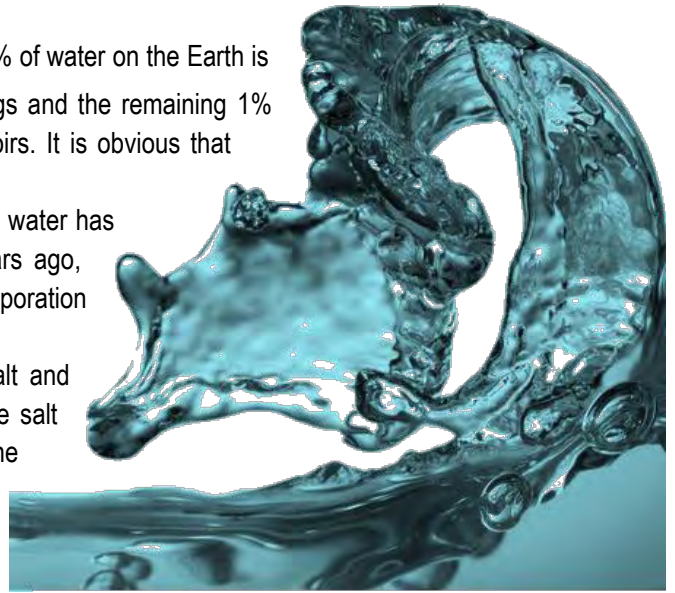


Looking at the nature, it can be observed that about 97% of water on the Earth is cumulated in the oceans; 2% is in arctic oceans and icebergs and the remaining 1% consists of sea water, lakes, rivers and underground reservoirs. It is obvious that only a negligible portion of this remaining water is consumable.

Man's effort to convert impure/salty water to desalinated water has been extended throughout his long history. About 2400 years ago, Aristotle announced the possibility of this conversion by evaporation and distillation.

This water is capable of dissolving various kinds of salt and mineral, amount of which varies in different regions, thus the salt amount of water differs depending on the place due to the quantity and kind of salt and minerals in the soil. According to the World Health Organization, the standard amount of dissolved solids in potable water is 500 PPM, in which the chloride ion must not exceed 250 PPM. However, in some arid regions, water with 3000-5000 PPM of impurity is currently used as potable water.



200 years ago, developments in marine industry led to construction of simple versions of evaporation desalination units. The primitive commercial desalination units were constructed about 100 years ago. After the discovery of oil in the Middle East in the 1930's, a few small desalination units were installed in that region.

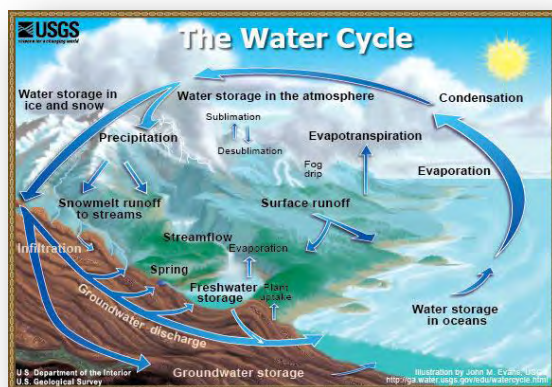
The oil industry developments in Persian Gulf increased the world growth of desalination industry in the 1940's. In these years the majority of desalination plants were fabricated by countries which did not require desalinated water in their own countries. In the 1950's the world's largest desalination plant of that time, with capacity of 2200 m³/day came into service.

The world's total desalinated water product in those days is estimated to be about 10,000 m³/day.

In 1960 the total capacity of desalination plants in the world reached 38000 m³/day. In 1970 it came up to 1,000,000 m³/day and in 1980 this amount exceeded 7,300,000m³/day. This increase was due to the rapid growth of industrial demand, which led to the universal expansion of desalination industry and caused the rush of money from consumer countries towards developed countries that produced desalination plants.

In 1960, a desalination unit using reverse Osmosis process method

A suitable method for desalination of brackish waters such as wells and rivers-was developed. In recent years many efforts have been made to utilize RO desalination process for desalination of sea water, which has not achieved results better than evaporation methods and the use of waste heat from optimality, and water quality point of view.



In 1980, about 75% of desalinated water was produced by evaporation methods, 20% by Reverse Osmosis, 4.7% by electro dialyzing method and 0.3% by other methods. Nowadays desalinated water is more expensive than oil, and therefore the growth of desalination technology should be considered as a strategic industry. Having the MED type design and manufacturing Know-how, **FAN NIROO Co.** is delighted to solve the drinking and industrial water problems.

MED Method

In the MED (Multi Effect Desalination) method, evaporation and distillation are performed under vacuum conditions.

The inlet water is spread over the effect tubes and, part of it is evaporated by the steam passing through the tubes. The steam produced from the first effect of evaporation unit passes through demisters, and while increasing the purity degree up to the predetermined degree, enters the horizontal tubes in the next effect.



By showering inlet water over these tubes a portion of this water is evaporated while the flowing vapor inside the tubes is condensed.

The vapor produced enters the next effect, and the process will continue. The energy and water consumption is decreased considerably by increasing the number of evaporation effects, and therefore, desalinated water can be produced with the least amount of energy consumption. The maximum temperature of brine water in this method is 65°C

Preferences:

- Low energy consumption
- Low operation temperature
- Low corrosion and scale
- Low maintenance costs and high performance
- Simple operation
- Wide range of capacity variation (very large units up to 280,000m³/day can be manufactured in this method).
- High purity (low salinity) of product water making it suitable for various industrial and potable water demands.

Currently the world's largest desalination unit with the cheapest product water utilizes MED method equipped with the last technological developments and waste heat recovery method.