

emission control systems



# EMI E46

Evaporation Specialist

## Evaporation

Evaporation is an essential part of the water cycle. The sun (solar energy) causes evaporation from the oceans, lakes, moisture in the soil, and other sources of water. The evaporation of water occurs when the liquid surface is exposed, allowing the molecules in excess of escape and to form water vapor.

### Factors that influence the rate of evaporation

- Concentration of the substance to be evaporated in the air.

If the air already has a high concentration of water to be evaporated, then the water evaporates more slowly.

- Concentration of other substances in the air.

If the air is already saturated with other substances, it may have a lower capacity for the evaporation of further substances.

- Air flow.

If "fresh" air (coming air that is not saturated with water and other substances) moves continuously on the water, then the water concentration in the air does not grow with the passage of time, so 'favoring more rapid evaporation.

- Intermolecular forces.

The stronger the intermolecular forces that hold the molecules in the liquid state, it must provide more energy to make her escape.

- Pressure.

Evaporation takes place more quickly if there is less pressure on the surface allowing the molecules to escape more fast.

- Area of the surface.

A substance that has a greater available surface evaporates faster, since there are more surface molecules per unit volume that are potentially able to escape.

- Temperature of the substance

The higher the temperature of the substance is greater the kinetic energy of the molecules on its surface, and therefore the greater the speed of their evaporation.



## Solutions for Industrial Evaporation

Evaporation ponds are artificial lakes with large surfaces that are designed to evaporate the water efficiently from sunlight and exposure to ambient temperatures.

### Pourposes

The docks to evaporation have several uses. Evaporation ponds produce salt from seawater. They are also used for the disposal of brine from desalination plants. Mines are used to separate minerals from the water basins. Evaporation ponds in the contaminated sites to remove water from hazardous waste, it reduces weight and volume so allowing the toxic sludge to be more easily transported, processed and stored. Evaporation ponds are used to prevent pesticides, fertilizers and salts from agricultural wastewater to contaminate the streams in which should be flowing.



### EMI E46

With 25 years of experience in the production of water mist systems, EMI has developed an evaporative floating machine structurally simple, suitable for use in any environment thanks to the materials with which is manufactured, and the very low energy consumption.

The E46 is proposed as an effective solution to increase by at least 10-12 times the evaporation that would normally on the same free surface.

The nebulization of water takes place by pumping the water through special nozzles designed also exploiting the Venturi effect to also suck air in such a way to have the formation of drops with high capacity of evaporation.

The nozzles are also designed to minimize the effect of drift of the sprayed water to remedy its dispersion in case of wind, in this manner everything that is not evaporated falls in the vicinity of the machine avoiding to contaminate areas that are outside of the basin.



## Specifications

### Circuit

- 4 kW stainless steel submersible pump
- 2 stainless steel Ball Valve to manual switch from full flow or half flow
- 6 nozzles HDPE with stainless steel insert for a maximum flow of 126 l/min at 12 bar (37 GPM at 176 psi)
- HDPE circuit and fittings for hazardous ambient

### Floating Platform

- 4 HDPE UV stabilized pontoons
- Stainless steel lifting frame
- Dimensions of 250x250x160 cm, weight 120 kg (100x100x64 inch , 264 lbs)

### Electrical

- Stainless steel control panel with start/stop and emergency buttons
- Pressure sensor

### Options

- Weather station
- Water temperature sensor
- Automation to fully manage the system accordingly the weather condition (RH, temperature, rain, wind speed and direction)
- Data recordable for storage in database and statistics purposes
- MOD-BUS or free radio frequency communication
- 50/60 Hz pump
- Modular floating system to give the possibility to add antidrift protection

