



2CPD Points
CESA-1848-10/2023
+
Plant Site Visit

Advanced Water Treatment and Wastewater Reuse Technology Workshop

Date: 13th – 15th October 2021

Virtual on MS Teams /Zoom

Venue: Protea Hotel Fire and Ice! Menlyn, Pretoria.

Workshop Overview

The course provides an in-depth of water treatment technology, covering the full range of physical, chemical and biological processes available. Process selection is approached from first principals, based on the fundamental character of the effluent, but is grounded in practical and economic reality. The treatment and disposal of resulting wastes, especially solids, can be critical in process selection, and this issue is also addressed. The course introduces an introduction to the principals of the regeneration, reuse and recycle, and describes latest trends and developments. As such it equips both the individual engineer and the organization to act as the intelligent buyer in specifying plant and assessing the claims of vendors.

Process industries remain under pressure to reduce effluent volumes and pollutants. Effluent treatment technologies have accordingly increased their sophistication and industrial users are now expected to deploy dedicated units of high efficiency which reliably achieve targets, are robust in operation and generate minimal collateral waste.

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Our facilitators



Johannes Stephanus Meyer

Johannes has got 46 years of experience in the engineering sector, mainly Civil Engineering, but also had the privilege to be actively involved with Mechanical and Electrical Engineering. This includes Design, Project Supervision, Contract Management, Project Management, Quality Assurance, Consultancy and acting Senior Resident Engineer off all three of these Engineering components. I have a proven track record in Lean Team Leadership and successful Project execution. Experience and skills in concrete works, Wastewater treatment plants and Renewable Energy, to only mention a few. My skills are renewable energy, Design and Construction Supervision of Wastewater Treatment Works, Water Treatment Works' Reservoirs and big Concrete Structures, Construction Supervision on Mechanical and Electrical Contracts related to Wastewater Treatment Works, Water Treatment Works, Roads, Bridges, Concrete Structures and Buildings. Design/Supervision of Bulk water supply systems, Pump and Outfall sewer pipeline up to 1.7m dia. Preparation of Water, Sewer and Roads Master Plans I have worked for BS Bergman Consulting Engineers from 1984 – 1986 Van Wyke & Gerber Consulting Engineers as manager and resident engineer from 1987 – 1990



Rachigan Rajagopaul

Rachigan has got more than 30 years of experience working as a senior scientist at Umgeni Water one of the biggest water supplier in Kwazulu Natala province. He developed 40 in-service trainees and graduate engineers who now have critical roles in the water sector, e.g. Works Managers, Process Engineers, Technologists, Technicians, and in other entities, e.g., Eskom, Mondi, Municipalities. He is also qualified with a master's degree in chemical engineering (ECSA-201270127) and he's very passionate about developing a training program for chemical engineers, technicians to achieve ECSA registration proficiencies.

Educational qualifications:
Masters Degree in Technology (Chemical Engineering, 2002

Dear Delegate

This 3day course has been structured to provide the most relevant theory applicable in the field. This workshop will also look at the application of the theory in practice as well as the legislation and operational aspects which should be considered in the application of the theory.

It's also accredited with 2CPD points from Engineering Council of South Africa (ESCA). Please take note that, CESA was only involved in assessing the program and creating a reference number on behalf of ECSA. Our accreditation reference number is CESA-1848-10/2023 and there's a certificate on the last day of this workshop.

Course Objectives

Upon successful completion of this course, the delegates will be able to:

- Learn the purpose, principals of operation and limitations of different treatment technologies
- Understand how the nature of wastewater stream(s) informs plants and process selection.
- Understand the downstream and collateral impact of treatment technologies, especially ultimate disposal options.
- Understand concepts of regeneration and recycle systems.
- Prepare for practical problems and real-life projects.
- Learn the design principles and functional design and design basic for each advanced treatment technology.
- Undertake socio-technical analysis for the selection of suitable water and wastewater treatment technologies.
- Create a requirement analysis, system design and detailed design for an advanced water and wastewater treatment system which addresses practical water treatment process problems and select appropriate processes for target pollutants including emerging pollutants to meet specified water quality requirements.
- Provide recommendations of appropriate treatment processes for upgrading water and wastewater treatment efficiency.

Organizational Impact:

- Empower personnel with skills required to handle effluent treatment design, analysis and selection.
- Enable competence in new and revamped wastewater process projects.
- Ensure that the right effluent treatment technology is selected.
- Improve awareness when communicating with vendors and consultants.

Personal Impact:

- Improve skills and impact on the development of effluent treatment projects.
- Promote creativity in the selection and specification of new wastewater treatment plant.
- Enhance ability to troubleshoot and improve existing wastewater installations.
- Familiarize with the latest developments in effluent treatment technology.

Who Should Attend?

- Water Engineers.
- Process Engineers
- Water Boards.
- Banks
- CEO's
- Civil Engineers
- Project & Investment Managers
- Heads of Development & Sustainability
- Finance Directors Corporate Affairs Directors
- Municipality Water Heads, Department of Water Affairs, Water Boards
- Product Innovation and Development Managers
- Consulting Engineers , Chemical Engineers
- Water Scientists, Technologists /Technicians
- Water Management Advisors, Planning Managers/Engineers/ Project Managers

Course Outline

Day One

1. Introduction and Basics of Water & Wastewater Treatment Technology.

- Primary sources of process waste and effluent streams
- Measures of contamination; individual and collective
- Effluent treatment objectives and strategy
- Wastewater treatment as a separation process
- Review of the Basic Definitions of Water Quality in the Domestic and Industrial Sectors
- Detailed Explanation of Key Parameters in Water Chemistry and Their Interpretation
- Introduction to Water Microbiology
- Description of Water Treatment Techniques for Different Processes
- Reference to Combination of Water Treatment Techniques
- Rapid Mixing, Coagulation and Flocculation Technologies
- Continuous Monitoring of Water Quality & Process Optimization
- Cooling Water Treatment and Evaporative Cooling Systems

2. Mechanical, Physical & Chemical Treatment Processes.

- Solids in wastewater; Chemical Coagulants; Phosphate Removal; Chemical Clarification, Disinfection; Equipment used in Chlorine feeding.
- Describe what colloidal particles are and outline the problems associated with removing them from wastewater.
- List chemicals used as coagulants.
- Explain how the flocculation process works.

- Explain the function of a precipitant.
- Solid-liquid and liquid-liquid separations.
- Precipitation and flocculation.
- Chemical oxidation and reduction processes.
- Column processes – stripping and extraction.

3. Biological Primary Processes:

- Classifying and targeting biological processes.
- Aerobic processes – principles, selection and sizing.
- Anaerobic processes.
- Biological nitrogen and phosphorus removal.
- Troubleshooting bioprocesses

Day Two

1. Polishing processes and solid waste handling:

- Membrane processes – reverse osmosis, electro dialysis and desalination.
- Ion exchange and adsorption processes.
- Solid waste treatment and disposal.
- Treating and conditioning solid wastes for disposal.

2. Process selection and integration:

- Process selection “rules of thumb”
- Introduction to effluent system optimization
- Regenerate, reuse and recycle
- Emerging technologies, new concepts and future trends in effluent treatment

3. Design principles and functional design and design basic for each advanced treatment technology:

- Solar technology for wastewater treatment plant application
- EBNR – Enhanced Biological Nutrient Removal system configuration
- Bio gas harvesting from sludge digester technology
- Sludge to energy technology

Day Three

- Completion of the Remaining presentation for day 2
- Plant Site Visit

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Registration Form
Please write in BLOCK CAPITALS

Company & Delegates Details

Company name:

Business Address:

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City: Postal Code:

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Lethukuthula	info@alliancetc.co.za

Date: 13th - 15th October 2021

Virtual / Online

Venue: Protea Hotel Fire and Ice! Menlyn, Pretoria

Please tick in the box

Price per delegate R8 999.99

Virtual Price per R5 999.99

AUTHORISATION

Signatory must be authorized to sign on behalf of the contracting Organization

Name:

Position:

Email:

Signature:

Date:

THIS BOOKING FORM IS INVALID WITHOUT THE SIGNATURE

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