Israel Electric Corporation
Generation Engineering and Regional
Maintenance Division
Chief Chemist Department

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Ref.: 217-0000568-2026

Subject: REQUEST FOR INFORMATION (RFI) Containerized Demineralized Water Treatment Systems – Municipal Network Water Only

1. Introduction

For the purpose of supplying demineralized water required for the reduction of nitrogen oxide (NOx) emissions either in combined cycle gas turbines or gas turbines units in open cycle during operation on diesel fuel, the Israel Electric Corporation Ltd. (IEC) plans to establish approximately ten (10) demineralized water production units at the following power plant sites: Hagit, Gezer and Tzafit.

This requirement is driven by regulatory obligations intended to ensure continuous capability for diesel operation when required. Accordingly, IEC is seeking information from qualified suppliers regarding compact, containerized systems for the production of demineralized water based on raw water ("Mekorot") as feed water.

2. General Purpose

IEC is seeking technical, engineering and commercial information from potential suppliers capable of designing, manufacturing, supplying and commissioning containerized water treatment systems for the production of Ultra-Pure Demineralized Water ("Type I" as specified in ASTM D1193) from raw water. The purpose of this Request for Information (RFI) is to gather market intelligence, assess technical feasibility, and obtain preliminary cost and schedule estimates prior to issuing a formal Request for Proposal (RFP). IEC is particularly interested in suppliers who have prior experience with skid-mounted or containerized membrane treatment systems deployed in power generation or similar industrial environments.

3. Site and Operational Context

Each of the three sites – Hagit, Gezer, and Tzafit – operates Combined Cycle Power Plant units that may be required to run on diesel (heavy fuel oil) during periods of natural gas curtailment. During such operation, NOx emissions exceed regulatory limits, necessitating the injection of high-purity water to suppress combustion temperatures and thereby reduce NOx formation.

The primary source of feed water at all three sites is raw water supply. The feed water characteristics used for system design purposes are presented in Appendix A (Table 1) of this document. Suppliers are required to base their technical proposals and feasibility assessments on this feed water quality.

4. RFI Objectives

The primary objectives of this Request for Information are to identify companies with demonstrated capability in designing, fabricating, integrating, supplying, and commissioning containerized water treatment systems for industrial ultra-pure water production. IEC is particularly interested in suppliers who have prior experience with skid-mounted or containerized membrane treatment systems deployed in power generation or similar industrial environments.

- Specifically, IEC requests that Respondents provide the following information (see Summary Table in Section 6):
- A proposed treatment process flow and equipment description structured in accordance with the technical requirements outlined in Section 5 of this RFI.
- Confirmation of technical feasibility for product flow rates of 25, 30, 35, and 40 m^3/h, including the associated feed flow and reject volumes.
- Preliminary mass balance for each capacity option, including product, reject, and CIP waste streams.
- Estimated total system recovery rate, with confirmation that the target of ≥80% can be achieved with the specified feed water quality.
- Preliminary CAPEX and OPEX estimates per unit for each capacity option

- Indicative project schedule covering design, fabrication, factory acceptance testing (FAT), delivery, and site commissioning.
- Physical dimensions of each equipment (containers) based on product flow rates 25,30,35 and 40 m^3/h
- Proposed ultra-pure product water quality parameters including conductivity, pH, silica, and key ions.
- List of references for similar containerized ultra-pure water deployed within the past five years.
- Any questions regarding the site conditions or feed water quality that require clarification prior to submission.

5. Technical Requirements

5.1. General System Architecture

Each unit shall consist of two (2) expended containers, each with maximum external dimensions of 12.0 m (length) × 3.20 m (width). This constraint is mandatory to avoid classification as 'Exceptional Load' (Oversized Cargo) under Israeli road transport regulations, which would impose significant logistical and cost burdens on the project. Suppliers must confirm compliance with this dimensional envelope for all proposed capacity options. Internal layout drawings are encouraged as part of the response.

The two containers shall be designated as: Container 1 - Pre-treatment Module, and Container 2 - Membrane Treatment & Polishing Module. Both containers shall be designed for seamless interconnection via flanged piping connections and an integrated electrical interface.

5.2. Container 1 : Pre-treatment Module

The pre-treatment module shall include all equipment required to condition the mains water feed prior to introduction to the reverse osmosis membrane system. The pre-treatment train shall be sized to accommodate the maximum feed flow corresponding to a 25, 30, 35, 40 m^3/h product output at a minimum system recovery of 80%.

The pre-treatment module shall include, at minimum, the following equipment and subsystems:

- Dual Sand / Multi-Media Filters (MMF): Two (2) parallel pressure vessels containing graded sand and anthracite media, sized for the maximum design feed flow. The filters shall be arranged for duty/duty or duty/standby operation with automatic backwash control triggered by differential pressure or a timed cycle. Vessels shall be constructed of coated steel.
- Dual Activated Carbon Filters (ACF): Two (2) parallel vessels containing High-grade granular activated carbon (GAC) for removal of free chlorine, chloramines, and residual organics. Sized for the maximum design feed flow, with automatic backwash capability. Carbon media shall be replaced on a scheduled basis as recommended by the supplier.
- Cartridge / Micron Filtration: A final-stage cartridge filter housing equipped with 5-micron polypropylene cartridge elements, sized to protect downstream RO membranes. Housing material shall be SS316L.
- Feed and Booster Pumps: Stainless steel centrifugal pumps with adequate head and flow for all pre-treatment stages. All pumps shall be equipped with Variable Frequency Drives (VFDs) to allow flow modulation and energy optimization.
- Blowers / Air Compressors: As required for filter backwash air scouring.
- Chemical Dosing Systems: A chemical dosing package shall be included for the following chemicals: (a) Antiscalant- for inhibition of scale-forming salts (carbonate, sulfate, silicate) on RO membranes; and (b) Sodium Metabisulfite (SMBS)- for dechlorination of the feed water upstream of RO membranes. Each dosing system shall include a day tank, calibration cylinder, peristaltic or diaphragm dosing pump, and automatic control interlock with the RO feed pump.
- Electrical Control Cabinets: housed within the container, all cabinets shall be suitable for the site's supply voltage and frequency (400 V / 50 Hz, 3-phase).

5.3. Container 2 : Membrane Treatment & Polishing Module

The membrane treatment module shall achieve the final ultra-pure water quality from the pre-treated feed water. The module shall include the following process units in series:

- Two-Pass Reverse Osmosis System: A two-pass, multi-stage RO configuration shall be employed to achieve the required product water quality. First-pass RO shall be designed to achieve maximum recovery from the pre-treated mains water feed. The second-pass RO shall be fed by first-pass permeate and shall be optimized for conductivity reduction. All high-pressure piping, RO pressure vessels, and associated fittings shall be constructed from SS316 / SS316L. Low-pressure piping, interconnecting pipework, and reject/drain lines shall be constructed from HDPE, PP, or Schedule 80 PVC as appropriate for the service pressure and chemical compatibility.
- GTM (Gas Transfer Membrane) Module: A GTM degassing module shall be installed downstream of the first-pass RO or between passes, as appropriate, to remove dissolved CO_2 and other dissolved gases from the process water. This is essential to reduce the ionic load on the downstream EDI system and to achieve the target final ultra-pure water resistivity.
- Electrodeionization (EDI) System: A continuous EDI unit shall be installed downstream of the second-pass RO and GTM module to achieve final ultra-pure water polishing. The EDI unit shall be supplied with dedicated, independently regulated DC power supplies (voltage and current regulators) as required by the EDI manufacturer's specifications. EDI product water shall meet the ultra-pure water target quality defined in Section 5.6. The EDI reject stream shall be recycled internally or directed to the pre-treatment stage feed as appropriate.
- Cleaning-In-Place (CIP) System: A dedicated CIP skid shall be included within Container 2 for in-situ chemical cleaning of the RO membranes. The CIP system shall include a CIP tank (acid and alkali capable), CIP pump, cartridge filter, heating element (if required), and necessary valving and instrumentation. CIP chemicals shall be compatible with all wetted materials and membrane elements.
- Operator Station: A fully integrated HMI panel connected to the system PLC shall be located within separated area in Container 2. The PLC shall control and monitor all process parameters of both containers, including flow rates, pressures, conductivity, SDI, chemical dosing rates, pump status, valve positions, and alarm states.

5.4. Materials and Instrumentation

The following material and instrumentation standards shall apply throughout the system:

- High-Pressure Piping: All piping, valves, and fittings operating above 6 bar shall be constructed from SS316 / SS316L.
- Low-Pressure Piping: All piping, valves, and fittings in low-pressure service shall be constructed from HDPE, PP, or Schedule 80 PVC, depending on chemical service.
- Ultra-pure water product Flow Measurement: Coriolis mass flow meters shall be used on all ultra-pure water product lines. Coriolis meters are required to ensure accuracy and freedom from entrained gas errors in low-conductivity streams.
- High-Conductivity Streams: Ultrasonic or turbine flow meters shall be used on all feed, reject, and intermediate streams carrying elevated conductivity water. Electromagnetic flow meters shall not be used on ultra-pure or very low conductivity streams.
- Conductivity: Inline conductivity sensors shall be installed on: pre-treatment outlet, first and second-pass RO product and reject, GTM outlet, EDI product, and EDI reject.
- Pressure: Pressure transmitters (4–20 mA output) on all RO feed, concentrate, and permeate lines.
- Temperature: Temperature elements on pre-treatment outlet stream.
- pH: Online pH sensor on pre-treatment feed and CIP tank.

5.5. Capacity Options

Suppliers are required to evaluate and provide a technical and commercial response for each of the following four (4) product flow capacity options. For each option, the response shall address feasibility, equipment sizing, system recovery, and the associated summary data requested in Section 6 of this RFI.

- Option A: 25 m^3/h ultra-pure water product flow
- Option B: 30 m^3/h ultra-pure water product flow
- Option C: 35 m^3/h ultra-pure water product flow

- Option D: 40 m^3/h ultra-pure water product flow

For all options, the total system water recovery rate shall not be less than 80

5.6. Performance and Product Water Quality Requirements

The ultra-pure water system shall be designed to consistently deliver product water meeting the following minimum quality specifications at the point of use (outlet of EDI module):

Parameter	Units	Target / Limit
Specific Conductivity	µS/cm	< 0.1
Silica (SiO_2)	µg/L	< 10
Sodium (Na^+)	µg/L	< 5
Chloride (Cl^-)	µg/L	< 5
pH (at 25°C)	–	6.5 – 7.5
Total Hardness	mg/L as $CaCO_3$	< 0.1 (non-detectable)
Iron (Fe)	µg/L	< 5
Turbidity	NTU	< 0.1

Suppliers are requested to provide their guaranteed or indicative product water quality for each capacity option, along with the basis for these guarantees (e.g., simulation results).

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6. Supplier Response – Summary Table

Respondents are required to complete the following summary table for each of the four (4) capacity options. Partial responses are discouraged; where data is not yet available, a brief explanatory note should be provided. All cost estimates should be stated.

Parameter	Capacity Option 1 25 m^3/h	Capacity Option 2 30 m^3/h	Capacity Option 3 35 m^3/h	Capacity Option 4 40 m^3/h	Remarks
Technical Feasibility					
CAPEX (estimated)					
OPEX (estimated per year)					
Design Duration					
Fabrication / Build					
Delivery Lead Time					
System Recovery Ratio (%)					
Reject / Concentrate Volume (m^3/h)					
Estimated Power Consumption (kW)					
Chemical Consumption (dosing rates)					
Final product Conductivity (µS/cm)					
Container Dimensions Compliance					

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Suppliers are also requested to attach, as supplementary information, any relevant process simulation outputs (e.g., WAVE or equivalent).

7. Legal Terms & Conditions

1. IEC shall be under no obligation to enter any transaction with any party whomsoever who responds to or participates in any procedure for the Receipt of Information to be used for the purposes of acquisition of services/equipment/systems/goods or data which is the subject of the Request for Information (hereinafter referred to as: "RFI") or for purposes of their development, application, production or construction.
2. IEC shall be entitled to use the information obtained by way of the RFI, as well as any data, solution, process, technique or suggestion contained in any of the responses or documents/response material submitted to IEC related thereto. Without derogating from the above, IEC shall keep any information/data received from any person responding to the RFI in strict confidence and shall not permit the use or use same for any purpose than for its own needs unless such information must be disclosed subject to a right granted by law.
3. A response to an RFI shall not bestow upon any person responding thereto (hereinafter referred to as the "Respondent") any advantage in any procurement procedure, if such a procedure should be publicized at all, and IEC shall not be obliged to include the Respondent in the procurement process.
4. Any exceptions, changes or additions to these above instructions (whether contained in any response to the RFI or otherwise) shall be devoid of validity and legal effect and shall not obligate IEC.
5. Only a supplier who fully responds to the RFI will be permitted to participate in a future procurement process, if and when a future procurement process is entered upon.
6. All responses to this RFI must be provided to mail address Efrat.brayer@iec.co.il, Rafi.halaui@iec.co.il by no later than **19.04.2026 at 12:00 pm**.

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Appendix A – Feed Water Quality Analysis (Mains Water)

The following table presents the typical water quality of the mains (raw / tap) water supply at the IEC power plant sites. This data represents the design basis feed water for the proposed system. All capacity options and system designs shall be based on the values presented.

Table A-1. Typical Mains Water Composition – Design Feed Water for the System

Parameter	Units	Value
pH	-	7.6
Conductivity	µS/cm	2,000
TDS	mg/l	1,100
TSS	mg/l	< 1
Turbidity	NTU	3
Bicarbonate	mg/l	315
Silica (SiO2)	mg/l	20
Chlorides (Cl-)	mg/l	290
SO4	mg/l	125
Sodium (Na+)	mg/l	160
Calcium (Ca2+)	mg/l	85
Magnesium (Mg2+)	mg/l	45
Potassium (K+)	mg/l	5
Iron	mg/l	0.01
DOC	mg/l	3

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