

**Specification number 04044-MEC-104-GEN-2.01 for the supply of the
Enclosed containers
CON-1.1-160, CON-16.2-1, CON-16.2-2, CON-16.2-3, CON-16.2-4,
version 2.01**

1. General

For the Ashdod domestic wastewater treatment plant, Enclosed screenings containers shall be provided.

The containers allow for direct filling of screenings into a totally enclosed container that includes an internal spiral conveyor thereby eliminating offensive odors. The waste products are transported, stored, and removed from site with minimal operator intervention, virtually odour-, vermin- and insect-free. A permanent onboard spiral conveyor and control system provide automated filling and level control while a robust door-sealing system ensures leakproof transport even with a large, liquefied component. Standard truck lifting devices are incorporated into the design to facilitate transport. Once it has reached the destination, the container is emptied by simply tilting.

See P&ID drawing for details 04044-GEN-063-01, 04044-GEN-080-04

Quantity	:	two units for the grit system and 5 units for the dewatered sludge system
Site conditions:		
- location	:	outdoors for grit system – indoors for dewatered sludge
- area classification	:	explosion proof within a 3.0 m envelope around equipment and channels, requirements for electrical equipment according to the National Electric Code Class I, group D, division 2
- ambient temperature min/max.	°C :	5 / 45
- humidity	% :	approx. 85
- sandstorm	:	not applicable
- site elevation	:	30 m above sea level
- site location	:	approx. 2.0 km from the Mediterranean Sea

The containers shall have a dedicated 150 mm (inside diameter) connection to be connected to the odour control system via an aeration duct.

The equipment shall be suitable for operation in wastewater treatment installations under harsh conditions both for continuous long-term operation and for intermittent operation. The system shall be designed for maintenance free (except for routine maintenance, long life at 24-hour per day operation).

The whole drive system shall be designed for maintenance free long life at 24-hour per day service.

Scope of supply:

The container system shall include:

- Containers for dewatered sludge
- Containers for grit removal at headworks
- electric boards
- Connectivity to the main control PLC
- all documentation including but not limited to, shop drawings, O&M manuals, installation manuals etc.

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- All parts required for on-site erection, ready for operation, including lubricants for three months
- Project engineering including submittal preparation, design drawings, reviewing the contractors detailed design in applying the manufacturer's equipment, preparing the FAT and SAT tests etc.
- Preparing and allocating all necessary resources for conducting a full FAT procedure in accordance with these specifications witnessed test by client and the manufacturer at the manufacturer's factory site.
- On-site supervision by a qualified representative of the manufacturer of the installation
- Providing approval that the equipment has been installed by the contractor in full accordance with the manufacturers specific instructions.
- The presence of the manufacturer's technician during the initial clean water commissioning at the Ashdod WWTP as required by this specification.
- The presence of the manufacturers technician during the initial wastewater water commissioning at the Ashdod WWTP as required by this specification.
- The presence of the manufacturer's technician 45 days after initial operation with wastewater for operation evaluation of the system.
- The presence of the manufacturer's or approved representative technician during the initial clean water commissioning at the Ashdod WWTP as required by this specification.
- The presence of the manufacturers technician or approved representative during the initial wastewater water commissioning at the -Ashdod WWTP as required by this specification.
- The presence of the manufacturer's technician or approved representative 45 days after initial operation with wastewater for operation evaluation of the system.
- The presence of the manufacturer's technician at the Ashdod site in case of a substantial malfunction as required by this specification.
- On-site training by the manufacturer's technician or approved representative required by this specification.
- On-site training by the manufacturer's technician

2. Previous Experience

All equipment to be supplied shall be solely made in OECD countries.

The manufacturer shall be successful in the experience of manufacturing and servicing of equipment of type, size, quality, performance, and reliability equal to that specified.

The manufacturer shall submit evidence of experience:

- a. having supplied in OECD countries (excluding Israel), at least twenty-five (25) installations of similar type and size that have been in successful operation for at least five (5) years.
- b. having supplied in Israel, at least three (3) installations of grit classifiers of similar type and size that have been successful for at least 3 years in the last 10 years.

The Israeli supplier-representative shall show that the company operates a qualified service team in Israel with at least 3 qualified technicians with previous experience in servicing the proposed equipment for at least 2 years.

3. Main Data

3.1 Enclosed Containers

Manufacturer : Spirac, Dutch Spiral or approved equivalent by the

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	Client's Designer
Volume:	
- for grit system	m ³ : 10
- for dewatered sludge	m ³ : 30
Ultrasonic level sensor to prevent overfilling	: to be included
Robust construction	: yes, to be included
Quick connections for power and controls	: yes, to be included
Retractable gate	: yes, to be included
Local electric panel for operation	: yes, to be included
Heavy duty rollers	: yes, to be included
Even load distribution with internal conveyor	: yes, to be included
Inlet chute	: yes, to shall be included.
Material of construction of container	: S235
Wall thickness of container	: at least 3 mm
Bottom thickness of container	: at least 5 mm
Material of construction troughs and covers	: SS316L
Material of construction of spiral	: S355J2
Material of construction of internal trough lining	: HMPE 1000 - at least 10 mm thickness

4. Protective coatings

All Stainless-steel components shall undergo a complete passivation - by immersion process. Both internal and external parts shall undergo passivation. No spray treatment or painting shall be allowed. The internal process shall be documented.

Any ferrous metal surfaces that are not SS shall be epoxy coated. The coatings shall be completely shop applied (no field finishing) and shall be verified by the following ISO standards tests or any other equivalent standard approved by the client:

All epoxy coatings shall include at least:

- Sandblasting SA2.5
- Primer with a thickness of 75 mm
- Outer coating with a thickness of at least – 2 coating each 150 mm each.

The epoxy shall conform to:

- Abrasion resistance — The coating shall exhibit high abrasion resistance suitable for grit storage and dewatered sludge removal.
- Chemical resistance — The coating shall provide excellent resistance to splash and spillage of the wastewater and centrate present at the wastewater treatment plant The coating shall withstand intermittent splash and spillage without blistering, softening, or loss of adhesion.
- Temperature resistance — The cured coating shall withstand continuous (during the day) service temperatures up to 75 °C without degradation, softening, or loss of adhesion.
- Corrosion protection — The system shall provide long-term corrosion protection of the substrate in a continuously damp, chemically aggressive environment.

Welding details between parts shall be conducted in accordance with best practices as outlined in chapter 5.5

“Geometric Considerations” given in Design of Municipal Wastewater Treatment Plants – Manual of Practice #8 fifth edition.

All SS welds shall be cleaned before passivation.

No field welds shall be allowed.

- Painting layers adhesion : ISO 2409:2007 – Cross cut test
ISO 4624:2016 – Pull of test for adhesion
- Preparation of steels before painting : ISO 8501-1:2007 - preparation of steel substrates before application of paints and related products - Visual assessment of surface cleanliness

ISO 8503-1:2012 - Preparation of steel substrates before application of paints and related products - Surface

ISO 8503-1- 5:2012 - Preparation of steel substrates Before application of paints and related products – surface roughness characteristics of blast-cleaned steel substrates

5. Fastening materials

- Flanges : DIN
- Bolts
 - Thread type : M
 - Bolt head type : Hex
 - Identification : in accordance with ISO 3506-1
 - Length : thread shall protrude at least 2 thread pitches and no more than three thread pitches.
 - Material : SS316L
- Nuts
 - Style of nuts : Hex
 - Identification : in accordance with ISO 3506-2
 - Material : SS316
- Washers - material : SS316
- Spring washers - material : SS316

6. Nameplates

- a stainless steel 316 identification nameplate shall be fixed to the equipment.
- all information provided shall be engraved (not printed)
- the nameplate shall include the following information:
 - Manufacturer's name
 - Model number

- Serial number
 - Tag number from P&ID
 - Date of manufacture
 - Power supply
 - Protection rating
 - Amperage
 - Speed
 - Rated capacity
 - All other pertinent data
- motor data shall include in addition:
- Number of poles
 - Electrical connection
 - Efficiency
 - Isolation class
 - Service factor

7. Spare parts

Spare parts to be supplied within the scope of supply shall adhere to the following:

- All spare parts shall be identical and interchangeable with the original parts.
- All spare parts shall be properly packed and clearly labelled separately and packed in containers.
- Each container will be labelled showing the contents of the container.
- Suitable provisions shall be made to protect the spare parts against corrosion.

8. Submittals

To obtain approval from the Client's Designer, submittal documents shall be prepared. The submittal shall provide standard documentation for easy reference. Submittals that are not in accordance with this requirement will be automatically disqualified. All submitted documents shall be in English only.

Document 1: First page:

- a. Equipment Name
- b. Tag number (or numbers) in accordance with the P&ID drawings
- c. Manufacturer's name
- d. Model Number
- e. Equipment country of origin
- f. Supplier's signature
- g. Contractor's Designer's signature
- h. Contractor's signature
- i. Date
- j. Version number

Document 2: Signed documents by manufacturer - Tender specification, the relevant P&ID and the specific drawings that pertain to the specific equipment shall be signed on each page by the manufacturer and the Contractor's Designer stating that the proposed equipment is in full compliance with all the tender and this

specification requirements.

Document 3: Technical data - Technical data that verifies full compliance with this specification. The data shall be submitted in the following manner, and shall include (but not limited to) the following:

- **Document 3A:** technical data sheets, including the manufacturer’s technical offer
- **Document 3B:** electrical wiring drawings, control configuration, proposed software, proposed communications protocol, power requirements, electrical standards adopted, etc.
- **Document 3C:** brochures,
- **Document 3D:** performance curves and calculations (as required in the specification),
- **Document 3E:** drawings of proposed equipment (detailing dimensions and proposed installation),
- **Document 3F:** standard installation manual and O&M manuals.

Document 4: Bill of Materials – A Bill of Materials of all components to be supplied. The bill of materials shall be provided in a table format as detailed below:

No.	Name of component	Weight Static/dynamic/wet [kg]	Sub-component	Sub-component manufacturers part number	Required sub-component material of construction in tender documents	Proposed sub-component material of construction	Quantity
1	TTTTTTTT	XXX/YYY/ZZZ	AAAAAA	GGG-HHH-FFF	JJJJJ	SSSSSS	
			BBBBBB	GGG-HHH-FFF	JJJJJ	SSSSSS	
			CCCCCC	GGG-HHH-FFF	JJJJJ	SSSSSS	
			DDDDDD	GGG-HHH-FFF	JJJJJ	SSSSSS	
			FFFFFFF	GGG-HHH-FFF	JJJJJ	SSSSSS	
			GGGGGG	GGG-HHH-FFF	JJJJJ	SSSSSS	

Note: Capitalized letters are to be replaced by actual information

Document 5: Previous Experience –

- **Document 5A:** Manufacturers list of previous installations in OECD countries (not including Israel) – the list shall be in the following format:

No.	Year of installation	WWTP name	Country	Design capacity of WWTP [m3/day]	Model type of installed equipment	Contact name, telephone, e-mail
1						

- **Document 5B:** Manufacturers list of previous installations in Israel) – the list shall be in the following format:

No.	Year of installation	WWTP name	Country	Design capacity of WWTP [m3/day]	Model type of installed equipment	Contact name, telephone, e-mail
1						

- **Document 5C:** Name list of the service team in Israel – a list shall be in the following format:

No.	Name of qualified technician (first and last name)	Number for years working on equipment from the specific manufacturer	Number of years' experience	Contact name, telephone, e-mail
1				
2				
3				
4				

If the submittal is not accepted, the contractor shall revise the submittal in accordance with the Client's/Client's designer's remarks.

The resubmittal shall include the entire submittal package, and all changes shall be marked (using "Track Changes"). The re-submittal shall be designated with an updated revision number.

Revised submittals that are not marked and with updated revision numbers shall not be checked and shall be handed back to the contractor and shall not be approved.

The contractor must use the approved submittal as the official document for procurement.

9. Factory Acceptance Test

9.1 General

For this equipment no client's witness factory acceptance test is required.

After complete manufacturing the system the manufacturer shall notify the client that the entire scope of equipment supply has been completed and is ready for the factory acceptance test.

Sixty (60) days prior to the shipment, the supplier shall send the following:

Updated submittal documents (1 through 5) as required above in a final version, stamped with "final version", with no marked changes on it.

Document 6: Certified installation drawings – certified final drawings of the equipment including dimension prints detailing equipment dimensions, installation details including but not limited to all required anchor bolt locations, weights, grove locations, openings, access areas and channel connection details etc. All drawings will be also provided in electronic files – CAD 2025 format. The electronic file drawings shall be both in 2D and 3D.

Document 7: Electrical drawings – The following technical data shall be provided:

- **Document 7A:** Complete wiring diagrams for the all the components supplied,
- **Document 7B:** Complete P&ID drawings of the equipment including the required control diagrams
- **Document 7C:** Control Narrative for Process Control
- **Document 7D:** Complete I/O lists and other process related information
- **Document 7E:** Detailed communication tables. These communication tables shall include but not limited to addresses and data for all types of events, motor status, instrumentation information, valve positions, motor speeds, power consumption, input and output discrete and analog raw data.

Document 8: Manufacturer's recommended procedures for jobsite storage and handling of equipment.

Document 9: Dedicated Installation, Operation and Maintenance Manuals: Prior to delivery of equipment and updated as required during installation of the equipment, the manufacturer shall furnish complete and detailed installation, operation and maintenance manuals which shall include the following information as a minimum requirement:

- 1) A description of each equipment and item, normal operating characteristics and limiting conditions including but not limited to performance curves, engineering data etc.
- 2) Assembly, installation and adjustment instructions.
- 3) Electrical diagrams, control philosophy and shop drawings for installation
- 4) Complete descriptive literature of all materials and components furnished.
- 5) Erection drawings with equipment mark numbers
- 6) Guide for trouble shooting with easy-to-read tables and charts
- 7) Field test protocols inline with the specification tests
- 8) Start-up instructions
- 9) Operating instructions
- 10) Routine maintenance and preventive maintenance schedule instructions
- 11) Control software documentation
- 12) Malfunction detection instructions
- 13) Safety instructions
- 14) Spare parts list and ordering procedure, including recommended quantities of spare parts to be stored onsite.

Document 10: Complete part list of the equipment to be tested. This shall be identical to what is required to be supplied by the manufacturer.

Document 11: Copy of the internal quality acceptance tests to be performed by the manufacturer

Document 12: Written approval of the supplier that the equipment fully complies with all that required in the tender specifications and has passed all internal quality acceptance.

The shipment shall proceed only after the documentation has been approved by the Client and the Client's Designer.

10. Site Acceptance Tests (SAT)

10.1 General

The site acceptance tests shall include:

- a. Conducting and approved completion of the dry-running tests
- b. Conducting and approved completion of specific equipment performance tests
- c. Conducting and approved completion of clean water tests
- d. Conducting and approved completion of wastewater tests

10.2 Tests on equipment upon arrival

All equipment that arrives at site shall be inspected as follows:

Visual inspection that the equipment is of high quality as detailed below:

- 1) no damages or flaws are seen,
- 2) no corrosion is seen
- 3) all critical sizes including – length, diameter, wall thickness
- 4) all materials provided are accordance with specifications this shall be conducted by proof of material tracing and using a hand held calibrated spectrometers that shall be on-site and operational during the FAT.
- 5) complete passivation on stainless steel components has been conducted
- 6) no non-similar metals have been connected
- 7) all fastening equipment has been provided
- 8) motors plates are in accordance with specs and what has been offered
- 9) plastic/rubber parts are new and not cracked
- 10) name plate is identical to what was required

Positive acceptance – the visual inspection shows no flaws.

Negative acceptance - the visual inspection shows flaws. The manufacturer shall mitigate all flows before dry running tests.

10.3 Dry-running tests

Dry-running tests shall include:

- a. Measuring the eccentricity of the internal conveyor. These must be straight with a maximum tolerance of 20 mm. The conveyor shall rotate without eccentric movement.
- b. Operating the conveyor for a period of 30 minutes showing the equipment is operating smoothly without vibrations and/or malfunctions. During this test, the following measurements shall be monitored and checked to be identical or better than what was offered:
 - 1) Number of rotations and their frequency
 - 2) Voltage
 - 3) Amperage
 - 4) Test duration
 - 5) Vibration measurements no more than 4.5 RMS mm/sec.

Dry-running tests shall only be performed on equipment that allows dry-running, such as electric boards, conveyers, instruments, etc.

Complete I/O tests shall be conducted and simulation of the process will be accomplished.

The supplier shall provide the client, manufacturer's written approval that supplied equipment is in accordance with the manufacturer's instructions.

10.4 Specific Equipment Performance Tests

The specific performance tests shall be carried out along the complete designed operating range of each specific piece of equipment.

The performance tests shall be carried out in the presence of both the client's representative and the supplier's authorized representative.

The duration of the performance tests shall be in accordance with the manufacturer's specific instructions. At the end of each performance test the manufacturer's representative shall sign a document stating the equipment has been installed in accordance to the manufacturer's recommendations, the equipment has passed all performance tests for the specific equipment and that the equipment is entitled to have the extended warranty as required by the tender.

10.5 Wastewater Tests

Operating the plant with wastewater shall not commence until the specific equipment performance tests have been completed and approved.

After successfully commissioning with wastewater, the supplier will notify the client that the plant is ready for the wastewater site acceptance test.

A manufacturer's technician or authorized local representative must be present within three days of starting the "Wastewater Tests." If they arrive later, the test period will begin only upon their arrival.

The equipment shall operate during the 30-day "Wastewater Test" with no substantial equipment malfunctions due to defects in design, workmanship, material of the equipment and installation. A substantial equipment malfunction is defined as:

- The equipment has been inoperable for a period of more than 24 hours and requires a qualified technician from the manufacturer/supplier to mitigate the problem.
- The equipment has been inoperable for more than 3 times and required a qualified technician from the manufacturer/supplier to mitigate the problem regardless of the down-time period.
- The accumulative down-time for all types of malfunctions (with or without the assistance of a qualified technician of the manufacturer or supplier) shall be no more than 36 hours.

Should a substantial malfunction occur, the clean test period will be reset. In all cases, the manufacturer's local representative is required to arrive on site within 6 hours of the incident during standard weekday working hours,

and within 24 hours during weekends or outside of regular work hours.

A senior manufacturer's engineer (together with the local supplier's technician) shall be present at the Ashdod WWTP site in the following circumstances:

- a. **Scenario A** - The contractor has not been capable of passing the 30 day wastewater test within 80 days.
- b. **Scenario B** - A serious event has occurred where the new conveyor causes an issue that leads to a cascade of malfunctions, resulting in the related system also failing. In such circumstances, the entire plant would be affected.

In Scenario A, a senior manufacturer's engineer will arrive on site within one month.

In Scenario B, a local technician will arrive within 4 hours, while the manufacturer's senior engineer is expected on-site within one week of the incident.

The contractor shall be fully responsible for all expenses associated with the manufacturer's senior personnel (including work, travel, accommodations, etc.), as well as costs related to local technical representatives, testing, tasks, and any other necessary expenditures required to address malfunctions and equipment non-compliance issues.

Positive acceptance – pass the 30-day test with no substantial equipment malfunction.

Negative acceptance - if after 120 days the equipment does not pass the Wastewater Tests the entire equipment package shall be considered non-compliant as defined in the contract.

11. Warranty

The conveyors package provided under this Specification will carry a warranty for **one (1) year, starting from the date the equipment passes the wastewater acceptance test.**

The manufacturer shall provide the client the manufacturer's warranty made in favor of the client, that the equipment supplied shall be warranted by the manufacturer to be free from defects in design, workmanship, and material for the duration of the Manufacturer's warranty period.

The manufacturer shall provide specific instructions on how to store the equipment until installation and from installation until continuous operation. The manufacturer's representative shall from time to time visit the storage facilities and update project management on the storage conditions. If the manufacturer's representative sees that the storage conditions are not satisfactory, due notice must be given promptly.

Equipment shall be tested in accordance with the manufacturer's instructions. The manufacturer shall provide documentation approving the installation and operation of the equipment.

If any part of the equipment supplied under this Specification should fail during the warranty period, the defective part shall be replaced immediately at the manufacturer's expense. All work associated with fixing the equipment will also be borne by the manufacturer. If for any reason the same equipment breaks down consecutively with the same malfunction, the manufacturer's technician shall provide a site visit for evaluation on the manufacturer's

expense. If the equipment continues to malfunction (over a period of 5 months) the manufacturer shall replace the entire package at the manufacturers expense. If the malfunction continues to other units as well, the manufacturer shall replace all the packages in their entirety on the manufacturers expense. If despite all the replacements, the system continues to malfunction, the manufacturer shall rebate the client the complete cost of the system and pay all damages as a result of the equipment failure.

In addition, the manufacturer shall guarantee the following:

1. The equipment that is offered is represented in Israel and technical assistance shall be given locally for a period of at least 7 years.
2. The equipment manufacturer shall guarantee the availability of spare parts for 7 years from the day of commissioning.