

**Confidential – Commercial**

Operation and Logistics Division  
Procurement Division  
Tender & Market Research Dept.

TO:  
SUPPLIER: \_\_\_\_\_  
ATTN. (c/o): \_\_\_\_\_

**SUBJECT : Sodium Hypochlorite alternatives for the  
biological growth and biofouling control in  
power plant cooling systems**

**R. F. I. No.: 102009430A**

**INVITATION TO SUBMIT REQUEST FOR INFORMATION**

**1. GENERAL PURPOSE**

The Israel Electric Corp. Ltd. (hereinafter: the IEC) is seeking information / data from potential suppliers, concerning potential solution provision as follows:

**Physical and/or chemical alternatives for Sodium Hypochlorite for the biological growth and biofouling control in power plant cooling systems**

as detailed in the attached specification.

Please, also forward this request to any company or any other relevant party that might be interested in this inquiry.

## **2. REQUIREMENTS FOR PARTICIPATION**

Respondents are requested to submit the technical data and documents required as detailed in the attached Specification.

For more details regarding this RFI please contact:

Mr. Itzhak Rosenberg  
Tel: +972-4-818-2416,  
email [itzhak.rosenberg@iec.co.il](mailto:itzhak.rosenberg@iec.co.il)

## **3. PLACE FOR SUBMISSION OF INQUIRIES**

You are kindly requested to fill in all the items of information requested and put your response for this RFI (by hand), in two copies, in an envelope carrying the RFI number, at the following address:

**THE ISRAEL ELECTRIC CORPORATION LTD.  
GROUND FLOOR, ROOM 009, HEAD OFFICE BLDG., 1 NATIV HA'OR ST.  
Haifa, ISRAEL  
BOX N<sup>o</sup> 1**

(Do not send your reply to this RFI by Fax ).

## **4. DEADLINE FOR SUBMISSION OF PROPOSALS**

The deadline for submission is:

**DATE: 14/08/2016**

**TIME: 11:00**

The IEC may, at its discretion, postpone the deadline for submission, at any time prior to the opening of the envelopes.

## **5. LEGAL STATUS OF THIS INVITATION:**

5.1. This RFI is a preliminary process, which may or may not be followed by a separate, bidding or other contractual process.

5.2. IEC shall be under no obligation to enter any transaction with any party 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.

- 5.3. 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, to a participant, to review the tender documents .
- 5.4. 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 procedure should be publicized at all, and IEC shall not be obliged to include the Respondent in the procurement process.
- 5.5. 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.

The IEC wishes to thank you for your anticipated participation and cooperation in the successful completion of this RFI invitation.

Sincerely,

Itzhak Rosenberg



## **Israel Electric Corporation**

**RFI documents for**

**Physical and/or chemical alternatives for  
Sodium Hypochlorite for the biological  
growth and biofouling control in power  
plant cooling systems**

**IEC RFI. NO. 102009430 A**

## 1. IEC OVERVIEW

The Israel Electric Corp.(IEC) is the sole integrated electric utility in the State of Israel and generates, transmits and distributes substantially all the electricity used in the State of Israel. The State of Israel owns approximately 99.85% of the Company

The Company was incorporated on March 29th, 1923, with its main object to produce, supply, distribute and sell electricity to the consumers.

The Company is one of the largest industrial companies in Israel.

Please find more information about the company at:

<http://www.iec.co.il/EN/IR/Pages/FinancialStatements.aspx>

## 2. GENERAL PURPOSE

The Israel Electric Corporation Ltd. (hereinafter: IEC) is seeking for information/data from potential suppliers, concerning the following goods:

**Physical and/or chemical alternatives for Sodium Hypochlorite for the micro and macro biological growth and biofouling control in power plant condensers cooled by:**

- 1) Cooling Tower open recirculating systems, or**
- 2) Seawater once-trough cooling systems**

Currently, for the purpose described above, IEC is using, in both cases, a 12% Sodium Hypochlorite solution, purchased from local suppliers. Due to different reasons, such as dangerous chemicals transportation, IEC is looking for the possibility of implementing alternative technical solutions that may have practical and/or cost advantages over the present state.

These proposed alternatives, however, apart from providing the requested performance, shall take into consideration the current Israeli Regulations and Laws regarding health, such as Legionella disease, and environmental issues concerning the disposal of cooling and wastewater to the sea.

### 3. COOLING SYSTEMS DESCRIPTION

#### 3.1. Cooling Towers.

In Gezer and Alon Tavor Power Plants there are, respectively, two (2) and one (1), 375 MW Combined Cycles which are cooled with induced draft open recirculating systems (cooling towers). Each cooling tower has a flow rate of about 20,000 m<sup>3</sup>/hr. The make-up water for these evaporative cooling systems is treated secondary municipal effluents, which concentrates in the cooling towers to about 15 concentration cycles. Temperatures in the system are in the range of 25 °C to 40 °C. Typical make-up and recirculating cooling water composition in both sites are given in the table below. In addition, as part of the water treatment program, hydrochloric acid is used for pH control and biological growth is controlled by the addition of a 12% sodium hypochlorite solution on a continuous basis. Moreover, according to the current regulations regarding health issues, a constant chlorine residual of 1 ppm is required.

##### a) Alon Tavor

Parameter	Cooling Tower	Make-up
pH	6.8 – 7.2	8.0
Conductivity (□S/cm)	35,000	1,800
Calcium (ppm)	800	35
Magnesium (ppm)	170	8
Sodium (ppm)	5,400	285
Potassium (ppm)	900	36
Chloride (ppm)	9,000	320
Sulfate (ppm)	1,400	70
Nitrate (ppm)	1,000	60
Alkalinity (ppm as CaCO <sub>3</sub> )	70	150
Silica (ppm as SiO <sub>2</sub> )	120	10
COD (ppm)	120	20
BOD (ppm)	10	5

b) Gezer

Parameter	Cooling Tower	Make-up
pH	6.8 – 7.2	8.5
Conductivity ( $\square$ S/cm)	20,000	2,000
Calcium (ppm)	600	30
Magnesium (ppm)	125	7
Sodium (ppm)	3,000	280
Potassium (ppm)	370	23
Chloride (ppm)	6,000	420
Sulfate (ppm)	1,200	90
Nitrate (ppm)	40	1.2
NH4-N (ppm)	20	35
Alkalinity (ppm as CaCO <sub>3</sub> )	70	150
Silica (ppm as SiO <sub>2</sub> )	100	10
COD (ppm)	130	10
BOD (ppm)	30	< 5

### 3.2. Seawater once through systems.

IEC costal plants units are cooled with once through systems using Mediterranean seawater. These systems have typical flow rates ranging from 20,000 to 70,000 m<sup>3</sup>/hr, depending on the size of the unit and the allowed disposal temperature increase. The condensers are also equipped with sponge ball cleaning systems.

The maximum allowed Chlorine residual in the cooling water outlet is 0.2 ppm. During the winter, due to low biological growth rate and environmental permits, the chlorination is performed for only two hours a day and in the summer, it is performed continuously for three weeks and then stopped for one week.

## 4. SUBMISSION OF PROPOSALS AND INQUIRIES

Manufacturer's and/or suppliers of physical and/or chemical treatment systems capable of mitigation and treatment of micro and macro biological growth and biofouling of power plant condensers' cooling systems, as those described above, are kindly invited to submit their proposals.

The proposals shall include:

- 1) A description of the treatment process and equipment proposed
- 2) A reference list of existing installations and case studies
- 3) A preliminary budget price including equipment and assembly

## 5. REQUESTED INFORMATION

The response shall include all data and information required above which illustrates the alternative proposition, and also the following:

Required Info.	Remarks
Name of Respondent	
Respondent r specialization and major activities	
Description of alternative solution	
Maturity of proposed solution (research, development, .....commercially implemented etc.)	
Proposed ways to demonstrate implementation feasibility	
Solution's compliance with Israeli laws and regulations including (but not limited to) environmental laws and regulations.	
Solution's compliance with EU/US other international relevant regulations, if any	
Solution's Budgetary cost	



## 6. LIST OF RFI DOCUMENTS

Please list all replied attached documents:

Document name	Description

Prepared by: \_\_\_\_\_

Approved by: \_\_\_\_\_