

Procedure 26-2018
Request for Information (RFI)
for a system for examining the state of Mekorot's rotating
equipment & early fault identification

1. **General**

1.1. In the Mekorot water company (hereinafter "Mekorot") there are about 3000 major water pumping units (a unit is a motor with a pump) deployed across Israel (hereinafter "the Mekorot rotating equipment").

The pumping units are installed at deep wells and at pumping stations (boosters), and are used by the national water supply system. Most of the pumping units are vertical units (mostly multistage units with a hollow shaft vertical motor or a solid shaft vertical motor), and few are horizontal units.

1.2. Today, Mekorot occasionally carries out proactive and focused tests for monitoring different parameters at the pumping units using fixed equipment or mobile equipment for maintenance purposes (this includes vibration and temperature tests among other tests).

1.3. As part of Mekorot's effort to improve the maintenance array, it has plans to introduce decision-supporting tools and to examine the integration of advanced technologies for predictive maintenance in several fields.

In view of the above, Mekorot is interested in receiving information on existing, working and proven technological solutions concerning systems for monitoring the state of the rotating equipment, which would include: a sensing system, an algorithm for processing data on the facility level, their automatic wireless and direct transfer to the information system in a secured manner, their storage and processing in the information system, "floating" of extraordinary incidents and trends including findings and recommendations as part of the automatic distribution of reports to the mailing list (maintenance personnel, maintenance engineers and managers on different levels). It is clarified that if required, it will be possible to use Mekorot's electrical source to operate the central transmission unit, but not for any other purpose.

1.4. The present RFI request is directed at companies which meet the technical requirements specified below, and which have an existing and proven technological solution ranging from the field to the end-user, which gives a response to the technical requirements specified as part of the present document.

1.5. **The present request is not to be regarded as a tender and/or process for selecting a supplier. In addition, the present application does not constitute any obligation on behalf of Mekorot to carry out continued activities beyond the present process, including future contracting.**

2. The goals of the present request for information

2.1. The goal of the present application is receiving information concerning the possibilities that exist today in the market in this field for study, comparison and evaluation of existing systems for examining the rotating equipment in Mekorot in a nation-wide deployment as well as for fault isolation at an early stage and/or in real time in order consider the possibilities that the company has.

2.2. It is explicitly clarified and emphasized that:

2.2.1. The present application is an early-stage application for receiving information only and it does not oblige Mekorot to carry out a competition or tender process with any person or entity, including any of the responders to the present request and it does not prevent Mekorot from acting or taking any decision it deems appropriate or in accordance with its authority by any law. The purpose of the present procedure is to assist Mekorot in making decisions and considering the possibilities it has.

2.2.2. The present application constitutes a stage of collection of general information and it does not constitute a public tender for any obliging procedure, and it does not constitute any obligation to proceed and/or to act through any purchasing procedure of any technology and/or system and/or any contracting operation or prevent Mekorot from initiating any procedure, deal or action as it deems appropriate concerning any matter related to the present request. The present application does not constitute any request for proposals or an obligation to contract with any of the responders to the present application and/or any obligation whatsoever on the part of Mekorot.

2.3. At any stage Mekorot may take any decision concerning the present application, including a decision on the termination and/or suspension and/or cancellation of the process.

2.4. The mere submission of a response to the present application shall not constitute a threshold condition for participation in any tender that will be held following the present application, if and in the extent that it is held; it

will not give any advantage to a participant in such a tender and it does not oblige Mekorot to include the responder in any tender, procedure or contracting if such may occur following the present application.

3. Technical requirements

- 3.1. An existing solution which works and is installed in Israel and/or abroad on at least several hundred of units of rotating equipment, were each unit that is stationary has been subjected to at least 1000 data samples and analysis; each unit that is mobile has been subjected to at least three samples and their analysis (a mix of stationary and mobile units is also possible).
- 3.2. The technological solution is based on collecting data using at least two of the following four (4) technologies: **collecting three-axis vibration data, sound, variations in the magnetic field, temperature variations.**

The size of the sensors and the manner by which the sensors and any other auxiliary equipment are installed must be as simple as possible without hurting or interrupting the functioning of the tested equipment and other systems.

In addition, it is required that sampled data collection be possible by a mobile unit as well, and that the data can be transferred from the end-unit in the field to a data collection system (secured, without the need to unload the data at a computer in the office and to send them for processing).

If in case the solution is not based on local sensors, it is required of full data analysis and reliable recommendation.

Transmitting the data from the field in an independent and secured manner.

It is clarified that if another unit is required for transmitting the data, aside from the data collection unit installed by the equipment, that unit must be as compact as possible.

Transmission and reception of data sampled or/and analyzed data, must be wireless and must take place in field conditions (they can be inside a building or outside), all over Israel.

- 3.3. All the components of the proposed solution that are installed in the field (if required) shall comply with the IP 67 standard including resistance to the environmental conditions of the weather, and electromagnetic disturbances and radio disturbances.
- 3.4. It is required that there is perfect identity between the reading obtained at the data collection unit and the reading transmitted and received at the information system.

- 3.5. The end units and the hubs (if required) must withstand ambient temperatures of -5°C to 70°C and relative humidity of 5% to 95%.
- 3.6. System support services.

4. **Information concerning systems for collecting, processing and displaying data:**

4.1. Collection of data – the responder to this request is asked to present the data collection procedure (automatic and manual):

- Interfaces and protocols
- The number and the types of inlet ports of the end unit
- The number and the types of outlet ports of the end unit
- Supply voltage and/or battery life.
- The manner of transmitting the data to the information system including information security aspects and cyber protection.
- Physical dimensions.

4.1.1. Specific reference to data collection by a mobile unit

- What is the information required from the person in the field to feed into the mobile unit.
- The manner by which data is collected from the surrounding equipment.

If physical contact is required with the equipment (motor, pump, bearing, connector etc.), specify how the data are collected.

If there is a sensor installed remotely from the equipment – provide information concerning the requirements for installing the sensor.

- Obtaining an indication – specify whether immediate indication is obtained concerning the status of the equipment.

4.1.2. Specific reference to data collected by a stationary system

- The number of sensors required to collect the information (vibrations, temperature, sound, changes in the magnetic field).
- The method of connecting the sensors to the system (wireless, wired, serial, Ethernet, type of protocols etc).

- What is the information required to be fed into the system concerning the equipment on which the sensors/sensors are installed.
 - Is it possible to interface with the SAP system in use in Mekorot in order to feed the data of the pumping unit?
- 4.2. Data processing – the responder is required to present the data processing procedure:
- How does data processing takes place and what is it based on? Do the obtained results undergo control before they're presented to the client? If yes please describe how this takes place.
 - Please specify the responder's estimate of the number of false fault alarms (in percentage).
 - Please specify for each field of processing (vibration, sound etc.), which experts does the responder employ for processing the data.
- 4.3. Data presentation – the responder is required to present the data processing procedure:
- Indications during the data collection stage – describe the indications obtained at the end of the data collection process (with a mobile system).
 - Specify whether the proposed system supports hierarchic presentation of the data.
 - Specify the proposed content of the report – what are the data presented in the report? For which level (field person, maintenance engineer, manager etc.)? Does it include recommendations for execution and urgency of repairs? (If yes, on which basis is the recommendation specified?).
 - Specify at what frequency the responder recommends to carry out control of the data in the reports at each level.

5. **Additional technical information for the suggested solution required from the responders:**

- a. We ask the responders to the present application to provide information sources, among others concerning the following subjects

Unit	Requirement	Specification of the responder
General	Please specify the layout of the system including all of its components	
Stationary data collection unit	Description of the manner of installation	
	Required number of units	
	Description of the method of resistance of the system to mechanical damage and vandalism	
	Description of the method of replacement of the unit including the local and distant configuration	
	Transmission and/or reception frequency	
	Capability and method of storing readings and data	
	Physical dimensions	
	Specify the ability to withstand environmental conditions, electric, electromagnetic and radio interference	
	Supply voltage and/or battery life, including calculation	
	Interfaces and protocols	
	<ul style="list-style-type: none"> Number and types of inlet ports of end unit 	
	<ul style="list-style-type: none"> Number and types of outlet ports of end unit 	

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	Other technical data	
Mobile data collection unit	Description of the unit (application installed on a cellular device, separate device, mini-terminal)	
	Method of data collection (which devices are required)	
	If external unit, please specify the battery life (including calculation per number of samples and transmission)	
	Physical dimensions	
	Specify the ability to withstand environmental conditions, electric, electromagnetic and radio interference	
	Other technical data	
Communication	Please specify proposed method of communication including drawing	
	Transmission and reception ranges	
	Transmission frequency	
	Encryption	
	Information security	
	Frequency range	
Information system and the proposed reports	Specify system architecture including functionality, with an emphasis on technological platform, databases, data processing method, calculation method, alert method, logical hierarchy, user interface, display screens, objects, graphs, warnings, report analysis, interfaces to external systems, data export, user management, information security	

Important: we ask to add a full specification of the system from all the technical aspects including drawings, layouts etc.

b. In addition to the aforesaid, Mekorot be grateful to receive any other relevant information that can attest to the responder's ability to respond to the present application and their capability in implementing the methods that lie at the basis of the specified technical requirements concerning systems for examining the state of the rotating equipment in Mekorot and for locating faults at an early stage.

c. **Method of submission of information**

The responder is asked to submit the information in writing in accordance with the requirements above.

In addition, the responders wishing to take part in the present procedure are required specify in the present chapter the following information:

- Details of the responding entity – method of incorporation, occupations, periods of activity, specialization, knowledge and experience in the proposed technology in Israel and abroad, experience in Israel and abroad in implementing similar projects (including specification of the concerned field – water companies, industry etc.), extent of activity.
- The responder's experience in supplying/integrating the proposed solution, including a description of their experience in integrating projects.
- List of clients that includes the particulars of the purchaser and the contact person on behalf of the purchaser, including contact details of the contact person on behalf of the purchaser.
- The responder to the present application shall present licenses, approvals, permits, standards, qualifications and agreements concerning the systems presented in response to the RFI, inasmuch as possible.
- Possibilities of technical support and ongoing maintenance.
- Index listing of the characteristic types of faults that can be identified during tests (specify separately for pumps and motors). If there are types of faults and capabilities that have not yet been developed and for which development is required, please specify them.

6. **Administrative information**

a. The information shall be provided by all the interested parties on a voluntary basis, with the understanding that the present request is for purposes of information collection only.

- b. It is clarified and stressed that the present application is considered a request for proposals and is not a part of tender procedures, but rather it is carried out for receiving information only, following which the company shall consider its further actions.
- c. All the expenses associated with the submission of the response to the present request shall be borne by the participants only. In no case shall the participants be entitled to any kind of payment for participation in the RFI, and/or refund and/or compensation and/or indemnity for expenses and/or damages that may be caused to them in connection to the response and or the preparation of the response and its submission.
- d. Mekorot reserves the right to make changes and/or corrections in the present request, including the date of submission, and will be entitled to cancel it.
- e. Without detracting from the specifications of the present document, Mekorot reserves the right to contact the responders to the present application, whether all of them or part of them, as well as any other entity with clarification questions or with applications, to receive any information and/or any data.
- f. The present application does not constitute an obligation and/or a basis for contracting of any type with any of the responders, and response to the present application does not create any obligation and/or advantage of any kind for the responders. Mekorot may consider its actions and act upon its exclusive discretion.

7. The method of submitting a response to the present request

- a. Full responses to the required information specified above and any other information that the responders to the present application wish to transfer to Mekorot shall be submitted to Mekorot on Sundays through Thursdays between 8:00 and 15:00 at **no later than April 15, 2018 at 12:00 noon** in a closed envelope in the tender box located at the offices of Mekorot at 9 Lincoln St., Tel Aviv, – the tender unit. The response envelope shall read “Request for information (RFI) for a system for examining the state of Mekorot’s rotating equipment & early fault identification”.
- b. Mekorot reserves the right to contact any responder of the present application for additional clarifications with regards to the information provided by them as part of the present procedure, as well as the right to meet any of them in order to receive explanations and clarifications concerning their answers.

If the information provided to Mekorot contains commercial secrets, this must be clearly specified at any relevant place in the document of the response.

The response shall be submitted both printed out in three copies and on magnetic media.

8. **Details and clarifications**

In questions, other details or clarifications that may be required for answering the present application one can contact Mr. Avi Assayag at assayaga@Mekorot.co.il. Please verify that the email has been received at the telephone 03-6230735/707/781.

9. **Making use of the received information**

- a. The requested information is required as part of the activities of Mekorot for examining the possibilities of contracting and signing deals on the system specified above, and the present application does not create any obligation whatsoever on the part of Mekorot or on the part of anyone on its behalf towards any of the responders.
- b. Mekorot reserves the right to make use of the information obtained for its own purposes and at its own discretion, but in any case Mekorot obliges that information that will be transferred to it shall only be used by it to examine its activities which are the subject of the present application and that information defined as a commercial secret shall not be exposed beyond the persons occupied with the present procedure inside the company.
- c. The list of responders that will be obtained following the present application does not, due to the very fact of response, constitute a closed list of bidders for carrying out a competitive procedure of any kind if held, and the responders shall have no special status in such a procedure due to the very fact of their participation in the present procedure.

10. **Property of Mekorot in the present procedure document**

To remove any doubt is hereby clarified that any document from the Mekorot company that will be transferred, in the extent transferred, to the responders to the present application is the property of the Mekorot company and may not be used for purposes other than the response to the present application.