May 2013

CryoDesalination – Saltwater desalination by freezing

'If we fail to salvage our planet's air and water, nothing else matters.'

Our planet is experiencing a severe water crisis. About one out of every six people living today - nearly a billion people - do not have adequate access to water. Water is scarce in numerous regions of the world and many suffer from perpetual shortages. According to estimates, fifteen years from now, two-thirds of the world will be water deprived.

The CryoDesalination process produces fresh water by desalinating seawater, brackish water, or any water containing minerals. It achieves this transformation by using a radically novel freezing process using the naturally occurring phenomenon that ice formed from saltwater is salt free.

CryoDesalination has lower investment and operating costs and greater environmental friendliness than any existing thermal or membrane desalination process. It is not burdened by the capacity limitations that restrain these systems. Unlike other processes that require replication of multiple units to achieve large capacities, this process can be scaled-up. Thus, the CryoDesalination process has a huge economic advantage because economies of scale yield major reductions in capital investment. With CryoDesalination, the larger the plant, the smaller the unit cost. At the same time, the simplicity of the process also permits manufacture of small units, looking much like air conditioners. CryoDesalination can thus bring relief to a multiplicity of needs – at various capacity levels.

Immediate goals involve optimisation and resolving some remaining technical details, testing of saline water effluents from different locations, and then making a massive effort to have the process implemented. This involves different groups for various capacity levels:

- Small units, with capacity ranges of 1,000 to 2,000 gallons per day (1 GPM) are sufficient to provide daily water requirements for 10 to 20 people. These can be manufactured in small shops, even in developing countries, from readily available mass-produced parts. These shops will provide employment and improve local conditions. Help from local governments or non-governmental organisations will be needed to get started.

- Intermediate sized units of 150,000 to 300,000 gallons per day (100-200 GPM) will be manufactured on skids to be trucked to sites. They will require sophisticated manufacturing shops. These units will be in demand for disaster relief, small localities, farms, and industry in general. The oil and gas industry in particular could use such units to solve the environmental problems of disposing of the huge quantities of water that are by-products of the industry.

Contd./…

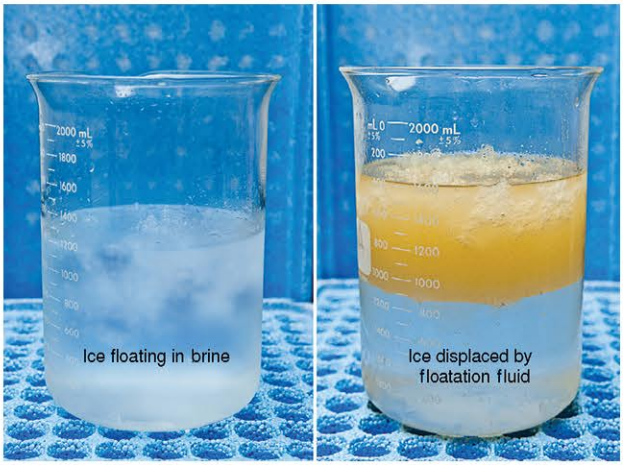
- Larger size water works, starting from 10 million gallons per day upwards (7,000 GPM+) require city or regional commitments and are intended for municipal, agricultural, and industrial use. A city of about 100,000 inhabitants may require a plant of 10-15 million gallons per day.

The CryoDesalination team will help spread the word about the process and will sustain CryoDesalination on its mission of providing water to the millions who are in need.

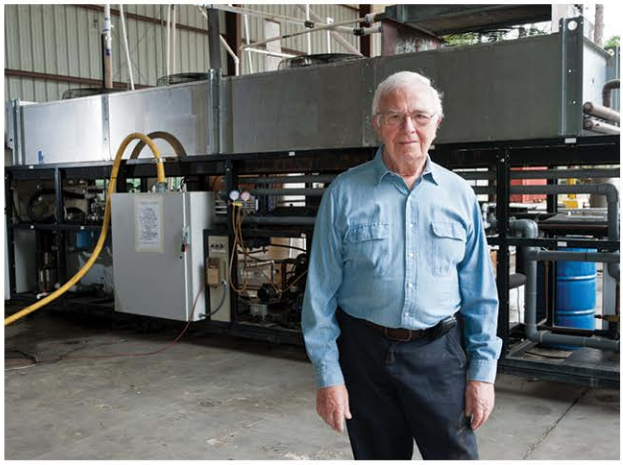
www.cryodesalination.com

THE ST ANDREWS PRIZE FOR THE ENVIRONMENT

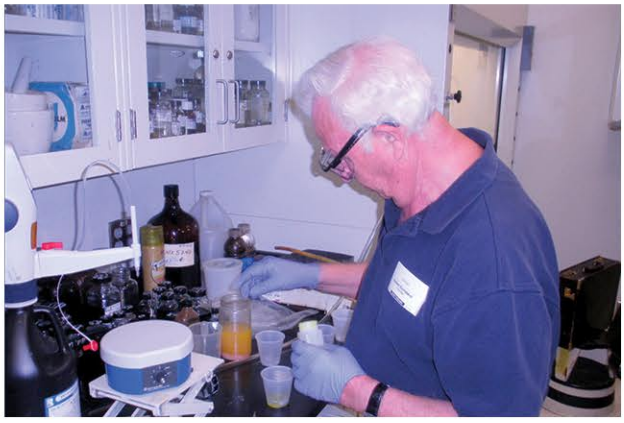
CryoDesalination - Saltwater desalination by freezing *May 2013*



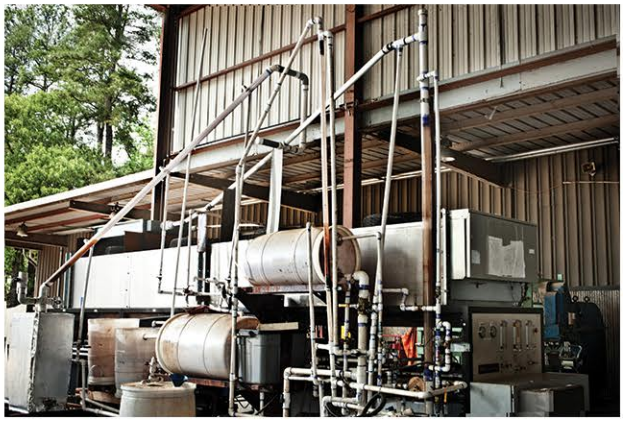
A novel ice harvesting technique based on floatation



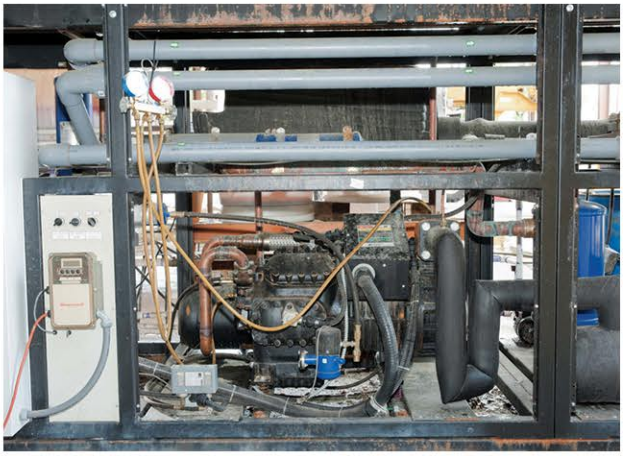
Norbert Buchsbaum, project founder and retired chemical engineer in front of a refrigeration unit



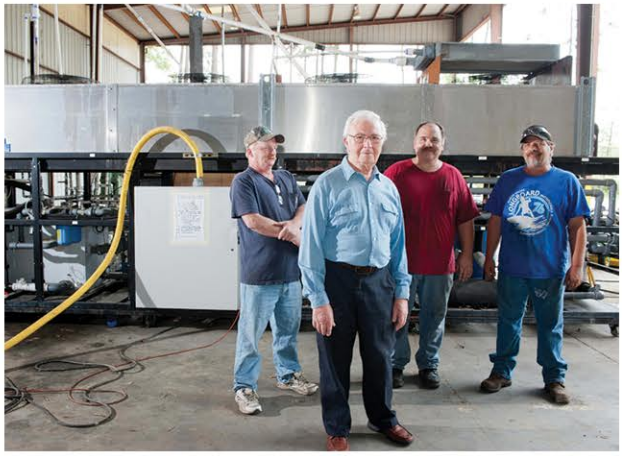
Working in the analytical laboratory



The rear of the pilot plant with different types of experimental test separation equipment



The compressor



Norbert Buchsbaum and the team