



Life Time Achievement Award

for
Desalination & Water Reuse



Conferred on

Dr C H Krishnamurthi Rao
Chairman

Dr. Rao Holdings Pte Ltd, Singapore
Chemfab TEAM Group, Chennai

on March 10, 2010 by

Indian Desalination Association



INDIAN DESALINATION ASSOCIATION

(Affiliate of International Desalination Association)

Lifetime Achievement Award 2010

Dr.C.H.Krishnamurthi Rao, a Mechanical Engineering graduate of the University of Madras has obtained his doctorate from BITS, Pilani on Technology Management from Industries'. He became an entrepreneur in 1967, after initial shop floor executive experience and by establishing Chemfab at Ambattur, Chennai. In 1977, he commissioned Titanium Equipment and Anode Manufacturing Co.Ltd.(TEAM)heralding the manufacture of energy efficient coated titanium anodes for chlor-alkali industries.

His tryst with purification of water started in late eighties as he established the 50,000 LPD seawater reverse osmosis demonstration plant at Marina Beach, Chennai and later established a number of brackish water plants across the state of Tamil Nadu to mitigate the problems of rural and remote areas under National Drinking Water Program. Being innovative and proactive he ventured into the development of Hollow Fiber Ultra-filtration Membrane (HFUM) and demonstrated the superiority of HFUM at Madras Refineries Limited for a zero discharge effluent scheme in 2002. He founded Membrane Hitec, a one stop shop for desalination for a variety of UF membranes for separation applications including silica removal for boiler feed water and also Membrane Research Technology (MRT) at Singapore.

He is the founder member of Indian Desalination Association (InDA) and the pioneer in showing desalination application in the country by demonstrating the technical feasibility of drinking water through membrane desalination for quenching the thirst of the common man. He is presently Chairman of all the four of his companies and also Fellow Member of Institute of Engineers (IE) & National Academy of Engineers (NAE).

In view of his contributions to the integration of Desalination as a societal solution for safe drinking water, Indian Desalination Association takes pride in Conferring the

Life Time Achievement Award for Desalination & Water Reuse to

Dr. C.H.KRISHNAMURTHI RAO

on this day, March 10, 2010

President

Indian Desalination Association

CHAIRMAN'S SPEECH AT THE InDA'S LIFETIME ACHIEVEMENT AWARD FUNCTION ON 10.03.2010



Ladies and Gentlemen,

Good morning,

Having lived many decades in Chennai, my mind has been working on getting safe potable water for the people.

Every year when monsoon fails, officials and Government agencies find it very difficult to augment the dire need.

Water is not available either for love or money. There have been cases when major industries had to cut down production for want of water.

“Managing Water seems more difficult than managing a war”.

From a corporate social responsibility angle, we searched and found Sea water desalination should be the best solution for this but never ending problem.

A quarter century ago, with the support of State Metro, I designed, fabricated and installed a 50,000 litre per day sea water desal plant, at our own cost, on the Marina beach, Chennai.

This was a demonstration cum proving cum production plant. This path breaking ambitious project of Team was a grand success.

The quality of the water surpassed the norms of W.H.O, validated by Anna university Biotech Lab, King Institute, and SISIR Lab in Singapore.

University, Railways and some commercial establishments used the water.

To my satisfaction, the entire fishermen community, living on the Marina beach, was using the desal water, through street tap dispenser, directly fed from our product storage tanks by gravity. They appreciated the quality and were gratified that their long standing drinking water problem had come to an end.

The demo plant was run for about 18 months and nearly a million people visited the plant. Every one's question was why no bigger plants?

Govt did not encourage our proposal for two “one MGD plants” in south and west of this coastal city.

We have been propagating, there is a technology available, with skilled manpower right in India, to produce potable water from the abundant sea water.

To continue the message, I founded Indian Desalination Association in late eighties, with a few hundred interested people. It has grown many-fold, over the years, with thousands of academicians, engineers and technicians, and is now InDA globally affiliated to the International Desalination Association. Later, I was the first Indian to be elected as the Director of International Desalination Association and served the Board for one term.

Prime Minister Late Shri Rajiv Gandhi set in motion, The National Technology Mission for Drinking Water, which was looking for an appropriate technology. The success of our demo plant caught their attention. Our demo plant was chosen as a model and around 40 plants were awarded to be installed in the State and Lakshadweep islands.

Meantime, TN govt ordered dismantling of the demo plant. We shifted it to TEAM and thus TEAM Water was born. Today, TEAM Water is a brand to reckon with, enjoying customers' trust and a major market share of drinking water in this region, resulting in Alkaline Water plant in Singapore with Healthier Choice Accreditation given by the Singapore Health Promotion Board.

Later, as Grace would have it, TN govt awarded six desal plants in the city including one in the same location from where our demo plant was shifted. But this time we were paid, not only for the cost of the plant, as also for the Operation and Maintenance.

I continued my venture into Singapore with an idea to develop Ultra-filtration hollow fiber membranes, under the guidance of Prof. Sourirajan.

The Singapore Govt owned National Science and Technology Board Singapore (NSTB),



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after due diligence of my project proposal, within six weeks, approved my project, with a grant - repeat grant - of two million Singapore dollars. I spent three Million. In three years, with a handful of Scientists, the deliverable was achieved to the satisfaction of NSTB.

I got our IPR registered in Singapore. The Govt subsidized IPR cost. This type of care, nurturing and encouraging Scientists and Innovators, is a part of Singapore Government's tradition. As a Singapore citizen and Person of Indian Origin, I enjoy the benefit of both countries for the enterprise.

Manufacturing of the membrane was undertaken in our Chennai factory. Today we are one of the largest spinners of hollow fiber membranes including multi-bores, single module of 100 sq meters membrane area that drastically reduces foot print and capital cost.

You can see this in the exhibition of this Conference.

As a pioneer in introduction of U.F., into India, the very first Indian sewage water recycle plant, replacing the conventional chemical process, was piloted by us, with the Indian spun UF modules, at our cost at CPCL (Chennai Petroleum Corporation Limited) for nearly 18 months.

Having fully satisfied themselves on technical feasibility and commercial viability and saving of water by recycling, CPCL, placed a turn key nominated order for one MGD recycling plant. The permeate directly used in cooling tower, a part feed for RO with almost zero SDI. The plant was run by us for nine years and even today, after many years, it is still running perfectly.

From the same customer, we won amidst international competition, re-membraning of KOCH and Norrit modules using Indian made membranes successfully, at a far lower cost.

Many OEMs use our hollow fiber modules in various application of water recycling, boiler feed water for silica removal, pre-treatment of sea water and many other applications.

As an awardee of Life Time Achievement for desalination and water reuse, I would like to suggest for Metros, a root for successful water management.

Detailed planning of rain water conservation.

- Increase reservoirs atleast 20 fold, duly inter-connected.
- All potable water distribution should only be either river or conserved rain water source, not on desalted sea water.
- Installing more modern membrane water factories, owned by government themselves
- Recruiting right Indian talents and duly paying their market values of package, thereby stopping brain drain as well create more employment.
- Encouraging majors like CPCL as they have rightly done, to have their own captive desal plants and also to take care of neighbours' need, through Metro.
- Lastly Build-Own-Operate (BOO) contracts need more care as no globally successfully plant operated one full cycle. Learn from U.S. Government's Tampa Bay Disaster story in Florida

Ladies and Gentlemen,

Here is a professional organization Indian Desalination Association with hundreds of Scientists, Academicians and Technicians with solid expertise, now led by BARC a great name, for their intellectual work, commitment and now in nuclear drinking water area too, for the same cause of social responsibility for the people.

My Team converted many lab scale (CSIR) technologies into successful commercial ventures as well as paying crores of rupees by royalties to National Research Development Corporation of India.

Every water plant in the middle-east, East and South-east has technicians trained by us This gives me great satisfaction.

InDA recognizing our team work on desalination and honouring me with a Life Time Achievement Award is heartening. I have no doubt this will boost my forays on Water Research and Innovations.

Ladies & Gentlemen,

With all humility, I thank Indian Desalination Association and accept this award which I dedicate to my team in India and Singapore and assure InDA of our continued efforts for the cause of better safe water for the people through membrane developments.

Thank you

