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IDA Academy Masterclass
IDA International Water Reuse and Recycling
Conference

October 11th–13th, 2021 | Rome, Italy

“Water Supply Resilience Planning,
Desalination and Reuse”

Monday, October 11th, 2021
(Venue location to be announced)

Dr. Gisela Kaiser & Mr. Nikolay Voutchkov, PE, BCEE
Water Globe Consultants, LLC



Inspiring Innovation and Excellence



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Outline

WATER SUPPLY RESILIENCE PLANNING – Dr. Gisela Kaiser

This half-day segment of the course provides an overview in how coastal cities can potentially plan for increased resilience against shocks and stresses such as drought and climate change, built on the case study of the Cape Town drought. It provides a broad framework of demand and supply and the building blocks for development of a strategy to securing a resilient water future.

Morning Session

08.00 – 09.00 Supply & Demand Planning

- Opportunities for conservation e.g. reduce water loss, manage water system optimally
- Opportunities to reduce demand
 - * Punitive tariff
 - * Physical flow control
 - * Pressure management
 - * Communication

09.00 – 10.00 Identifying and Evaluating Alternative Water Supply Sources

- High level feasibility of alternatives
 - * Tariff and affordability
 - * Resources required e.g. energy supply
- Assessing the economic impact

10.00 – 10.15 – Coffee Break



10.15 – 11.30 Development of Water Supply Resilience Strategy

- Whole of society approach
- Valuing water
- Building partnerships
- Sustainable use

11.30 – 12.00 Water Resilience Planning - Questions & Answers

12:00 – 13:00 Lunch Break



Dr. Gisela Kaiser is an accomplished management executive and professional civil engineer with 28 years' experience in the development and management of infrastructure projects and programs within various sectors including local government, industrial development, higher education and retail. As the City of Cape Town's Executive Director of Water & Waste utilities, she was the technical lead during the recent Cape Town drought. She joined Water Globe Consultants in June 2019 as Director of Sustainable Water Management.



DESALINATION AND WATER REUSE PLANNING – Mr. Nikolay Voutchkov

This half-day segment of the course provides an overview of the use of membrane desalination and water reuse as sources of alternative water supply in a diversified portfolio for resilient water supply. The course provides fundamentals of reverse osmosis technology and current trends in desalination and water reuse.

Afternoon Session

13.00 – 14.15 Reverse Osmosis Systems Fundamentals

- Basic Principles of Reverse Osmosis
 - * RO Process
 - * RO Membrane Structure and Types
- Key Performance and Design Parameters
 - * RO System Recovery
 - * Membrane Salt Rejection
 - * Membrane Flux
- RO System Components
 - * Selection of RO Membranes for Water Reuse
 - * Selection of RO Membranes for Seawater Desalination

14.15 – 15.15 Application of Reverse Osmosis in Water Reuse

- RO Systems for Water Reuse
 - * Overview of Water Reuse Status and Trends
 - * Reclaimed Water Production Costs
 - * Energy Use
 - * RO System Configurations for Performance and Energy Optimization



- Key Challenges and Solutions
 - * Control of RO Membrane Fouling
 - * Product Water Quality
 - * Energy Use

15.15 – 15.30 – Coffee Break

15.30 – 16.30 Application of Reverse Osmosis in Desalination

- RO Systems for Desalination
 - * Overview of Desalination Status and Trends
 - * Desalinated Water Production Costs
 - * Energy Use
 - * Novel RO System Configurations for Performance Optimization
- Main Challenges and Solutions
 - * Control of RO Membrane Fouling
 - * Product Water Quality
 - * Energy Use

16.30 – 17.00 Questions & Answers



Mr. Voutchkov has over 25 years of experience in the field of desalination and water reuse, and currently works as an independent technical advisor to public utilities implementing large desalination projects in Australia, USA, and the Middle East; and to private companies and investors involved in the development of advanced membrane technologies. He has extensive expertise with all phases of project delivery: from conceptual scoping, pilot testing and feasibility analysis; to front-end and detailed project design; permitting; contractor procurement; project construction and operations oversight/asset management.

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