



## **THE INTERNATIONAL DESALINATION ASSOCIATION FELLOWSHIP AWARD PROGRAM**

### ***Background***

In 2008, the International Desalination Association launched its Fellowship Award Program to facilitate the advancement of global expertise in desalination and water reuse through the exchange of talents, knowledge and skills. This program plays an important role in promoting education and fostering information exchange among industry professionals – two essential elements in the fulfillment of IDA's mission of supporting development of and promoting the use of desalination and desalination technology globally.

The IDA Fellowship Award provides recipients with an unprecedented opportunity to spend time with a host agency – a high-profile public utility or well-respected research organization – working alongside colleagues in the desalination industry, gaining insights into the host agency's operations, strategies and policies, and ultimately exchanging ideas with the global desalination community following this attachment. Through this process, the IDA Fellow becomes a conduit for knowledge transfer when he or she shares their learning with their own organization, as well as with other fellow professionals through IDA's publications or presentations at major IDA events.

### ***Program Objective***

The objective of the IDA Fellowship Award is to facilitate the advancement of global expertise on desalination and water reuse by fostering more interactions and sharing of non-confidential knowledge and non-patented technologies and processes in the desalination and water reuse industry. The IDA Fellowship Award enables the IDA Fellow to acquire new in-depth knowledge through an attachment with a host agency – a high profile, well-respected public utility or research organization known for its leadership in desalination and desalination technologies. The host agency also benefits from the IDA Fellow's experience, knowledge and exposure to best practices, which are shared with the support of the Fellow's own organization.

The IDA Fellowship Award program consists of two parts – a monetary award and an attachment to work on a specific project. IDA confers a monetary award up to 10,000 USD, which is funded through the IDA Foundation. This amount is utilized to cover the airfare and accommodations of the Fellow. The host agencies also agree to cover the Fellow's in-country living expenses while he/she is on attachment with the hosts. The hosting agencies reserve the right to draft the specifics of the attachment and the level of monetary commitment. The IDA

Fellow must also demonstrate the ability to secure additional sources of funding to allow him/her to complete the attachment.

The attachment, provided by the host agencies, spans several weeks, during which time the Fellow works on a project (e.g., operational project, research and development) that is outlined as part of the application procedure.

### ***Host agencies***

The Water Corporation and Murdoch University in Western Australia are joint host agencies for IDA's 2010 Fellowship Award.

The Corporation is at the forefront of advances in seawater desalination applications for potable water supply within Australia having undergone a rapid expansion of the use of RO technology in the past few years. Murdoch University is research intensive with strong links to industry and is set to become the focal point of desalination research in Australia by hosting the planned new National Centre of Excellence in Desalination.

In recent years, a telling reduction in rainfall in Australia has led to widespread interest in recycling and in the large scale adoption of membrane technologies, in the form of reverse osmosis filtration, to obtain drinking water. Thermal/evaporation processes are also in common use.

The host agencies firmly recognize that the production of potable water is one of the most important global issues of the 21<sup>st</sup> century, and that the market for large scale desalination is growing rapidly, particularly in Australia.

### **Water Corporation**

The Corporation was established in 1996 and is the principal supplier of water and wastewater services in Western Australia, an area of some 2.5 million square kilometers, much of it arid. It supplies drinking water to almost two million customers and wastewater and drainage services to hundreds of thousands of homes, businesses and farms as well as bulk water to farms for irrigation.

Owned by the Western Australian Government, the Corporation directly employs about 2650 people full time and manages infrastructure valued at almost \$12 billion, with a current annual works program costing \$1.1 billion.

It has become a leader in water supply planning in recent years with a strategy of 'Climate Resilience' in response to the onset of a drying climate. This has produced initiatives such as Australia's first large scale seawater desalination plant for public supply and a major trial of groundwater replenishment using highly treated wastewater. The Corporation also has a 'Water Forever' program to plan sustainable water supplies 50 years ahead.

The desalination plant has attracted a lot of interest among the world's water industry and media and has won numerous national and international awards including International Desalination Plant of the Year in 2007.

A second large scale seawater desalination plant began construction in July, 2009. Desalination processes have also been developed for treatment of remote, poor quality groundwater sources and for recycling highly treated wastewater for industry.

The push into desalination was supported by the Corporation's establishment of an internal Centre of Excellence in Desalination in 2000 in recognition of the important and rapidly growing role that desalination for potable water supplies was clearly to play in coming years. Its role was initially to study possible applications of advanced desalination processes in remote parts of Western Australia.

### Murdoch University

The Centre for Water Desalination Research at Murdoch University aims to increase the capacity for desalination research in Western Australia, support commercial desalination R&D, and develop a coordination role for desalination R&D by bringing key Murdoch staff together under one umbrella to collaborate.

Murdoch's Desalination Research Centre is led by Professor Richard Pashley, a preeminent colloidal chemist with an international research reputation in the area of the physical chemistry of water and salt solutions. Professor Pashley's research focuses on exploring the fundamental properties of water and innovative and novel approaches to reverse osmosis membrane filtration, thermal desalination and electrodialysis.

Murdoch's solutions chemical group's research strengths lie in chemical water analysis and knowledge of salts in water and their determination of solution properties, while the nanotechnology group is exploring novel porous materials for membrane development. Murdoch also has a long history of expertise in renewable energy research, environmental technologies and water management in remote and isolated communities.

### ***Future hosts:***

Agencies interested in becoming subsequent hosts are invited to register their interest with the IDA Secretary General, with the final decision to be made by the IDA Fellowship Committee.

### ***Eligibility***

Individual applicants for the 2010 Fellowship Award must be IDA members. In addition, applicants must possess 8-10 years of working experience in the field of desalination and/or water reuse.

Applicants should express an interest in emphasis on research or utility operations so that the most appropriate attachment can be planned with Murdoch University and the Water Corporation. The successful Fellow's background will also be considered in this process.

The host agencies will work with the successful Fellow to organize placement with a suitable venture and to identify sites of interest so that the best use can be made of opportunities presented. There are a number of desalination sites that would be of potential interest to the

Fellow, but we ask that he or she lets us know where their particular interests lie. Only sites within Western Australia will be considered for this attachment.

Applicants should also advise of any potential commercial sensitivity that may arise for them with this attachment so that this matter can be considered in the selection process and attachment planning. The host agencies will attempt to accommodate any perceived conflict of interest.

After completion of the attachment, the host agencies will offer the Fellow specific training in one of a range of topics, guided by areas of interest advised by the Fellow.

### ***Application Procedure***

Before submitting the application criteria and supporting papers, the applicant should ensure that he/she meets all eligibility and submittal requirements specified. It is important that directions are followed carefully and that all appropriate sections of the application are completed. Applications that do not adhere to requirements will be disqualified.

The following items constitute a complete application package and must be submitted together.

- 1) **Application Form** – single copy, signature required
- 2) **Resume/Curriculum Vitae** – single copy
- 3) **Fellow's Proposal** – One copy, not to exceed five pages, double-spaced. This statement should provide an outline of the candidate's objective for the attachment, specific areas of interest with the host agencies, the applicant's perspective of why he/she should be chosen for the Fellowship, and how he/she and his/her organization would benefit from the award. This statement should correlate the applicant's educational training and career goals to the purpose of the IDA Fellowship. Selection criteria outlined below should be kept in mind as this statement is prepared.
- 4) **Two Letters of Recommendation** by the applicant's advisors, employer, instructors, or others well acquainted with the applicant's work and personal character. Letters should address how the person making the recommendation sees that the applicant meets the goals of the Fellowship. Letters must be submitted along with the forms provided with the application. The recommendations should be sealed in an envelope, signed across the seal by the recommender, and returned directly to the applicant for inclusion with the application. Applications without both recommendations will not be considered.
- 5) **Oral Interview** – Finalists may expect to be interviewed by the Selection Committee.

**Important Dates:**

Application Deadline	April 15, 2010
Announcement of IDA Fellow	May 1, 2010
Commencement of Award	The commencement date of the attachment is dependent on the specific project on which the IDA Fellow will work. The earliest commencement date is June 2010, and a specific timetable will be provided once the details of the project have been confirmed.

Mail a completed application form, required documents and supporting materials in one packet to:

Ms. Patricia Burke  
Secretary General  
International Desalination Association  
P. O. Box 387  
Topsfield, MA USA 01983  
Tel: 978-887-0410  
Fax: 978-887-0411

For electronic submissions, please e-mail the entire package to: [npagels@idadesal.org](mailto:npagels@idadesal.org)

***Selection Criteria and Process***

Selection criteria for the Fellowship Program include professional achievements, relevant experience in the field of desalination and water reuse, and the potential to make a significant contribution to desalination and water reuse in particular, and to the field of water and waste water in general.

Applicants will be evaluated based on their experience (as it relates to the host agencies) in the field of desalination and water reuse, their references, and the benefits of the attachment to the applicant, his/her utility or company, and to the hosts.

The Fellowship Committee will review and evaluate all eligible Fellowship applications and will make the final selection. The Committee is comprised of the following members:

- IDA President
- IDA Secretary General
- Chairman and Vice-Chairman of IDA Foundation
- Two members of IDA Board of Directors
- One general member of IDA
- Executives of the host agencies

Specific selection criteria include:

- Above average professional achievements

- Relevant experience in the field of desalination and water reuse
- Responsible career goals for advancement in the chosen field
- Potential to make a significant contribution to desalination and water reuse in particular, and to the field of water and waste water in general
- Benefits of the attachment to the applicant, his/her utility or company, and the hosts
- Intent to remain connected to the desalination and water-reuse industry through future work

To ensure a fair and objective review process, it is the policy of the IDA not to comment on the deliberations of the committee. Thus, the Committee is unable to provide written or oral evaluations of applications after the decisions are made. All applications and supporting materials become the property of the IDA and, as such, cannot be returned. By submitting an application, the applicant accepts these conditions as stated.

Immediate relatives of the IDA's Board of Directors, IDA's staff or that of Water Corporation and Murdoch University, and members of the Fellowship Committee are not eligible as candidates for the Fellowship.

### ***Attachment Program and Deliverables***

The specifics of the attachment program shall be determined by the host agencies. The acceptance of a Fellowship requires fulfillment of the following deliverables:

- The IDA will undergo a short period of familiarization to learn and understand the host agencies' work.
- For the remainder of the attachment, the Fellow is expected to lead a working project (be it an applied R&D project, an operational project, etc.) at the host agencies, depending on the area of expertise of the IDA Fellow.
- The scope of the project shall be determined after discussions between the host agencies and the Fellow, but it must be able to benefit the organization where the Fellow originates. The host agencies will assign a senior officer, preferably at Director-level or above, to mentor and provide guidance to the Fellow throughout his program.
- The Fellow shall also submit an interim proposal to the IDA Secretary General on the proposed project which he/she plans to undertake with the host agencies.
- The Fellow shall present a final report of his/her project to the host agencies as well as a summary of his/her experience and findings to the IDA Board upon completion of the attachment.
- The Fellow is expected to share the outcomes of his/her project and the key learning points of his/her program at an appropriate IDA event.

The proposed program for this attachment in Western Australia will commence based on the specific project on which the IDA Fellow will work but not earlier than June 2010 and will broadly consist of:

Week 1: Introductions and orientation; visits to sites of interest.

Following weeks: Attachment activities including provision of feedback and seminar

Final week: Presentations of learnings and farewells.

A full program will be prepared by the host agencies in conjunction with the 2010 Fellow following his/her selection.

### ***Additional Information***

Please contact Nancy Pagels at IDA by phone at 978-887-0410 or by email at [npagels@idadesal.org](mailto:npagels@idadesal.org). We welcome inquiries from potential applicants as well as organizations interested in becoming a host agency for the program.

### **Desalination sites of interest in Western Australia**

#### Perth Seawater Desalination plant:

Australia's first plant to provide desalinated seawater for large scale public consumption was completed just south of Perth in late 2006 to produce up to 45 gigalitres of potable water per year. It was then the largest plant of its kind outside the Middle East. Construction was undertaken by an Alliance between the Corporation and Degremont, the French based world operator in water treatment and desalination with Multiplex, a large Australian construction company. Degremont and the Corporation operate the plant.

The reverse osmosis plant was subjected to the most rigorous environmental approval procedures ever imposed on a Corporation project. The State's Environmental Protection Authority set stringent criteria for its operation which is subject to the most intensive ocean monitoring program of any desalination plant in the world. Additionally, the energy requirements of the plant are purchased from a wind farm north of Perth.

Located at Kwinana, 40 kilometres south of Perth, it became the city's biggest single water source, at its inception providing some 17 per cent of its water needs. The plant's timely introduction allowed Perth to avoid drastic garden watering bans during the very dry 2006-07 summer.

#### Southern Seawater Desalination plant

The Corporation is currently constructing a second seawater desalination plant on the coast about 160 kilometres south of Perth with a slightly higher annual output than the Perth plant but with the potential to double this to about 100 gigalitres.

Construction is being undertaken by an Alliance between the Corporation and several companies including the Spanish based Tecnicas Reunidas and Valoriza Aqua that have extensive international desalination experience.

Environmental considerations were also a major factor in the design of this \$A955 million plant to be commissioned in 2011. When operational, almost one third of Perth's drinking water will be supplied from the two climate independent desalination plants.

The Water Corporation intends purchasing the energy requirements and associated environmental credits for the southern plant from renewable energy generators using a combination of traditional and currently commercially unproven renewable technologies, possibly wave power or innovative biomass projects.

A pilot plant was constructed at the site as a temporary, small scale version of the future plant to assist in understanding the pre-treatment processes, chemicals and components that will be required. Site works for the main plant began in July, 2009.

#### Kwinana Water Reclamation plant

The Kwinana Water Reclamation plant, close to the Perth Seawater Desalination plant, was commissioned in 2004 and processes about 24 million litres per day of treated wastewater from the adjacent Woodman Point Wastewater Treatment Plant to produce high-quality, industrial-grade water for several local industries. At its commissioning it was the largest plant of its kind in Australia.

The plant makes a significant contribution to the State Government's target of achieving 20 per cent statewide wastewater re-use by 2012. One of its most notable achievements is that it has reduced demand for scheme and bore water by six billion litres per year, which is equivalent to about two per cent of Perth's total unrestricted drinking water use.

The Water Corporation proposes to expand this plant to ten gigalitres a year by 2010, subject to sufficient demand from industry.

#### Groundwater Replenishment trial

The Water Corporation is undertaking a three year trial of groundwater replenishment in Perth, beginning in 2009. Its purpose is to build knowledge of the technical, health, environmental and social issues associated with groundwater replenishment and to collect sufficient information to build community and regulator confidence that groundwater replenishment is a safe, viable and sustainable drinking water source option.

The Water Corporation has spent more than three years on research, monitoring and design to ensure the trial runs smoothly and safely. The overall project involves a considerable degree of community involvement in decision making. The trial will look in detail at removal of chemicals and microbes through the treatment process - a multi-barrier approach comprising membrane filtration, reverse osmosis and UV disinfection - and at the effects the treated water's injection has on the aquifer, as well as the effect of the aquifer on the quality of the water.

A small advanced water treatment plant is being constructed to take treated wastewater from an adjacent large treatment plant and treat it again to drinking water quality. About 1.5 gigalitres will

then be injected annually into an aquifer at a depth of 120-220 metres. Water will later be extracted at some distance from the point of injection and tested to determine if there are any changes to the water in the aquifer.

Groundwater replenishment has huge potential for water supply in Perth, estimated to be capable of providing around 35 gegalitres of water per year for public water supply by 2030 and in the longer term, up to 115 gegalitres.

#### Remote area process for poor quality groundwater

Small but significant is a 'world's first' desalination plant developed recently to greatly improve the water supply for the small remote community at Yalgoo, more than 700 kilometres north east of Perth. The technology has the potential to open up high quality water sources for other remote areas in Western Australia.

Opened in July, 2007, with a capacity to process up to 300 kilolitres of high quality water per day, the plant was planned as a possible solution to groundwater quality problems that have faced a number of inland settlements in Western Australia and elsewhere in Australia.

The plant's high efficiency reverse osmosis (HERO) process is an adaptation of technology patented in the US to supply ultra-pure water to the electronics industry. Yalgoo is an historic town that experienced a gold rush in 1892 but is now an administrative centre for an area that survives on sheep farming and mining. Its brackish groundwater source contains naturally occurring impurities including nitrates and silica which limits the ability of a conventional reverse osmosis plant to run at high recoveries due to scaling.

Similar groundwater source problems in other regional settlements have for many years plagued planners' efforts to improve water supplies. Some sources have the additional problem of low yields.

The HERO plant achieved high water recovery rates - up to 95 per cent compared with about 60 per cent for conventional reverse osmosis methods - while keeping silica in solution to prevent scaling and removing other impurities.

An added advantage is that the HERO process produces just one tenth of conventional plants' concentrated brine residue for disposal, thus eliminating the need to construct big evaporation ponds.

# IDA FELLOWSHIP AWARD 2010

## APPLICATION FORM

Applications must be in English and submitted before April 15, 2010.

For more details refer to the application procedure.

### I. TYPE OF IDA MEMBERSHIP

Please indicate ONE of the following:

- Individual, proceed to section II  
 Institution or organization, proceed to section III

### II. APPLICANT'S DETAILS

Name of Applicant

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Applicant's Title and/or Profession

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Affiliation/Place of Employment

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Address

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Contact Information

---

Email Address

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### III. APPLICANT'S DATA FOR IDA MEMBER INSTITUTION/ ORGANIZATION

Name of Applicant

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Name of IDA Member Organization

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Address

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Phone: \_\_\_\_\_

Fax: \_\_\_\_\_

Web Address:

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Email Address:

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Additional Information  
(Government/Non-governmental/Research Institute, etc.)

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### IV. OTHER REQUIREMENTS

Please refer to the Application Procedures for details

- √ Resume/CV  
√ Fellowship Proposal  
√ Two (2) Letters of Recommendation

**Applications must reach the following address by April 15, 2010**

**Ms. Patricia Burke**  
Secretary General  
International Desalination Association  
P.O. Box 387  
Topsfield, MA 01983  
Tel : 978-887-0410  
Fax: 978-887-0411

**For electronic submissions, please email to:**  
npagels@idadesal.org