Desalination

From theory to practice

People, Papers, Publications

Gulf Europe
WSTA EDS

Miriam Balaban
EDS Secretary General
Europe and the Gulf Region

The collaboration between our regions has had significant impact on the development of desalination based on innovation and upscaling opportunities. Over the years research and development have led to the significant application of desalination technology and industry to ensure the water security in our regions and provided information and partnerships to other regions of the world.

Data on publications, people and plants and processes will be presented.
CUMULATIVE INSTALLED DESALINATION CAPACITY, 2015

**KUWAIT**
2.6 M m³/d

**OMAN**
1.1 M m³/d

**QATAR**
1.8 M m³/d

**SAUDI ARABIA**
11.4 M m³/d

**UAE**
8.9 M m³/d

Source: GWI DesalData, 2016
Source: GWI DesalData, 2016

Miriam Balaban, Founder, Editor-in-Chief 1966–2010
<table>
<thead>
<tr>
<th>Time Period</th>
<th>Papers</th>
<th>Countries</th>
</tr>
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<tbody>
<tr>
<td>1966–1975</td>
<td>539</td>
<td>20</td>
</tr>
<tr>
<td>1976–1985</td>
<td>1300</td>
<td>46</td>
</tr>
<tr>
<td>1986–1995</td>
<td>1277</td>
<td>56</td>
</tr>
<tr>
<td>1996–2005</td>
<td>3048</td>
<td>75</td>
</tr>
<tr>
<td>2006–2015</td>
<td>6313</td>
<td>94</td>
</tr>
<tr>
<td>1966–2015</td>
<td>12,478</td>
<td>118</td>
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</table>

**Desalination (49 years)**

- **12,478 Articles**
- **118 Countries**

**GCC countries**

- Saudi Arabia: 266
- Kuwait: 214
- UAE: 192
- Bahrain: 43
- Oman: 43
- Qatar: 20
<table>
<thead>
<tr>
<th>Year</th>
<th>Papers</th>
<th>Countries</th>
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<tr>
<td>2009</td>
<td>503</td>
<td>60</td>
</tr>
<tr>
<td>2010</td>
<td>510</td>
<td>60</td>
</tr>
<tr>
<td>2011</td>
<td>564</td>
<td>49</td>
</tr>
<tr>
<td>2012</td>
<td>608</td>
<td>49</td>
</tr>
<tr>
<td>2013</td>
<td>919</td>
<td>54</td>
</tr>
<tr>
<td>2014</td>
<td>855</td>
<td>57</td>
</tr>
<tr>
<td>2015</td>
<td>1649</td>
<td>57</td>
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<tr>
<td>2016</td>
<td>2770</td>
<td>81</td>
</tr>
<tr>
<td>TOTAL</td>
<td>8209</td>
<td>91</td>
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</table>

Desalination and Water Treatment (2009-2016)  
8209 Articles (8 years)
HISTORY, EXPERIENCE AND ECONOMICS
OF WATER PRODUCTION IN KUWAIT*

M. H. ALI EL-SAIE

Ministry of Electricity and Water, Kuwait

INTRODUCTION

Kuwait had practically no potable water and was relying, between 1925–50, on a very limited supply of imported water from Shat Al-Arab, Iraq, by boat. In 1950, the Kuwait Oil Company supplied the city with 80,000 igpd.** H. H. The Amir of Kuwait ordered the first one million igpd submerged tube sea water distillation plant which produced water in 1953 and this was followed in 1955 by a similar plant of one million gallon capacity. Then in 1957, the first of four 1/2 million igpd flash type evaporators was commissioned. In 1960 another flash evaporation plant was commissioned which consists of two units each of one million igpd capacity. Five 1 million igpd plants are under construction and will be commissioned soon.
Working Party on Fresh Water from the Sea

Chairman Prof. Anthony Delyannis

1967, Athens, Greece
International conference on
Fresh Water from the Sea

Athens 1967  Amsterdam 1980
Dubrovnik 1970  Florence 1983
Heidelberg 1973  Cannes 1987
Alghero 1976  Kuwait 1989
Las Palmas 1978

50 years

Left to right: R.S. Silver, M. Balaban, K. Kraus, K. Fischbeck
Above: Zeus
A COMPOSITE TUBULAR ASSEMBLY FOR REVERSE OSMOSIS DESALINATION

SIDNEY LOEB

Department of Engineering, University of California, Los Angeles, Calif. (U.S.A.)

(Received December 6, 1965)

Energy production at the Dead Sea by pressure-retarded osmosis: challenge or chimera?

Sidney Loeb
The First Commercial Membrane Desalination Plant at Coalinga, CA, 1965

- This 5,000 GPD plant, dubbed “Raintree” produced drinking water from brackish water for the 5,000 residents of Coalinga CA (60 mi SW of Fresno). Sidney Loeb and Prof. J. W. McCutchan are shown on the left.
Desalination Directory – about 35,000 entries of those concerned with desalination and water treatment

Average per day
Visits 1,330
Hits 12,546

Total
Individuals 30,573
Organizations 4,439
Gulf 1378
256
IDEA International Congress on Desalination and Water Reuse, Bahrain, 1981

Plant visit to Jubail, Saudi Arabia
Kuwait water towers

Visiting Jubail, 1981