- e.g.: screen mesh, difficult environmental conditions

**Flow rate, outlet side:**
- e.g.: define size of TSB 1 (15 or 30)

**Place of installation:**
- e.g.: existing channel or dedicated tank

**Combination of materials**
- e.g.: 304/304 SS, 304 SS/mild steel, 316/316 SS, etc.
Waste Water Treatment
Waste Water Treatment
Waste Water Treatment
THANK YOU