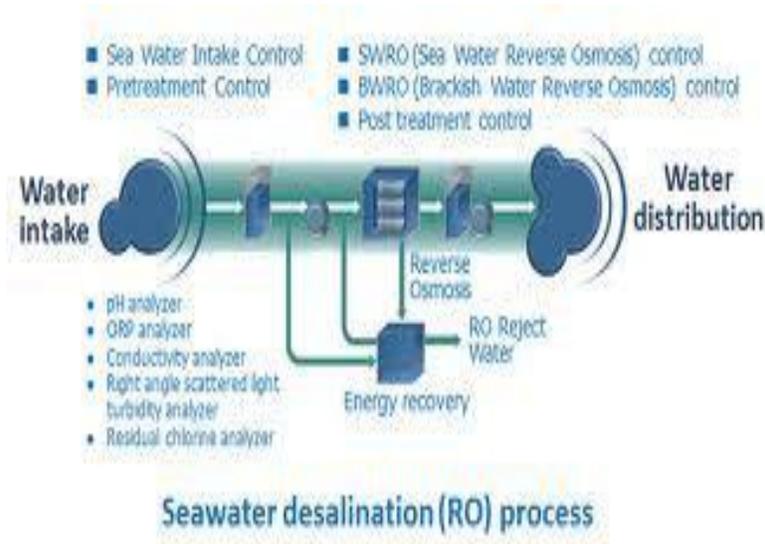


Sea water desalination: becoming a reality here



The technologies that can be used to make fresh water from sea water or partly salty brackish water have been used for a long time in locations where little fresh water exists (e.g. the Middle East). The processes employed are either distillation or so-called reverse osmosis, a technology where hydraulic pressure is used to push water through a non-porous membrane, which leaves the salts and other minerals behind. Both processes are quite costly for normal conditions in most of the United States, since installation costs are high and power requirements substantial.

While water costs in regions with plentiful water are as low as \$ 50 per acre-foot, sea water desalination can cost \$700 to 2000 per acre-foot (a common unit designating a volume of water one foot high covering an acre of ground). When desalination plants are built in conjunction with a power plant, water costs can be as low as \$ 500 per acre-foot. In Southern California, water costs frequently range from \$ 200 to \$ 300 or much more and the cost of reverse osmosis is coming down as technology improves and power costs decrease.. Brackish water desalination costs are in the range of \$ 300 to 500 per acre-foot and a number of such plants have or are being built in West Texas. These numbers show that while we will not see desalination in most parts of the country, the technology is very much in our future. Reliability is also issue, of course, as water starts to become more scarce. And in some parts of California, water costs are getting really high.

This became clear to me when reading a recent article in the New York Times describing a billion dollar sea water desalination plant for which ground was recently broken in Carlsbad, California. The town is now paying as much as \$1000 per acre-foot to the Metropolitan Water District of Southern California(!). So, not only will the new plant be somewhat competitive with other sources, but citizens will be protected against likely higher future costs of water coming from Northern California, always a contentious issue in that state. The plant is being financed with municipal bonds, while a private developer is putting up \$ 189MM in equity.

Proposals for more than a dozen of such plants are being developed in Southern California.

Source: <http://chemengineeringposts.wordpress.com/2013/03/03/sea-water-desalination-becoming-a-reality-here/>