Our technical capacity and offer

WATER JOBS

www.oieau.org/cnfme
The International Office for Water is a market leader in professional training. The French National Training Center is managed by the International Office for Water.

Every year, 6000 people are trained either in our centers or in their own companies, both in France and overseas.

- 30 000 m² of technical and educational facilities, for all water fields (drinking water supplies, sanitation systems, etc)
- The International Office for Water is the only independent training center in France to employ 30 permanent trainers.

This enables the International Office for Water to accumulate a know-how at its partners’ disposal.

- Trainings programs
- On-site activities
  (Consulting, technical assistance and organizational activities)

The National Training Center has been developing a real expertise based on a smart correlation between training courses and onsite activities (consulting, technical assistance and organization).

Our methodology, know-how, developed during training, offer us a real advantage to ensure a professional approach in the field.

The feedback from our on-site activities helps us to continuously correct and adapt the content of our training.

To summarize, the training activity enhances the technical skills of our on-site activities and the experience from the field feeds the content of our training programs.
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For more than 20 years, IOWater has offered solutions through its technical assistance and its capacity-building programs.

OUR STAFF OF 30 PERMANENT TECHNICAL TRAINERS

The IOWater know-how comes from our 30 permanent trainers, each an expert in his own field. The advantage of them working together on the same site ensures a multidisciplinary approach, suited to your every need.

AN OBJECTIVE APPROACH

Our activities are renowned for our objective approach. Our independent statute of Non-Governmental Organisation and our financial and statutory independence, guarantees a full objectivity.

ADAPTING SOLUTIONS TO SUIT LOCAL CONDITIONS

Our experience has led us to the conclusion that we need to take into account the local context to provide adapted technical solutions or capacity-building programs.

Therefore, our trainers are accustomed to spontaneously adapting themselves to any context.
 OUR TRAINING CENTERS

30,000 m² of technical and educational facilities

18 training rooms with video and Wi-Fi access

20 technical and educational platforms for practice in real situations

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CONSULTING, TECHNICAL ASSISTANCE AND ORGANISATIONAL ACTIVITIES

For many years, International Office for Water has been giving technical assistance, consultancy services and organisational activities to a large number of customers. Our methodologies, our skills and capacities are renowned all over the world. The independence, objectivity, adaptability, listening and investment return are the agreed criteria of our well broad expertise.

These activities include the following: infrastructures and organisational audits, treatability/feasibility tests, pilot tests, services organisation, optimisations, products and materials tests, pedagogical engineering...

OUR SKILLS

PROJECT EVALUATION

Relying on their expert assessment and experience, with the help of qualitative means (meetings, interviews etc) and quantitative means (indicators, observations in situ, analysis of technical documents etc), our experts can offer their overall vision on improved management of the water resources.

AUDIT SUPPORT SYSTEMS AND DECISION AIDS

This type of audit is realised to identify several future research opportunities and embedded decision support. The audit is consistently based on a diagnosis of the current situation (technics, economy and institutions).

ASSISTANCE IN THE ELABORATION OF NATIONAL TECHNICAL REFERENCE DOCUMENTS IN FOREIGN COUNTRIES

International Office for Water is often involved in the redaction of national technical documents, allowing the implementation of good practices for further assignment in the water sector. These reference documents are used in respect of the local constraints and techniques and are adapted to the real life situation.

AUDIT, EXPERT ASSESSMENT, TECHNICAL ASSISTANCE

Our approach is based on the necessity to take into account the local constraints (technical, sociological, economic etc). The audit of services, facilities and plants are provided with full objectivity. International Office for Water is fully independent of all other businesses (products, devices, reagents, sales).

With more than 35 permanent members of staff, each of them are expert in his own field, the International Office for Water is well-known for its adaptability and high capacity:

- to assure a wide range of consulting, technical assistance and organisational activities;
- to bring our customers adapted technical and human resources.
SOME OF OUR REFERENCES

Drawing up of a requirements specification for the planning of the strategic development of ONID, in the Integrated Water Resources Management field.

- Identification of the ONID needs
- Creation of a report to analyse the results and make recommendations

Design of training programs for hydro-mechanical engineers and water management agents of the SONEB - with the support of the GIZ (German International Cooperation Agency for Development)

- Improving access to and supply of:
  - Drinking water
  - Sanitary infrastructures
- Training programs adapted to SONEB needs

Assistance to the ONEAD Commercial Department:

- Proposing a new organisation for the Customer Service Department
- Defining a methodology for updating the customer files and testing it in the field to assess its effectiveness

Audit to check the size of a future wastewater plant, with the support of the SIAAP:

- Knowledge of the context to propose the most adapted recommendations
- Proposition of technical advice

Long-term action: Elaboration and publication of the National Technical Baseline

- Distribution of the National Technical Baseline
- Training for staff and users
- Future project: rewriting a second version of NTB

Diagnosis of a wastewater treatment plant of the Soufflet malt-house:

- Equipment audit on site
- Tests and analysis to detect deficiencies on site

Assistance with the project of GRANDLYON (Lyon Urban Community):

- Setting up an Integrated Management System for the Improvement of Water Resources
- Capacities reinforcement training for public water agents
- Implementation of a network for water agents and development of a “water expertise” regional center
TRAINING ACTIVITY

The International Office for Water exports its training know-how on water and environmental professions all over the world.

Based on the initial technical specifications, the training courses are then made to measure. Thanks to their experience, the trainers are able to adapt the course objectives and content to the local expectations: regulations, infrastructures, skills level, languages, practices and customs of your establishment.

This approach is called “à la carte” training.

OUR SKILLS

ASSESSMENT AND TRAINING SERVICE

IOWater offers different assessments to check the benefits and efficiency of our training. In order to assess the progress made by the trainees, the following tools are implemented:

- Initial and final quiz (the same) to validate the knowledge acquisition during the session.
- An evaluation form to measure the participation of attendees, the overall level of understanding and for the trainer to make suggestions to improve future sessions.

ELABORATION OF SPECIFIC CURRICULA

For each grade of personnel, it is obviously important to analyse the job description, in order to develop a skills grid, with which to work: allowing companies to select appropriate modules for their staff. We are available to assist at all levels of the planning process, so that we can adapt modules to tailor-fit your needs offering a medium term approach.

In a nutshell, the approaches are chosen to meet the expectations of any Human Resources Department.

Structuring action for the development of training centers abroad:
Relying on its experience, the IOW has become a leader in its field and has responded to demand for training centres worldwide: creation and development of training centers for water professions.

Training programmes:
To help the water service, to plan, to organise, adjust and assess different training courses, IOW sets up full training programs. This approach helps to spread out and fully optimise the capacity-building programs.

“A la carte” training sessions:
For different technical topics, IOW is able to design, hold and assess the specific training sessions which fit your needs.

Fully aware that skills enhancement is one of the key tools in manpower development, and by relying on its experience, the IOW has developed a real Human Resources training program in the water, sanitation and waste sectors.
SOME OF OUR REFERENCES

“The French Guianese Water Board”
Design and leading of training sessions: assessment for intervention in confined spaces.
- Training sessions for the French Guianese Water Board staff
- Leads to a diploma program

“National Office for Electricity and Drinking Water”
ONEE training and development program on:
- Evaluation of trainee willingness and abilities
- Supply of pedagogical units and implementation
- Setting up of technical visits and technical sessions in France for operators and trainers

“Public Authority for Electricity and Water”
Design and leading of training sessions: “Reservoir cleaning: planning and supervision”: in support of the PAEW-IITC
- Preparation and delivery of 12 training sessions

“National Office of Sanitation”
Technical assistance contract with ONAS:
- Elaboration of 2 curriculum professions: “Electrical Maintenance Technician” and “Sewage Plant Manager” followed by design and delivery of training sessions based on “the 2 curriculum professions”

“Public Authority for Electricity and Water”
Long term partnership between Groupe romand FES (Swiss Federal organisation for capacity building in waste water) and International Office for Water:
- Design of the new qualification courses. Implementation of the Swiss training standards in these new courses was necessary
- Design of the assessment tests, required to obtain the official Swiss Diploma of Wastewater Treatment Plant Manager
- Drawing up of training courses
- Participation in the qualification process (IOWater provided 4 experts as official examiners during the examination stage)

“National Office for Electricity and Drinking Water”
Preparation and carrying out of preliminary study for the Center of Excellence for RANDWATER (water board):
- Preparing and carrying out of preliminary study for the Center of Excellence (training center) at Water Academy of Rand Water with following outputs and reports contents
HOW DOES A MADE-TO-MEASURE TRAINING PROGRAM WORK?

We elaborate trainings made to measure, thanks to a precisely analyse, realised as much as possible on site. The made-to-measure training represents **75% in foreign countries** and **25% in our training centres** (Limoges, La Souterraine - France).

**Made to measure trainings offer you the best human and technic adaptation:**
- ✓ the contents, time and modality of realisation adapted
- ✓ a precise answer at your objectives
- ✓ educational sessions adapted to your needs
- ✓ a training planning adjusted at your constraints

According to the training thematic, the session can be completed with practical works and/or case studies.

**OUR PROCESS IN 3 STEPS:**

<table>
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<tr>
<th>ANALYSIS</th>
<th>TRAINING SESSIONS CAN BE CONDUCTED:</th>
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<td>✓ the local context</td>
<td>In the premises of our local partners</td>
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<tr>
<td>✓ Company analysis</td>
<td>On-site</td>
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<tr>
<td>✓ the objectives</td>
<td>.........................................................</td>
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<tr>
<td>✓ the constraints</td>
<td>In our centers</td>
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<tr>
<td>✓ the budget</td>
<td>.........................................................</td>
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<tr>
<th>COURSE DESIGN AND VALIDATION</th>
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<tr>
<td>✓ Drawing up and proposal of the specific educational content</td>
</tr>
<tr>
<td>✓ Validation of a final proposal</td>
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<th>REALISATION</th>
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<td>✓ Training program</td>
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<tr>
<td>✓ Training sessions</td>
</tr>
<tr>
<td>✓ Evaluation</td>
</tr>
<tr>
<td>✓ Assessment by various methods including MQC, case studies, practical tests…</td>
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TRAINING OFFER

Safety
Drilling
Energy
Regulation
Drilling
Energy
Regulation

Analysis & metrology

Pumping
Drinking water production
Industry
Decentralised cooperation
Pumping
Drinking water production
Industry
Decentralised cooperation

Visits
Operating plant demonstrations and visits
Visits
Operating plant demonstrations and visits

Case studies
Exercise
Case studies
Exercise

Theory
Slide show, video...
Theory
Slide show, video...

PW
Practical works
PW
Practical works
REGULATION AND MANAGEMENT OF WATER AND SANITATION SERVICES

- GOVERNANCE OF THE SERVICES -

**OBJECTIVES:**
- How to determine the technical and human means necessary for the operation of a water or sanitation service.
- Creating an optimal means organization

**Financial management of the water and sanitation services**

**OBJECTIVES:**
- Make a financial diagnosis of the water services
- Evaluate the capacities of investment
- Define a prospective tariff strategy in the medium term

**Creation of a water and sanitation control**

**OBJECTIVES:**
- Define the governance of a water control, a water service
- Determine the technical, human and financial means in order to implement

**Management of the subscribers: means and tools**

**OBJECTIVES:**
- How to diagnose the customer relation management system of a water service
- Determine the organization, human and technical means for optimization

**Project management for drinking water and sanitation**

**OBJECTIVES:**
- Acquire the basis competences, essential to the project management
- Understand the techniques of planning of the projects

**Project management - Level 2: deepening**

**OBJECTIVES:**
- How to implement the techniques of planning and functional analysis of the projects
- Learn to use the analysis tools to determine the value of the project
- Create a strategy of communication

- MANAGEMENT OF THE SUBSCRIBERS -

- QUALITY AND PROJECT MANAGEMENT -
SAFETY OF PEOPLE

- IN WATER JOBS -

OBJECTIVES:
- Learn how to evaluate the methods and constraints for the improvement of the risk prevention in a company

- Organization of the prevention in the services of water and sanitation
  - 3 days
  - 10% Theory, 10% Case studies, 80% PW

- Organization of interventions in a confined space
  - 2.5 days
  - 15% Theory, 35% Case studies, 50% PW

- Hygiene and safety in a drinking water plant
  - 3 days
  - 10% Theory, 80% PW, 10% Visits

- Hygiene and safety in a waste water treatment plant
  - 3 days
  - 80% PW, 10% Visits

- IN NETWORKS -

OBJECTIVES:
- How to prepare an intervention whilst
- Respecting and whilst enforcing the appropriate measures
- Learn about the protection equipment and how to use it

- IN TREATMENT PLAN -

OBJECTIVES:
- How to conceive a safety policy on a factory of potabilisation
- Learn about the integration of organisation of work for accident prevention
- Be able to make a risk analysis on a work station
Basic notions on water chemistry

- Acquire the vocabulary of water chemistry
- Learn the bases of water chemistry

50% Theory 10% Case studies 40% PW

Elementary analysis related to waters bacteriology

- Learn to apply the elementary analyses relating to waters bacteriology
- How to interpret a bulletin of an analysis

40% Theory 60% PW

Analysis of waste waters for self-monitoring

- How to carry out the necessary analysis and interpret it in order to monitor the operations of a WWTP and for the control within the framework of the self-monitoring system
- How to make a choice among the various existing techniques

30% Theory 50% PW 20% Visits

The basics of the water sampling

- Learn how to make a sample of natural or drinkable water
- Adapt the sampling technique according to the parameters to be analyzed
- Learn about the limiting factors which can modify results of analysis

30% Theory 60% PW 10% Visits

Creation of a control laboratory and production of water and sanitation

- Learn about the tests and controls necessary in order to monitor water quality
- How to install equipment and organize the control laboratory
- How to write specifications

80% Theory 20% Visits

OBJECTIVES:

- Acquire the vocabulary of water chemistry
- Learn the bases of water chemistry

- BACTERIOLOGY -

- Learn to apply the elementary analyses relating to waters bacteriology
- How to interpret a bulletin of an analysis

- WASTE WATERS -

- How to carry out the necessary analysis and interpret it in order to monitor the operations of a WWTP and for the control within the framework of the self-monitoring system
- How to make a choice among the various existing techniques

- SAMPLE -

- Learn how to make a sample of natural or drinkable water
- Adapt the sampling technique according to the parameters to be analyzed
- Learn about the limiting factors which can modify results of analysis

- DESIGN AND OPERATION -

- Learn about the tests and controls necessary in order to monitor water quality
- How to install equipment and organize the control laboratory
- How to write specifications

1,5 days

OBJECTIVES:

- Learn how to make a sample of natural or drinkable water
- Adapt the sampling technique according to the parameters to be analyzed
- Learn about the limiting factors which can modify results of analysis

3 days

OBJECTIVES:

- Acquire the vocabulary of water chemistry
- Learn the bases of water chemistry

- BACTERIOLOGY -

- Learn to apply the elementary analyses relating to waters bacteriology
- How to interpret a bulletin of an analysis

3,5 days

OBJECTIVES:

- How to carry out the necessary analysis and interpret it in order to monitor the operations of a WWTP and for the control within the framework of the self-monitoring system
- How to make a choice among the various existing techniques

4 days

OBJECTIVES:

- Learn how to make a sample of natural or drinkable water
- Adapt the sampling technique according to the parameters to be analyzed
- Learn about the limiting factors which can modify results of analysis

1,5 days

OBJECTIVES:

- Learn about the tests and controls necessary in order to monitor water quality
- How to install equipment and organize the control laboratory
- How to write specifications
Management of a laboratory of control and production of water and sanitation

OBJECTIVES:
- Organization: the control laboratory, the measurements and tests, the management of inputs and outputs of water analysis

80% Theory
20% Case studies

Analysis of drinking water for self-monitoring

OBJECTIVES:
- How to create and interpret tests and basic analysis necessary for monitoring the functions of water production
- Learn about the contents of self-monitoring

45% Theory
50% Case studies
5% Visits

Metrological management of a park of sensors

OBJECTIVES:
- How to create and interpret tests and basic analysis necessary for monitoring the functions of water production
- Evaluation of the reliability of a measurement
- Learn about the metrology standards

60% Theory
30% Case studies
10% PW

Flow metering

OBJECTIVES:
- Learn about the hydraulic laws used for flow measurement
- How to maintain, check and gauge a system of measurement
- Be able to install an automatic sampler

50% Theory
30% Case studies
20% PW

Operation and maintenance of the sensors for water quality

OBJECTIVES:
- Learn the principles of water quality sensors measurement
- How to check, adjust and calibrate a sensor
- How to validate a measurement in an identified environment

40% Theory
30% Case studies
30% PW
PUMPING AND DRILLING

**- PUMPING -**

**Choice and installation of a pump**

- How to select and proportion a certain pump according to specifications
- How to install and use a pump according to the rules

**Pumping stations of drinking water - technology and operation**

- Learn the technology of centrifugal pumps
- Understand how to run, manage and maintain a pumping station

**Pumping stations in sanitation networks**

- Learn about the technology of sanitation pumps
- How to calculate the dimensions of a pumping station
- How to manage the tests of maintenance of a waste water pumping station

**Protection of drinking water catchments against occasional and accidental pollutions**

- Learn about how to start a compliance procedure of a protection area

**Water drilling**

- How to water drill according to the rules, protection of resources and the environment and for a suitable catchment of groundwaters

**Operation and maintenance of a water drilling**

- How to help the operator of a water drill and choose and maintain its pumping equipment, to select and exploit the techniques of treatment and the pumping equipment
DRINKING WATER PRODUCTION

- OPERATION -

Operation of drinking water treatment factories

- OBJECTIVES:
  - Learn the bases of the physics and the chemistry
  - Learn about the phenomenons caused due to the different steps of the water treatment

Operation of drinking water treatment factories – Level 2: water clarification and disinfection

- OBJECTIVES:
  - Learn the technics of water clarification and disinfection so that the water becomes drinkable
  - How to manage a drinking water production factory

Audit and optimization of drinking water treatment factories

- OBJECTIVES:
  - How to evaluate the operations of a drinking water treatment plant

- AUDIT -

- TECHNICS OF TREATMENT -

Parameters of the water quality

- OBJECTIVES:
  - Learn the notions related to the sanitary control of water quality
  - Learn the technics of water clarification and disinfection so that the water becomes drinkable

Desalination of the sea water and the brackish waters by reverse osmosis

- OBJECTIVES:
  - Learn about water desalination by reverse osmosis for drinking water production and problems through case studies

Water purification operation: the classic methods

- OBJECTIVES:
  - Learn the classic ways of drinking water treatment
  - Learn how to bring together diverse technologies to obtain the best treatment and insure a maximum quality of water for distribution

- REGULATION -
DRINKING WATER PRODUCTION

- TECHNICS OF TREATMENT -

**OBJECTIVES:**
- Learn about the various techniques of water refining (activated carbon, membrane filtration,...)
- How to compare the various techniques of membrane filtration (low and high-pressure membranes)
- To be able to make a treatment choice

- INITIATION -

**OBJECTIVES:**
- Acquire a general knowledge of water purification operations
- Learn the various techniques used in drinking water production

**OBJECTIVES:**
- Understand the hydraulic and aeraulic operations of a drinking water production factory
- Be able to calculate the dimensions of a fluid transport structure

- OPERATION -

**OBJECTIVES:**
- Be able to use the plans and the appendice documents and participate in updating the plans
- Make a functional pattern of an simple hydraulic facility

**OBJECTIVES:**
- Learn the regulations and the technology of cold water meters and flowmeters
OBJECTIVES:
- Learn how to install a control valve in compliance with constructors recommendations
- How to maintain and adjust control valves

3 days

OBJECTIVES:
- How to implement and make necessary interventions for the maintenance and the operation of drinking water networks

4 days

OBJECTIVES:
- How to identify the risks of water quality degradation in the supply networks
- Learn the technical solutions to protect the quality of drinking water

3.5 days

OBJECTIVES:
- How to organize the cleaning and disinfection of drinking water infrastructures according to established procedures according with hygiene and safety rules

4 days

OBJECTIVES:
- Learn the hydraulic bases to understand and resolve the exploitation problems in the drinking water networks
- How to study and integrate simple projects of extensions and reinforcements of the network

4 days

OBJECTIVES:
- How to implement the diagnostic survey and the network pattern
- How to use the simulation tools learn aboutand improve the networks functions

3 days
Laying of drinking water pipes

OBJECTIVES:
- Learn how to install and assemble the different components of the water supply network
- How to repair and do the necessary modifications of a network in use

Construction of water supply networks

OBJECTIVES:
- Learn about the construction rules of a water supply network
- Be able to calculate the dimensions of a network expansion
- Be able to design particular aspects of a network (pressure booster pump, flow control station)

Asset management of water networks

OBJECTIVES:
- Learn about the technical and financial issues linked to the renewal of a drinking water network
- Learn about the tools and techniques of the asset management

Improvement of the network performance: strategy and organization

OBJECTIVES:
- Create an action plan to reduce water loss
- How to implement various methods in able to detect and know the exact number of leaks

Detection of leaks and buried pipes

OBJECTIVES:
- Learn about the techniques and methods for leak detection
- Learn how to improve the use of detection devices in order to conduct more precise and selective searches
SANITATION NETWORKS AND NON-COLLECTIVE SANITATION

- NON-COLLECTIVE SANITATION -

**Technical control of the non-collective sanitation**
- Learn about the sectors and systems
- Learn about the essential elements of pedology for this mission
- Learn the selection criteria for a good adequacy: site/ground/sector

**Maintenance and functioning of the DEWATS system**
- Learn about the functioning process of the organic treatment sectors recognized by DEWATS system
- Learn about the operating conditions of these facilities

**Sizing of sanitation networks - Level 1**
- How to calculate the hydraulic parameters of a flow in the main sewer of sanitation
- How to create a longitudinal profile by applying the technical recommendations
- How to calculate the dimensions of common facilities

**Sizing of sanitation networks - Level 2**
- How to calculate the dimensions of the special facilities (stormwater spillway, fall, siphons...) in order to insert them in a sanitation network

**Construction of the sanitation networks – Module 1: soil analysis for the laying**
- Learn the various methods of geotechnical investigations
- How to define and choose the consistency of soil analyses in the framework of a project

**Construction of the sanitation networks - Module 2: Implementation and follow-up of building site**
- Take part in the follow-up of building site (technical and administrative)
- Preventing the risks on building sites
- Take part in the control of official acceptance of works

OBJECTIVES:
- - Learn about the sectors and systems
- - Learn about the essential elements of pedology for this mission
- - Learn the selection criteria for a good adequacy: site/ground/sector

OBJECTIVES:
- - Learn about the functioning process of the organic treatment sectors recognized by DEWATS system
- - Learn about the operating conditions of these facilities

OBJECTIVES:
- - How to calculate the hydraulic parameters of a flow in the main sewer of sanitation
- - How to create a longitudinal profile by applying the technical recommendations
- - How to calculate the dimensions of common facilities

OBJECTIVES:
- - How to calculate the dimensions of the special facilities (stormwater spillway, fall, siphons...) in order to insert them in a sanitation network

OBJECTIVES:
- - Learn the various methods of geotechnical investigations
- - How to define and choose the consistency of soil analyses in the framework of a project

OBJECTIVES:
- - Take part in the follow-up of building site (technical and administrative)
- - Preventing the risks on building sites
- - Take part in the control of official acceptance of works

50% Theory
10% Case studies
40% Visits

60% Theory
25% Case studies
15% Visits

50% Theory
40% Case studies
10% Visits

60% Theory
30% Case studies
10% Visits

60% Theory
10% Case studies
30% PW

4 days
3 days

3,5 days

4 days

2 days

4 days
SANITATION NETWORKS AND NON-COLLECTIVE SANITATION

Laying of sanitation networks

- OBJECTIVES:
  - Learn the rules of construction and of laying sanitation networks
  - Learn about the controls to receipt of the works

- DIAGNOSIS, RESTORATION AND ASSET MANAGEMENT -

DIAGNOSIS, RESTORATION AND ASSET MANAGEMENT -

3,5 days

Diagnosis of sanitation networks and master plan

- OBJECTIVES:
  - How to be able to identify the dysfunctions and insufficiencies of sanitation networks
  - Learn how to analyse the results of the diagnostic study

Restoration of sanitation networks

- OBJECTIVES:
  - Learn about the primary techniques of restoration of non-visitable networks
  - Learn about the problems and different methods of structural diagnosis
  - Take part in the technical assembly and evaluate the cost of a restoration

OBJECTIVES:

- Learn about the role and characteristics of the current facilities
- Take part in the reception and the control of the sanitation networks
- Learn about and how to prevent the risks on the installation of a building site

OBJECTIVES:

- How to implement a strategy of asset management of the sanitation facilities
- Learn the stakes linked with the restoration of networks

OBJECTIVES:

- Be able to implement controls and test
- Learn how to take a rigorous approach to go towards quality
- How to act safely
OBJECTIVES:
- Learn how to take control of an individual connection of the network
- Be able to take part in the control of the discharge of non domestic wastewater
- How to act safely

- RAINWATER SANITATION -

OBJECTIVES:
- How to design a rainwater network and its facilities
- How to calculate a flow by a simplified method
- How to implement the modeling of a network

OBJECTIVES:
- Learn about the stakes and the tools for an integrated management of rainwater in an urban environment

OBJECTIVES:
- How to choose and decide on the size of retention ponds and alternative techniques
OBJECTIVES:
- Learn the main criteria of design and sizing of the activated sludge treatment methods

OBJECTIVES:
- Learn the main criteria of design and sizing of treatment methods for small communities
- Learn about the validity of an offer

OBJECTIVES:
- How to describe the compact systems for wastewater treatment
- Learn the main criteria of choice and sizing of these methods

OBJECTIVES:
- Learn the basic mechanisms of the civil engineering of treatment plants
- Learn which points need to be monitored during studies of: facilities design, schedules of specific technical clauses, construction site monitoring and official acceptance of facilities

OBJECTIVES:
- Learn about the main points to be inserted into special technical or administrative specifications in order to guarantee the conditions of a good official acceptance
- How to check the compliance of works done, compared with the building market
- OPERATION -

**OBJECTIVES:**
- Learn about the various techniques of urban wastewater treatment
- Learn about the operating principles and constraints of water and sludge circulation within a system of wastewater treatment for one of its usual uses
- How to control the first tests and field diagnostics

**Operation of high-tech water treatment plant: MBR, SBR, MBBR**
- How to control the basic operations of a water treatment plant with a membrane bioreactor
- Learn about various technologies of membrane filtration and to deal with this in depth
- How to maximize the membrane bioreactor operation

- MANAGEMENT -

**OBJECTIVES:**
- Learn about the constraints and solutions of by-products elimination
- Create and exploit an operation report of a water treatment plant
- How to integrate indicators of technical management to optimize the WWTP

**Technical management of a water treatment plant**
- Learn about the constraints and solutions of by-products elimination
- Create and exploit an operation report of a water treatment plant
- How to integrate indicators of technical management to optimize the WWTP

**OBJECTIVES:**
- How to control the basic operations of a water treatment plant with a membrane bioreactor
- Learn about various technologies of membrane filtration and to deal with this in depth
- How to maximize the membrane bioreactor operation

**Operation of water treatment plant - Level 1: operation and detection of dysfunctions**
- Learn about the various technique of urban wastewater treatment
- Learn about the operating principles and constraints of water and sludge circulation within a system of waste water treatment for one of its usual uses
- How to control the first tests and field diagnostics

**Operation of water treatment plant - Level 2: measures and diagnostics**
- Define the control points of an activated sludge waste water treatment plant
- How to make and validate observations and measurements
- How to compare the achieved results to the basic adjustments

**Operation of water treatment plant - Level 3: adjustment and optimization**
- How to define, calculate and adapt the basics parameters
- How to adjust the regulations of ventilation, recirculation and extraction
- How to determine a dysfunction situation

**OBJECTIVES:**
- Define the control points of an activated sludge waste water treatment plant
- How to make and validate observations and measurements
- How to compare the achieved results to the basic adjustments

**Operational management of water treatment plants - Level 1: operation and detection of dysfunctions**
- Learn about the various technique of urban wastewater treatment
- Learn about the operating principles and constraints of water and sludge circulation within a system of waste water treatment for one of its usual uses
- How to control the first tests and field diagnostics

**Operational management of water treatment plants - Level 2: measures and diagnostics**
- Define the control points of an activated sludge waste water treatment plant
- How to make and validate observations and measurements
- How to compare the achieved results to the basic adjustments

**Operational management of water treatment plants - Level 3: adjustment and optimization**
- How to define, calculate and adapt the basics parameters
- How to adjust the regulations of ventilation, recirculation and extraction
- How to determine a dysfunction situation

**OBJECTIVES:**
- Define the control points of an activated sludge waste water treatment plant
- How to make and validate observations and measurements
- How to compare the achieved results to the basic adjustments

**Operation of water treatment plant - Level 1: operation and detection of dysfunctions**
- Learn about the various technique of urban wastewater treatment
- Learn about the operating principles and constraints of water and sludge circulation within a system of waste water treatment for one of its usual uses
- How to control the first tests and field diagnostics

**Operation of water treatment plant - Level 2: measures and diagnostics**
- Define the control points of an activated sludge waste water treatment plant
- How to make and validate observations and measurements
- How to compare the achieved results to the basic adjustments

**Operation of water treatment plant - Level 3: adjustment and optimization**
- How to define, calculate and adapt the basics parameters
- How to adjust the regulations of ventilation, recirculation and extraction
- How to determine a dysfunction situation
SLUDGES AND ODOURS TREATMENT

- TREATMENT OF SLUDGES AND BIOWASTES -

OBJECTIVES:
- Define the different characteristic parameters of sludge
- How to select a method of sludge treatment according to the requirements

Methods of treatment and sludge recycling of wastewater treatment plants

- Sludge digestion of wastewater treatment plant and biogas recycling
- Control odours in sewage: network and wastewater treatment plants

OBJECTIVES:
- Learn how to work the sludge digestion of wastewater treatment plant
- How to operate digesters and their peripheral equipments including the safety

- ODOURS TREATMENT -

OBJECTIVES:
- How to target the origin and the causes of odours in wastewater treatment plants
- Learn about different methods of deodorisation, their specifications and their ideal operating conditions

MAINTENANCE, ENERGY, AUTOMATISM AND TELEPROCESSING

- MECHANICAL AND ELECTRIC MAINTENANCE -

OBJECTIVES:
- Understanding the hydraulic system of a pumping station works and how to do a fault diagnosis
- Learn about the technology of centrifugal pumps and their main faults

Maintenance of pumping stations

- Facility maintenance and electric motors

OBJECTIVES:
- Understanding how energy is distributed in a water factory
- Learning how to use specified maintenance of electrical equipment
- Propose and implementing a change of installation
**OBJECTIVES:**
- Understanding, interpreting and designing an electric diagram
- Take part in the first electrical fixing
- Learn the roles of the equipment in an electric cabinet

**Operative and maintenance of electronic starters and speed controllers**

**OBJECTIVES:**
- Learn how to use and regulate the devices of electronic starters and speed controllers
- Identifying and analyzing the origins of disturbances
- How to write an operational manual

**Reception of electrical facilities and automated systems**

**OBJECTIVES:**
- Doing reception tests and checking conformity
- How to write a specification in the field of electric and automatism

**Operating the electrical facilities in water factories**

**OBJECTIVES:**
- Understanding, interpreting and designing an electric diagram
- Take part in the first electrical fixing
- Learn the roles of the equipment in an electric cabinet

**Electrical energy saving and sustainable development**

**OBJECTIVES:**
- Doing an energy diagnosis on an electrical installation
- Proposing improvements of energy management
- Learn about the technical solutions available

**Strategy of use of renewable energies**

**OBJECTIVES:**
- Analyzing the technico-economic context
- Determining a development strategy with the renewable resources
- Learn how to use the different renewable energies (solar, aeolian, biogas...)

**Discovery of automated systems and remote management**

**OBJECTIVES:**
- Understanding the functions of various equipment
- How to identify all the elements of a chain of measurement
- Learn the various means of automation: wiring, programmable automaton
MAINTENANCE, ENERGY, AUTOMATISM AND TELEPROCESSING

- AUTOMATISM -

Networks of industrial automaton in the water factories

- Understanding the structure of industrial automaton network: maintenance and implementation
- To intervene on the communication mediums used (connection RS232, Ethernet, Radio, optical fibre…)

Wiring and programming of smart relays and micro PLC

- How to identify the main functions of various smart relays
- How to wire and program a micro PLC (Zelio, Logo…)
- Learn how to read and transpose an electrical diagram into a logic program ladder

Process control in water facilities

- Learn the main principles of process control (type of signals, open or closed loop, representation…)
- Learn the different setting methods
- How to program and configure a PID control loop

- REMOTE MANAGEMENT AND MEASUREMENT CHAIN -

Wiring, configuration and maintenance of the teleprocessing equipment

- Take part in the startup of teleprocessing network equipment and in the implementation of their maintenance
- How to configure the basic functions of a teleprocessing unit

Operation and maintenance of measurement chains

- Learn about the technical user instructions in able to install equipment
- How to install a measurement chain, to calibrate various components
OBJECTIVES:
- Learn how to define the organizational framework of water management by catchment area
- Learn the different methods and tools of water management by catchment area

OBJECTIVES:
- Carrying flow measurement out with different methods (by dilution or by exploration of the speed field)
- Participate in setting up a gauging station

OBJECTIVES:
- Understanding the behavior of a watercourse and how to make a diagnosis

OBJECTIVES:
- Réaliser et interpréter les analyses nécessaires au suivi du fonctionnement des stations d’épuration
- Connaître les bases théoriques de la chimie et de la physique

OBJECTIVES:
- Comprendre les techniques de traitement en vue de la production d’eau d’appoint
- Conduire une usine eau

OBJECTIVES:
- Savoir réaliser et interpréter les analyses de contrôle
- Réaliser et interpréter les analyses de suivi du fonctionnement des étapes de clarification et de désinfection

OBJECTIVES:
- Learning the basic principles relating to the pollution of groundwater reservoirs and the treatment techniques used
- Learn how to choose the techniques of treatment according to the problem given
OBJECTIVES:
- Learn the theoretical basics of physics and chemistry. Applying these bases to the different steps of industrial water production.
- Controlling and interpreting an analysis.

OBJECTIVES:
- Clarification and disinfection: Understanding the techniques of treatment used in water production; creating and interpreting the analyses of the follow-up of the operation of the stages of the treatments.

OBJECTIVES:
- Learn the operational principles of techniques of water purification and their level of effectiveness.
- Learn the target parameters and the analyses to control them.

OBJECTIVES:
- Understanding the mechanisms of reverse osmosis.
- Learn the control parameters, possible dysfunctions and the corrective solutions.

OBJECTIVES:
- Learn the different technics of disinfection and their weaknesses.
- How to control the functions of the disinfection step.

OBJECTIVES:
- Learn the causes of corrosion and scaling.
- Learn the primary actions of the products for conditioning and the biocides treatments.
Legionella risks: sensitizing and recycling

OBJECTIVES:
- Learn the risks related to the development of Legionella
- Comprehend risk management

1 day

Ion-exchange resins

OBJECTIVES:
- Understanding the mecanisms of ion-exchange
- Learn the various types of industrial exchangers and their probable dysfunctions and the corrective solutions

3 days

Dimensioning of the sewage treatment plants by activated sludges in industry

OBJECTIVES:
- Controlling the primary design criteria and dimensioning of the treatment processes by activated sludges in industry
- How to evaluate the relevance of a technical offer

4 days

Operation of a biological sewage treatment plant- Level 1

OBJECTIVES:
- Learn the bases of purification
- Learn the principles within the operation of a waste water treatment station (activated sludge, SBR, MBBR, methanization...)

3 days

Operation of a wastewater treatment plant by activated sludges- Level 2

OBJECTIVES:
- To carry out and interpret the operational tests
- To know the theoretical foundations of the wastewater treatment
- To identify the main dysfunctions and find solutions

3 days

Operation of a physico-chemical sewage treatment plant (surface treatment not included)

OBJECTIVES:
- To optimise the adjustments of a sewage treatment plant
- To understand the mechanisms of sewage treatments
- To identify the main dysfunctions and find solutions

3 days
## WATER FOR INDUSTRY

### OPERATION

**Operation of a methanation unit of liquid effluents**
- Objectives:
  - To know the adjustments of a methanizer and how to use it
  - To understand the biological phenomenons involved
  - To identify and resolve the main dysfunctions

**Detoxification of effluents**
- Objectives:
  - Understanding and analysing the treatments mechanism of effluents
  - How to optimise the management of a detoxification plant
  - How to calibrate and maintain the probes of measure (pH and redox)

**Validity and reliability of the industrial waste water analysis**
- Objectives:
  - Learn how to implement the best material conditions to guarantee the result of the analysis
  - Learn how to make an analytical report of the modus operandi

### DETOXIFICATION OF THE SURFACE TREATMENTS

### ANALYSIS AND CONTROL

### DECENTRALISED COOPERATION

#### Water supplies in villages
- Objectives:
  - An initiation with the water supply techniques in villages in southern countries
- Percentage:
  - Theory: 60%
  - Case studies: 25%
  - PW: 15%

#### Sanitation in the least developed countries
- Objectives:
  - An initiation with the techniques from pertaining to sanitation in the least developed countries
- Percentage:
  - Theory: 70%
  - Case studies: 30%