



# EMS Mekorot Projects



hydrology  
water supply  
Command & Control  
development  
effluent

desalination  
technologies water resource management  
models  
research & development  
wastewater treatment  
drillings  
water quality  
integrative management resources rain enhancement

**Water should not be taken for granted  
We make it happen!**

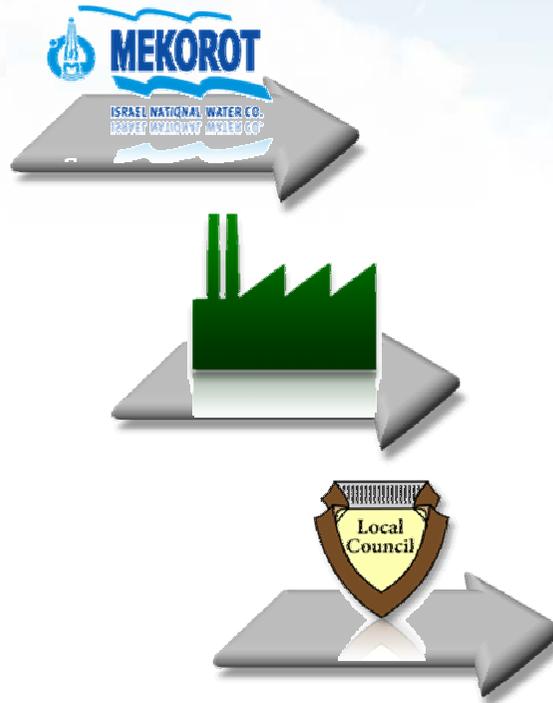


## COMPANY VISION

TO BE A LEADING COMPANY  
IN PROVISION OF  
COMPREHENSIVE SOLUTIONS  
FOR WATER INFRASTRUCTURE  
AND DISTRIBUTION

- EXCELLENCE
- INTEGRITY
- DEDICATION
- PARTNERSHIP
- SUSTAINABILTY
-

## Clients of the Company



- Mekorot Group
- Municipal authorities
- Water and Wastewater Corporations
- Water Associations
- Industrial Sector
- Public and private companies and infrastructure companies
- The Palestinian Authority

## Scope of Activities



- **Infrastructure** works and **laying of pipelines**
- Deep and shallow water **drillings**
- Design, manufacturing and installing **pumps** and **pumping equipment**
- Design and construction of **water treatment plants**
  - Design and construction of drinking water and Tertiary **filtration plants**
  - Design and construction of **desalination plants**
  - Design and construction of **water monitoring** and **sampling** systems (water quality and security)
- Construction of **wastewater treatment plants**



# Scope of Activities



- Design and built of complete **electrical solution** for all the a/m plants
- Design and construction of **electrical and command boards**
- Design and construction of **command and control systems**
- Design and construction of **cathodic protection systems**
- **Rain enhancement**



# Infrastructure Works and Laying of Pipelines



- **Infrastructure** works in pumping stations, water treatment and wastewater treatment plants
- **Laying** drinking water **pipelines** with diameters of up to 108"
- Building and rehabilitation of **water ponds and reservoirs**
- **Sealing** water reservoirs
- Installing **floating covers** for water reservoirs



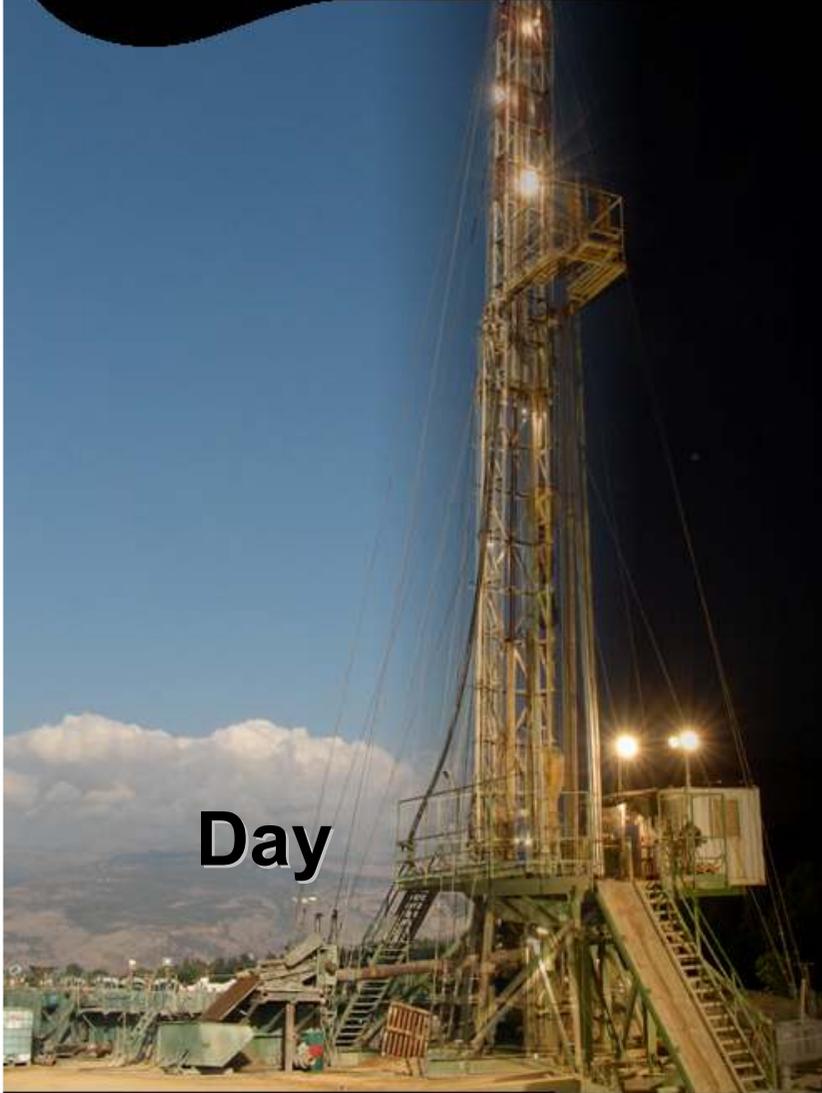


# Drilling Operations

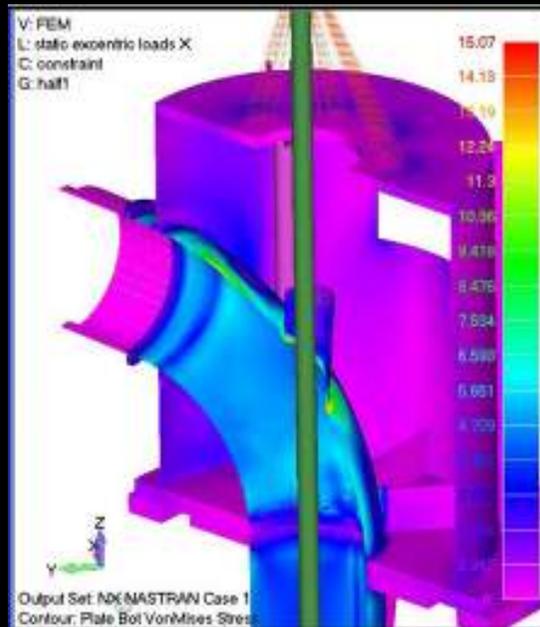
- Carrying out **deep and shallow** water **drillings** to depths of up to 1,500 meters
- Carrying out deep drillings by means of **4** designated machines using the **rotary method**
- Carrying out shallow drillings by means of **2** **reverse circulation** machines

Day

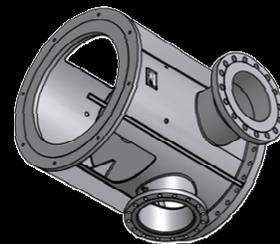
& Night

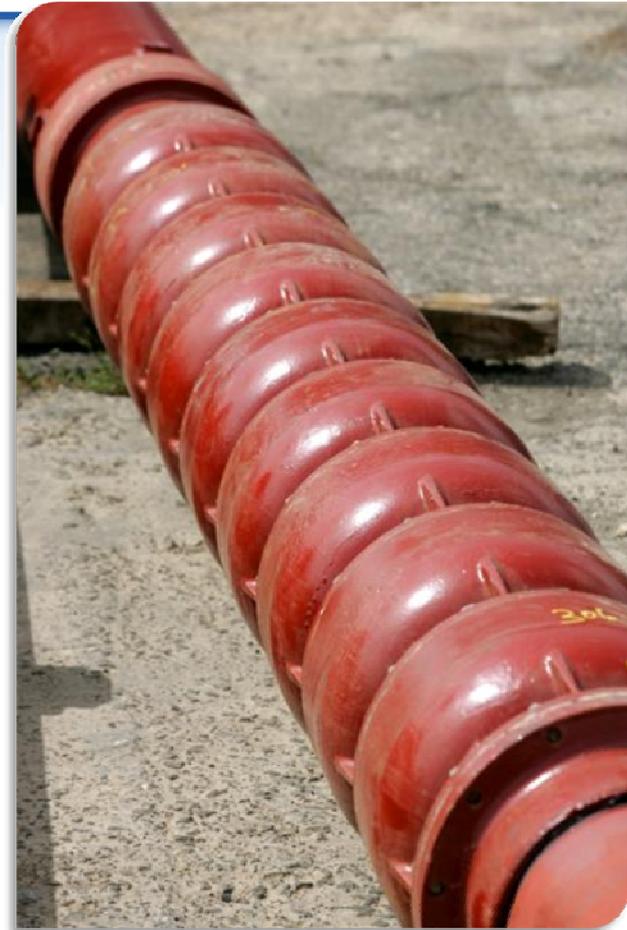


# Production and Installation of Pumping Equipment



- Development, production and renovation of **vertical line shaft pumps**
- EMS holds and own **40 pumps models** with capacities of up to **40”**
- Development, design and production of diversified pumping equipment with unique expertise in oil & water lubrication systems for deep and shallows wells





# Manufacturing and Installing Pumping Equipment

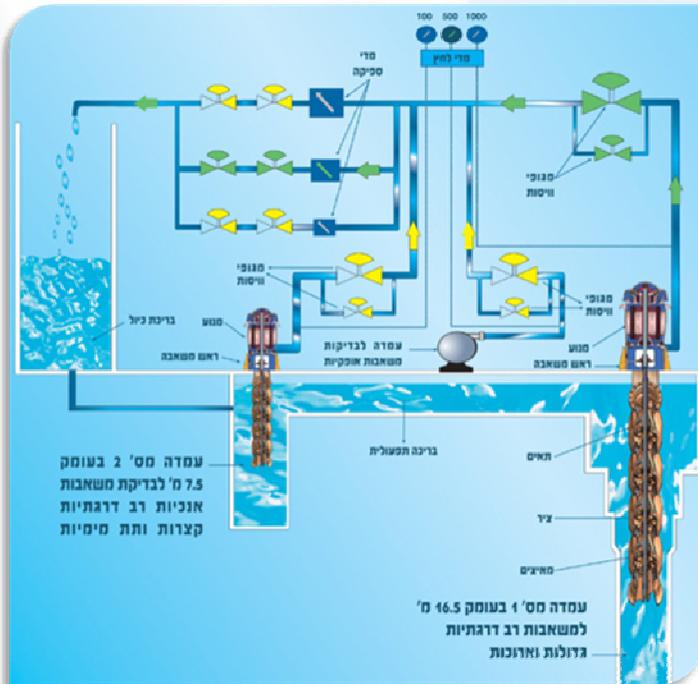


- Developing, design and manufacturing complete pump equipment, **discharge heads, barrels and suction strainers**
- The company **installs** pumping equipment of great value and precision (up to 80 tons), specializing in deep boreholes and in installation at a depth of up to **510m**
- Execution of pumping tests in deep and shallow wells

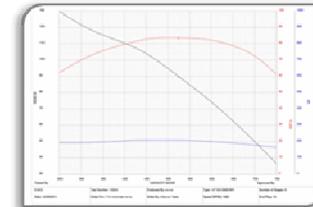




# The Pump Inspection Institute



- The Pump Inspection Institute, founded in 1957, with its computerized control systems, is the most advanced of its kind in Israel, and is meant to test line shaft vertical and submersible pumps
- Information about the Institute:
  - Capacity of up to 7,000 m<sup>3</sup>/h
  - Measured pressure: up to 700 meters (70 BAR)



# The flow meter Institute



- The flow meter institute founded in 1964. with its computerized control systems, is the most advanced of its kind in Israel.
- EMS clients are MEKOROT group, industrial sector, and ISRAEL water associations.
- The institute is checking flow meter up to 12" diameter.
- The institute is checking and repairing over 6,500 units per year. and flow meter arbitration.
- The institute includes 6 workers.
- Main projects in 2011 – 2012:
- MEKOROT group flow meter repair.

The government infrastructure office project, for replacing over 2,000 remote flow meter, in an amount of 4 ML nis.

# Water Treatment Plants



- Desalination plants: RO systems
- Filtration plants
- Disinfection systems
- Impurities removal systems
- Enrichment systems
- Coagulation & flocculation systems
- Chemical dosing systems



# Filtration Plants



- EMS designs and constructs drinking water and Tertiary filtration plants using the following techniques:
  - **Media filtration** systems:
    - **Pressure filtration, vertical and horizontal** pressure tanks
    - **Gravitational** filtration
  - **UF membrane** systems
- EMS design and constructs facilities with a capacity of up to **36,000 m<sup>3</sup> /day** for pre-treatment systems, for improving water quality from drillings and surface water and for tertiary treatment systems





# Desalination Plants



- Designing and constructing brackish water desalination plants using **RO** technique
- Constructing **ED** facilities for the removal of nitrates from drinking water
- The company constructs compact facilities with a capacity of **3 - 10 m<sup>3</sup>/hour** as well as medium sized facilities with a capacity of approximately **2,000 m<sup>3</sup>/hour**
- Among other things, the company has built:
  - Compact plants in the southern desert of Israel
  - ED plants for the removal of nitrates, with a capacity of 150 m<sup>3</sup>/hour
  - “Gat” 10 Brackish Water desalination plants, with a capacity of 180 m<sup>3</sup>/hour
  - “Granot” Brackish Water Desalination Plant – expanding the existing plant by an additional 500 m<sup>3</sup>/hour. EMS has just begun the third phase of the project - additional 1,000 m<sup>3</sup>/hour



# Water Treatment Plants



- **Disinfection** by use of gaseous, hypochlorite and in situ **chlorination**
- **Disinfection** by use of green methods such as **UV**
- Plants for the removal of micro-pollutants such as  $H_2S$  and volatile organic material, using **activated carbon** adsorption
- Plants for the removal of micro-pollutants, by **oxidation & filtration**
- Liquid and solid **fluoridation** plants
- **Chemicals dosing** systems
- **Pilot plants** for all kind of water treatment systems





# Wastewater Treatment Plant



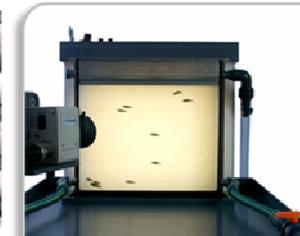
- EMS constructs electromechanical installations and operates **municipal wastewater treatment plants (WWTP)**, using various techniques:
  - Activated sludge (Continuous and SBR)
  - Membrane systems MBR
- EMS Mekorot Projects experience:
  - construction works and WWTPs throughout the country, with a capacity of up to **48,000 m<sup>3</sup>/day**, like Ramat HaSharon, Ashdod, Rahat and the Lower Galilee Regional Council. Moreover, tertiary treatment as a supplement, or upgrading of existing WWTPs
- Its customers include: **Ashdod, Eilat, Rahat, Ramat HaSharon, Carmiel** etc.



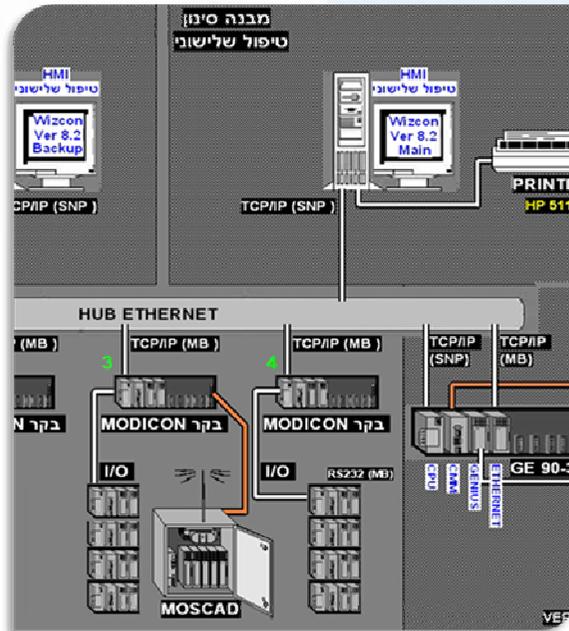
# Monitoring Plants for Safety Water Quality Assurance



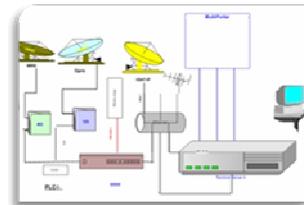
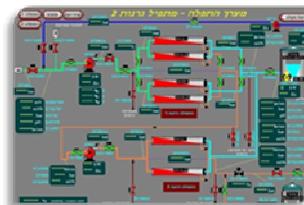
- Design & construction of **Monitoring systems**:
  - Use of advance **instruments and analyzers** for water quality measurements and for toxins and pollutants detection
  - **Data analyzing** for control the water quality
  - **Biological** method for toxic detection



# Command and Control Fields of Activity



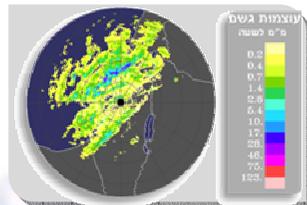
- Complete **control and command** systems
- Construction and maintenance of **SCADA systems and control centers**
- Construction of **water computerized systems, networks and communication infrastructures**
- Construction of **remote** command and control systems, based on radio wireless, satellite, cellular and wired communications
- Construction and maintenance of **local** command and control systems – centralized and decentralized
- **Control philosophy** preparation
- **Design** services and **training**
- Construction of diesel generator control systems



# Rain Enhancement



- EMS Mekorot Projects has **conducted rain enhancement** activities for the last fifty years
- **Cloud seeding** using **silver-iodide** takes place in the winter, between November 1st and April 30th, targeting orographic clouds in northern Israel
- Seeding operations are carried out with 3 seeding aircrafts, and over 30 ground-based generators
- Cloud-base airborne seeding is carried out, on average, approximately 330 hours each season
- The Rain Enhancement Department operates a **research** aircraft, and together with researchers from the Hebrew University of Jerusalem, conducts flights that aim to improve our understanding of the structure and processes that characterize the clouds in northern Israel



## An Integrative Capacity for Project Management



**EMS Specializes in management,  
designing manufacture &  
construction of multidisciplinary,  
high budget and complex projects**

Since 1961



Thank you