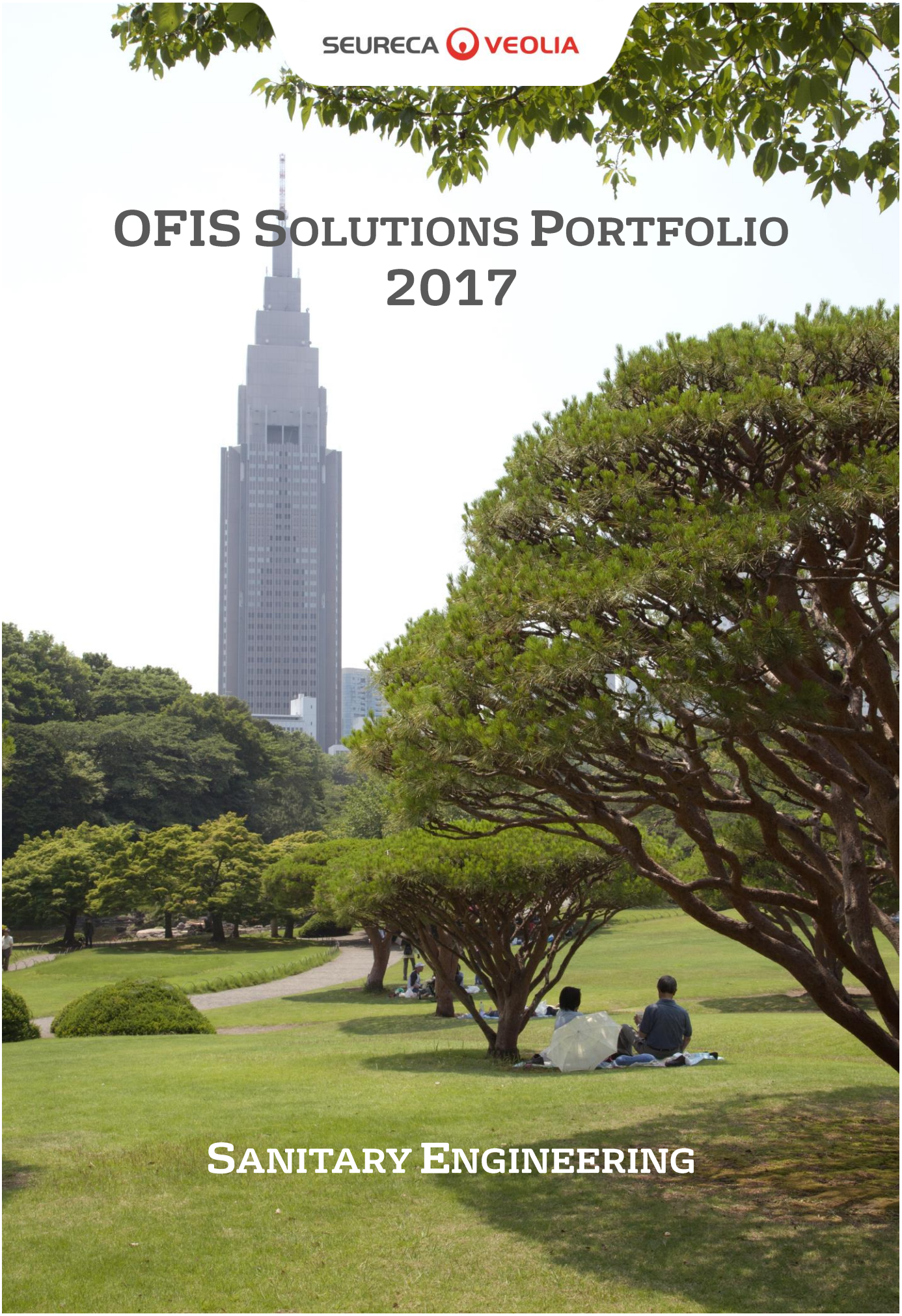
SEURECA VEOLIA

OFIS Solutions Portfolio 2017



Sanitary Engineering

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INTERNATIONAL

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Indoor air quality management manual
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Tour du Midi (Belgium)

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45. Secondary heating network optimization
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Accreditation N°1-6188
Scope available from www.cofrac.fr

Sabine Fauquez-Avon
OFIS CEO

Managing air and water quality inside buildings is a constant priority

Ensuring that buildings are healthy is still a key factor. We spend more than 80% of our time indoors, which means that controlling sanitary and health risks is critical for building operators. The stakes are high, both in terms of air quality, as inadequate ventilation can lead to user discomfort, and in terms of water quality. According to the *Institut National de Veille Sanitaire*, over 1,200 cases of Legionella are reported each year in France.

The design and operation of indoor systems in buildings must be compatible with controlling these major health issues.

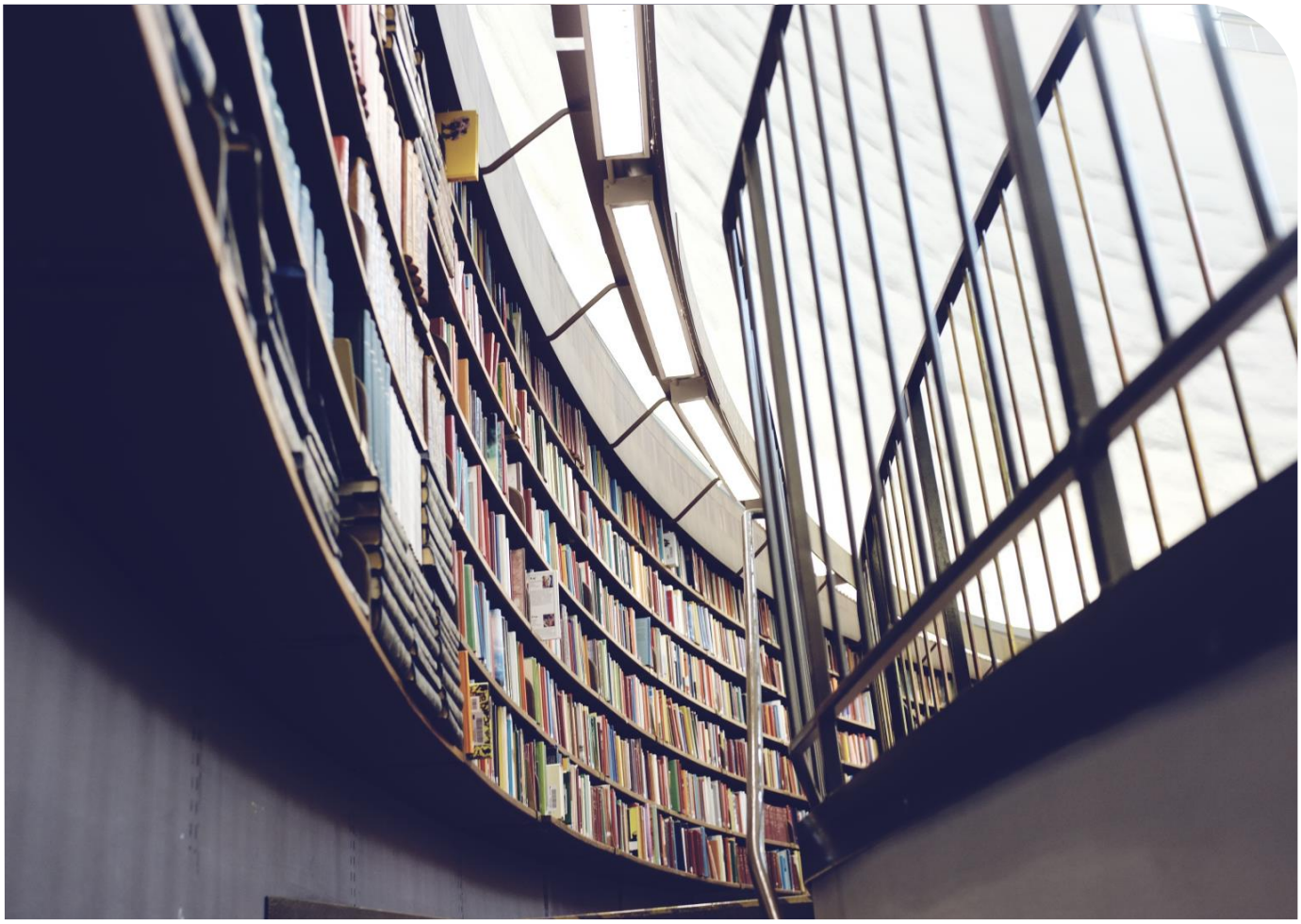
OFIS, the consulting engineering agency of Seureca Veolia, fundamentally aims to understand, assess and provide support. We have developed tried and tested technical reference materials specific to water issues in order to control Legionella risks, as well as to indoor air, to ensure that occupants are both comfortable and healthy. These reference materials apply to buildings from design to acceptance.

We are delighted to present projects illustrating our know-how.

Whether health facilities or public buildings, rental property managers or workplaces, our expertise is at your service to meet these priorities. We can boast accreditation to guarantee our professional skills (COFRAC, CSTB QB24, OPQIBI), and will strongly recommend the actions required to control sanitary and health risks.

I would like to sincerely thank our clients for their renewed trust each year.

Happy reading!



SEURECA VEOLIA

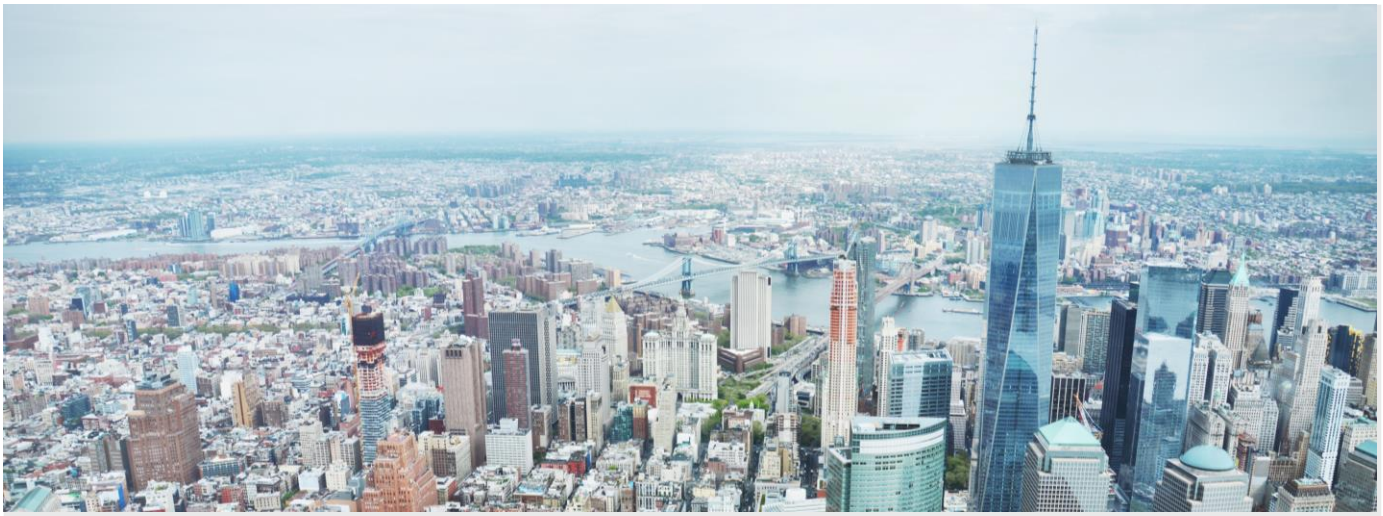
PROFILE

OFIS professionals are selected to carefully carry out the assignments entrusted to them, whether they be simple, complex, traditional or exceptional projects.

Every day, OFIS technicians and engineers perfect their training and their techniques and share their experience to prepare for the future.

Through constant assimilation of new skills and technologies, OFIS teams lead the field in the domain of sanitary and energy performance expertise.

A NETWORK OF CONSULTING ENGINEERS



FRANCE

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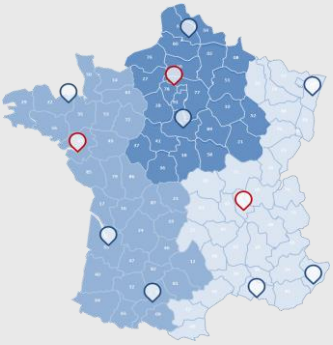

INTERNATIONAL

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49 employees

€4.9 million of revenue in 2016

+ 9 000 audited sites

+1 000 Active clients

Our expertise

OUR TRADES & EXPERTISE

WATER

- Preventing bacteriological and chemical risks
- Optimizing system operation
- Maintaining performance levels and the value of assets
- Reducing pollutant emissions

AIR

- Evaluating indoor air quality
- Optimizing ventilation systems
- Adapting practices
- Reducing pollutant emissions

ENERGY

- Evaluating performance
- Optimizing consumption and usages
- Balancing secondary heating and cooling networks
- Maintaining user comfort

STUDIES

- Auditing and diagnosis
- 6THEMIC© expertise
- Technical Health Inspection
- Cartography
- Logbook

MEASUREMENTS

- Sampling strategy
- Sampling (water, air, effluents…)
- Continuous monitoring (water, air, energy…)

TECHNICAL SUPPORT

- Project Management support
- Network balancing
- Crisis management
- Training

Our certifications

Sanitary Water

CSTB (the French Scientific and Technical Centre for Building) Certification: QB24 "Sanitary water network expertise

OFIS has been recognized as an expert by the CSTB for the specific services and testing required to diagnose water networks in buildings. OFIS is a leading expert in the following area:

- Technical and sanitary risk expertise.

Indoor Air

OFIS is **OPQIBI**-certified (Organisme Professionnel de Qualification de l'Ingénierie: Infrastructure Bâtiment Industrie) for the following services in the air sector:

- 0908: indoor air quality diagnosis.

OFIS Ouest holds **COFRAC** (Comité français d'accréditation, French accreditation committee) accreditation for monitoring indoor air quality in public buildings (LAB REF 30) and therefore meets the requirements of standard NF EN ISO/IEC 17025: 2005. This accreditation covers:

- Benzene.
- Formaldehyde.
- Carbon dioxide.
- Sampling strategy.

Accreditation N°1-6188
Scope available from www.cofrac.fr

Training

Referencing

Datadock

OFIS is referenced under **Datadock**, a unique database for referencing training bodies, in accordance with the quality criteria defined in the law of 5 March 2014.

OFIS is registered as a training body with the Préfecture of the Ile-de-France region, under no. 11 75 1140 192*.

Programs

Indoor air quality

- Air quality in the tertiary sector
- Clean room air quality

Indoor water networks

- Awareness of Legionella risks for Sanitary Hot Water
- Legionella: Designing Sanitary Hot Water networks
- Legionella: Maintaining Sanitary Hot Water networks
- Legionella: Sanitary logbook
- Legionella: Treating Sanitary Hot Water
- Water network corrosion
- Backflow protection

Pools

- Level 1: Awareness
- Level 2: Air and water quality for pools
- Water treatment for public pools/Safety

The environment

- Awareness quiz
- Sustainable development
- Eco-behavior
- Buildings and health
- Water savings and management
- Waste management
- Energy savings and management
- HQE comfort

Cooling towers

- Level 1: Awareness
- Level 2: Operation/Monitoring
- Level 3: Recycling
- Cleaning cooling towers

**This registration is not equivalent to Government approval.*

Communications

Our publications & actions

OFIS Indoor Air Quality meeting

Presentations by building and indoor air quality experts

Chaired by Dr Fabien Squinazi

March 2016

2016 Paris Healthcare Week

Trade event for health facility management and transformation

Introduction to sanitary engineering specificities

May 2016

2016 Atmos'Fair

Daily air pollution

Presentation on innovative air quality management solutions in public facilities

October 2016

Hopitech Exhibition

Research and training days

Presentation on *Pseudomonas risk* prevention in health facilities' water systems

October 2016

Pollutec exhibition

Uniclima Air quality forum

Presentation of improvement areas for air quality in tertiary buildings

December 2016

HEQ Working Group

Contribution to developing a best practices guide for indoor air quality in new or renovated buildings

2015-2016

Les rendez-vous de l'ECS

A trade fair targeting the hospital segment

Presentation on maintenance of sanitary hot water networks

April 2017

57th IHF research and training days

Trade fair organized by Ingénieurs Hospitaliers de France (IHF - French Hospital engineering group)

Publication and presentation on the prevention of *Pseudomonas* risks

June 2017

SEURECA VEOLIA

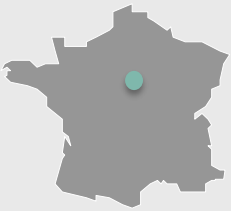
WATER

As with any infrastructure, water systems must be maintained, optimized and renewed in order to maintain usage and water quality in the most cost-effective way.

With its strong experience, extensive references, certifications and qualifications, OFIS is currently the leading expert in water facility management for buildings.

Administrative buildings
Multi-fluid cartography
Veolia water for the RATP (Paris public transport system)

MANAGING INFRASTRUCTURE



Paris,
Ile-de-France

Jérémy Rayez,
OFIS IDF Center & Northern Regional Officer

"Thanks to our in-depth system knowledge and mastery of expert software, we are able to meet various system cartography needs, ranging from water or air in buildings, waste water treatment systems and other specific networks (gas, compressed air, underground pipes, etc.). Our clients can then concentrate on the operation and programming of their facilities."

Client's challenge

System research and optimization for buildings require comprehensive and up-to-date drawings to make the right decisions.

Veolia Water needed a multi-fluid network cartography to be able to optimize the operation, maintenance and monitoring of the technical and sanitary systems of an RATP (Paris public transport system) site in Paris.

OFIS' solution

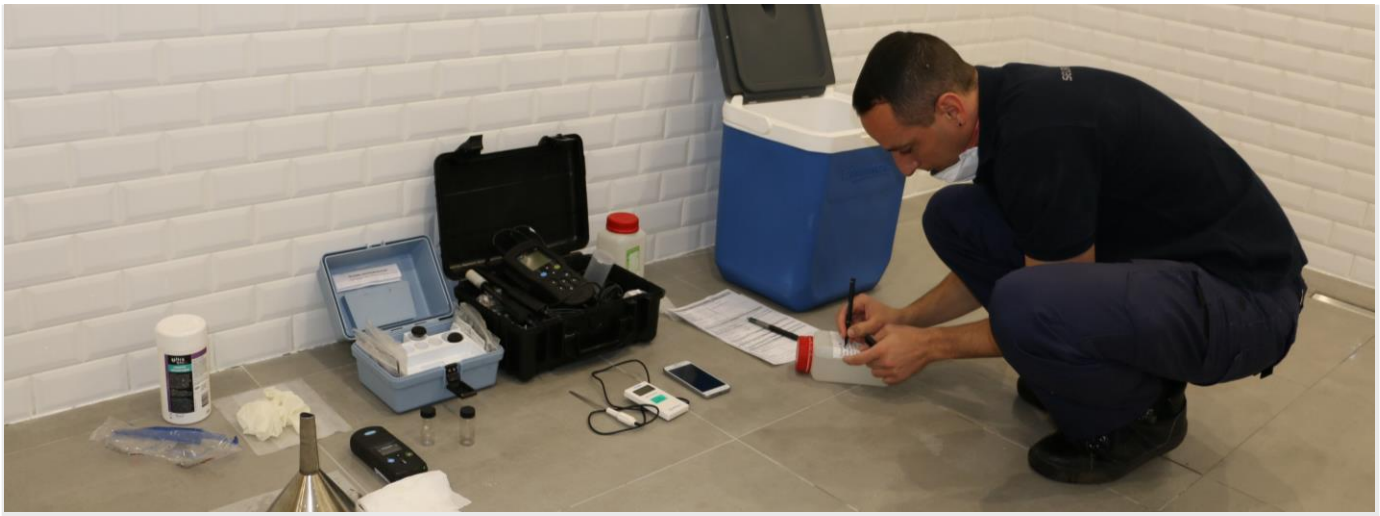
OFIS carefully recorded each type of system on the site, in particular sanitary water systems (sanitary hot and cold water), technical water systems (heating water, cooling networks, refrigerants, condensates), drainage systems (sewage, storm water, waste water), air systems (supply air, exhaust air, return air, recirculated air) and gas mains.

The collected data was transcribed to IT plans that included the various systems, their identification (type, material, diameter), the localization of the related equipment (valves, discharge grills, outlets, etc.) and potential defects.

With this optimal overview of their systems, Veolia Water now has the knowledge required to ensure the RATP facilities are optimized.

14	+10,000	6
types of systems	m^2 of surface area	levels

Nursing homes
Water network audits & monitoring
Partage et Vie Foundation



SAFEGUARDING WATER NETWORKS AT NURSING HOMES AND SANITARY SITES

Alexis Aubignac,
OFIS
Water Cycle Manager

"OFIS has supported its clients, such as the Partage et Vie foundation, in managing Legionella health risks for more than a decade. This renewed confidence confirms the quality of our know-how. Our technical and sanitary/health expertise has also been recognized by construction professionals, such as the CSTB (Centre Scientifique et Technique du Bâtiment - the French Scientific and Technical Center for Building) and some health authorities, such as the ARS (Agences Régionales de Santé - Regional Health Agencies)."

Our client's challenge

The Partage et Vie foundation, a major operator in the nursing home and sanitary sectors, has been applying a bacteriological contamination risk control policy to water networks for many years. As part of this policy, the foundation has renewed its confidence in OFIS for another 4 years, benefiting from our support in preventing Legionella risks.

OFIS' solution

OFIS provides its expertise to over 100 sites in France providing the foundation with consultancy services to optimize its operating contracts, especially through annual technical audits of sanitary water networks, while analyzing risks and identifying critical issues.

Maintenance operations and operational and monitoring conditions are assessed for any piece of equipment which could influence water quality. OFIS provides a tailor-made sampling strategy to increase the reliability of the Legionella analysis results per site.

Sensors are fitted on networks to obtain permanent measurements of sanitary hot water temperature, which can be used to detect any preliminary signs of reduced water quality.

Once the diagnoses have been established, each site has an individual, prioritized action plan for preventive, corrective and curative measures.

100+
sites supported

48
months covered by an assistance contract

12+
years of OFIS partnership

HOTELS
LEGIONELLA RISK PREVENTION
ACCOR GROUP

SUPPORTING A LEADING HOTEL GROUP

Fabienne Lapierre,
OFIS Key Account Manager

"ACCOR is one of the first hotel groups to engage in a preventive Legionella risk management plan for its full range of facilities. Thanks to its nation-wide presence and international scope, OFIS can rapidly meet the ACCOR Group's needs throughout France and abroad. OFIS has integrated its know-how into the ACCOR Group's procedures and has therefore naturally become a partner rather than a simple service provider."

Client's challenge

As a leader in the hotel sector in France and around the world, ACCOR has enhanced water quality monitoring in its facilities for many years.

As part of its health management policy, ACCOR runs a preventive management plan for technical facilities presenting a *Legionella* risk, including cooling towers and sanitary hot water systems. In parallel, the ACCOR Académie has undertaken a challenging health risk control training program for technicians.

OFIS' solution

OFIS has been conducting sanitary water system diagnoses and inspections and developing compliance programs for the ACCOR Group since 2006. In 2015, ACCOR Worldwide's Technical Management team commissioned OFIS to establish its water quality maintenance standards (sanitary hot and cold water systems, cooling towers, swimming pools) for its facilities across the globe.

The ACCOR Académie contracts OFIS to train and update hotel technicians' skills in hot water system treatment management, preventive *Legionella* risk management in cooling towers and swimming pool maintenance methods.

221
hotels receive OFIS support

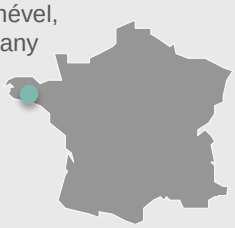
+1,700
training hours

11
years of partnership OFIS

Nursing homes
Sanitary hot water system diagnosis
habitat 29

MAKING SANITARY HOT WATER SYSTEMS SAFE

Kernével,
Brittany



Arnaud Micheau,
OFIS Western Regional Officer

"OFIS excels in that it provides tailor-made support to site managers from all sectors (tertiary, hospital, residential and industrial) who wish to engage in a preventive Legionella risk management approach. Our teams support the Kernével nursing home administrator during the key phases of implementing a sanitary water system control process."

Client's challenge

Nursing homes care for those people who are most vulnerable to *Legionella*. As the owner of La Croix des Fleurs, a nursing home in Kernével, Habitat 29 wanted to improve the facility's health risk management solutions for the sanitary hot water systems.

OFIS' solution

OFIS initially carried out a technical diagnosis of the sanitary water systems, which included a structural study of facilities, an assessment of the operating conditions, a risk analysis using the critical points identified, meteorological checks (temperature, flow) and the definition of preventive, corrective and curative measures.

A balance study including network modeling and equalizing unit presetting calculations was carried out after the diagnosis. This is key to maintaining the correct temperatures in systems to stop potential bacterial development and to ensure sufficient comfort for residents.

OFIS then helped Habitat 29 draw up a specific technical reference guide for rehabilitating hot water recirculating loops.

OFIS provided construction project management support by ensuring sanitary monitoring of the facilities and approving the work completion.

42
bedrooms

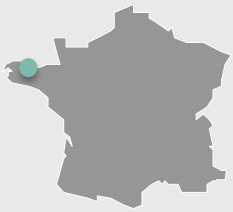
+20
flow and temperature measurements

6
months of technical support

Health facility
Remote monitoring of water systems
Bon sauveur foundation

REACTING RAPIDLY IN THE EVENT OF DYSFUNCTION

Bégard, Brittany



Sébastien Guinel, OFIS Western Region Operating Officer

"OFIS' sanitary offer is based on long-term individual support. In addition to continuous remote monitoring, we carry out a yearly installation visit to check the analytical history of the elapsed period, ensure that the sanitary logbook is up-to-date and suggest adequate actions in the event of anomalies. This is a scalable system that enables other durable management building parameters to be integrated (especially water and energy consumption levels)."

Client's challenge

The Bon Sauveur Foundation invested in remote monitoring of the hot and cold sanitary water system temperatures to safeguard its Ker Avel (Bégard) building against *Legionella* risk.

OFIS' solution

The OFIS sanitary solution consists of continuous monitoring of the hot and cold water system temperatures via connected measurement probes. The remote monitoring service is used to identify the warning signs of decreased water quality. Continuous water consumption monitoring was also implemented to optimize system utilization and identify potential leaks.

OFIS provides the equipment (probe installation, commissioning and operational checks) and ensures that data is processed and restored (web portal access, alert level definitions and warning system if maximum limits are exceeded) as well as site technician training for portal use and data processing.

This solution means that the on-site teams are more responsive in the event of a dysfunction and can apply the adequate corrective action immediately. The teams also now have access to factual information which may be used in the event of a discrepancy or audit.

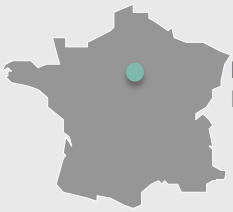
+4,500 m^2 of surface area

13 continuous-measurement probes

3 monitored flows

New buildings
Water system compliance
Delacommune et Dumont

PROVIDING IMPECCABLE WATER QUALITY



Paris,
Ile-de-France

Malika Hamidi,
OFIS IDF Center & Northern Region
New Connection Dept. Officer

"Water quality is a key issue in schools. Heat and stagnation can lead to water contamination in facilities that are closed during the summer. To ensure impeccable water quality in schools, OFIS flushes out the systems two weeks before the schools are opened and collects samples for analyses (temperature, turbidity, chlorine, and bacteriology) to guarantee the efficiency of the intervention and the water quality."

Client's challenge

When a new building is delivered, water-connection commissioning is subject to compliance with a certain number of regulatory requirements, particularly with regards to public health. Delacommune et Dumont, a qualified installer since 1812, expects its compliance-control partners to provide a high quality service that adheres to regulations and compliance schedules.

OFIS' solution

Water quality is an essential issue to consider from the outset of water-network commissioning. Pipes may have been contaminated before installation (storage conditions) or after (stagnation). It is therefore important to disinfect systems after construction and before the delivery of a new building. Analytical checks are carried out to ensure the quality of the water supplied upon building delivery.

In accordance with regulatory procedures for the commissioning of a connection to the public drinking water system, OFIS conducts audits on construction sites to inspect private system compliance and check water quality. After inspection, the installer receives a report that certifies design regulation compliance or that specifies actions to be taken and recommendations for improvement, in the event of non-compliance.

After the analytical checks, OFIS assesses the efficiency of the disinfection and proposes further actions if necessary.

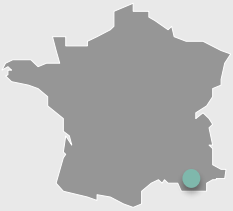
+300
technical inspections per year

+750
analytical checks per year

5
dedicated operational staff in the Paris region

Health facilities
Water system commissioning
SEM for the European hospital

SUPPORTING COMMISSIONING PHASES



Marseille, Provence-Alpes-Côte d'Azur

Carole Chassignet, OFIS Eastern Region Account Manager

"OFIS provides hospital facility support from the moment sanitary water systems are commissioned, thus preventing any water quality issues. We assist construction project management during the key construction phases before the first patients arrive. Our clients select us for our experience in hassle-free, new building deliveries."

Client's challenge

Maintaining water quality during the commissioning of a facility is crucial for health risk management. During the European Hospital's commissioning in Marseille, the SEM (Marseille Water Company) required support in assisting the sanitary water system's operator to secure water quality during the building's various commissioning phases.

OFIS' solution

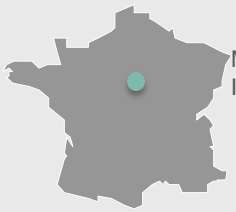
After delivery of the building, the first support phase is to help the facility during the transitory waiting period for the first patient, in order to reduce the risk of germs spreading within the already-operational water systems. OFIS produces a technical hot and cold water system compliance assessment before final delivery and then monitors the hot water recirculating loops. OFIS also implements water quality preservation procedures, a sampling strategy and a hospital sanitary monitoring logbook.

During the second test phase, OFIS carries out regular follow-up visits and updates the sampling program with the obtained results. Corrective and curative actions are provided if needs be. The OFIS teams also ensure that the current and future facility managers are fully aware of health risks.

560	22	24
beds	operating theaters	months of monitoring

Social housing district
Water savings diagnosis
Association des Bailleurs du Mantois

IMPROVING WATER MANAGEMENT IN RENTAL BUILDINGS



Mantes-la-Jolie,
Ile-de-France

Muriel Albert,
OFIS Development Director

"Expenses incurred due to water leaks in dwellings are often underestimated, or even simply unknown. Far too many households get used to dripping taps and leaky flushes, without considering the impact on their budget and the environment. Structural action must be taken by property managers, in addition to ensuring general awareness of the cost of water bills, to save water, e.g. by treating or preventing leaks, or monitoring water consumption."

Our client's challenge

Controlling water consumption in rental buildings is a key priority for social landlords aiming to help their tenants reduce their consumption. The *Association des Bailleurs du Mantois* has launched a program to improve water management in its rental buildings located in Mantes-la-Jolie as part of a program for investing in the future run by the *Agence nationale pour la rénovation urbaine* (Anru - national agency for urban renovations).

OFIS' solution

OFIS is recognized for its expertise in water savings in the private sector and holds a solid database. As such, the firm was selected to analyze the rental set-up of 7 landlords and provide for solutions to optimize the situation.

A report was drafted based on the analysis of water consumption readings for over 5,000 dwellings in recent years.

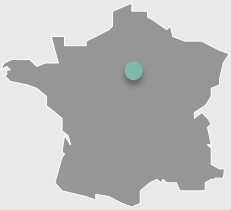
The results were reconciled with the operating analysis and system management techniques, as well as with the communications initiatives launched targeting tenants.

Thanks to the study provided by OFIS, potential water savings were quantified and suitable action plans were proposed for each landlord and each context.

7	5,000+	24+
social landlords	apartments	months of data analyzed

Residential buildings
Corrosion diagnosis
Immobilière 3F

TARGETING REHABILITATION PROGRAMS



Ezanville,
Ile-de-France

Hervé Bonnet,
OFIS IDF Center & Northern Region
Water Quality Departement
Operating Officer

"Some rehabilitation treatments involve a highly aggressive initial, mechanical and/or chemical, scouring phase. In the event of critical corrosion, a system rehabilitation of this nature could pierce the pipes, which would then need to be replaced. It is therefore vital to carry out an in-depth feasibility study prior to any system rehabilitation project."

Client's challenge

Water system asset management is a major stake for property managers. Reflecting its proactive approach in terms of efficient facility management, Immobilière 3F wanted to carry out a sanitary hot water system corrosion diagnosis in its buildings in Ezanville (Paris region).

OFIS' solution

A metallographic analysis was carried out on sections in order to determine the condition of the inside of the water pipes (blockage check, deposit analysis, estimated loss of thickness).

The corrosion rate in metal pipes varies depending on pipe material, age, installation conditions and water quality. OFIS' expertise provides the elements required for selecting the appropriate rehabilitation or system replacement techniques, depending on how critical the loss of thickness is.

OFIS' corrosion diagnosis provided Immobilière 3F with an exact overview of the condition of its properties' systems, as well as an essential tool for system asset management and renewal.

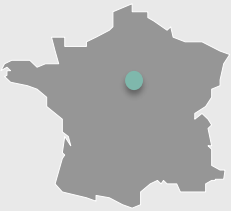
+20
buildings

+30
metallographic sections

+10,000
m^2 of surface area

Social housing
Lead-in-water diagnosis
Veolia Water for Efidis

ELIMINATING RESIDENTS' EXPOSURE TO LEAD



Paris,
Ile-de-France

Jérémy Rayez,
OFIS IDF Center & Northern Regional Officer

"After 1948, lead pipes in internal networks were gradually replaced by other materials. However, lead pipes can still be found in some buildings. Identifying lead and replacing pipes can be complicated and costly for property owners. OFIS has developed a specific approach for clients who require a property asset assessment."

Client's challenge

As a registered, social housing company, Efidis is aware of the health risks associated with the presence of lead in drinking water and is concerned about regulatory compliance. It has therefore decided to adopt a challenging, preventive approach for 50 of its residences in the Paris region.

OFIS' solution

OFIS was mandated by Veolia Water to conduct a well-structured and pragmatic risk assessment of residents' exposure to lead in water.

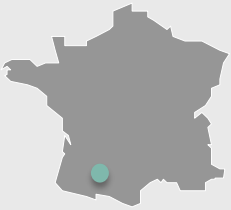
The OFIS site inspection identified lead sections in sanitary hot and cold water systems and assessed the feasibility of a rehabilitation program. The collected data (installation drawings, technical specifications and identification of critical points) was directly recorded on site using a tablet.

Following OFIS' assessment, Efidis now has an exact overview of lead exposure per residence, a procedure for prioritizing associated risks, recommendations adapted to the characteristics of facilities and a financial estimate of the remedial work to be undertaken.

50	2	10µg/L
audited residences	months of interventions	regulatory limit for lead

Municipal swimming pool
Chloramine diagnosis
Grand Auch

REDUCING AQUATIC CENTER CHLORAMINE LEVELS



Auch,
Languedoc-Roussillon-Midi-Pyrénées

Carole Lucas,
OFIS Western Region
Engineering Consultant

"Chloramine development is a complex phenomenon involving several chemical reactions between chlorinated products found in water treatments, nitrogenous matter brought in by swimmers and cleaning products. Chloramines are highly volatile and easily move from water to air; adequate ventilation is therefore essential. OFIS' global swimming pool health-risk prevention solution takes all treatment channels into account: water, air and surface hygiene."

Client's challenge

Aquatic centers (swimming pools, water-sport centers and leisure centers) have to deal with chloramine pollution. This can create health problems for those working and those using the facility.

As part of the Auch swimming pool operational contract renewal, the Grand Auch local council asked for an assessment of the conditions of use and maintenance of the systems, with the aim of including these issues in the new contract.

OFIS' solution

OFIS carried out a sanitary and technical diagnosis of the swimming pool's water, air and hygiene treatment installations, in order to identify the potential elements that create and spread chloramines in the facility's air and water.

Water quality (free chlorine, total chlorine, combined chlorine, pH, temperature) and air quality (ventilation and air renewal rate, temperature, hygrometry, trichloramines) measurement campaigns were carried out simultaneously in order to assess risk levels and provide preventive and corrective solutions.

Schematic swimming pool water and air treatment supply chain diagrams were drawn up to provide a clearer overview of the monitoring and maintenance operations.

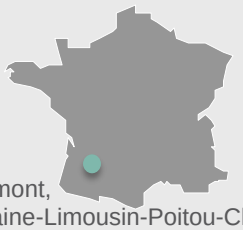
+130
audited elements

+110
measurements recorded

500
users max. at one time

Wine cellar
Effluent management
Veolia Water for the Cave du Marmandais

REDUCING POLLUTANT EMISSIONS AS PART OF RSDE MONITORING



Cocumont,
Aquitaine-Limousin-Poitou-Charentes

Fabienne Lapierre,
OFIS Western Region
Account Manager

"The MEEDAT (French Ministry of Ecology, Sustainable Development and Energy) circular of 5 January 2009 decrees that manufacturers who operate facilities requiring special authorization must implement a hazardous substances in water research program (RSDE).

OFIS assists manufacturers during the program's three implementation phases: initial monitoring, permanent monitoring and substance origin identification, and actions to apply to reduce the emissions."

Client's challenge

Obtaining excellent production quality whilst respecting environmental by-product discharge requirements (waste water and sludge) is an ongoing concern for the Cave du Marmandais. It is for this reason that Veolia Water France and OFIS were commissioned to assist the Cave du Marmandais in implementing the RSDE (hazardous substances in water) program.

OFIS' solution

OFIS provides a global approach for water pollutant discharge management. The initial step consists of a structural study of effluent collection and treatment and an operational procedures assessment of the entire factory chain.

The potential sources of the various pollutants and the type of emissions are then identified. The results gleaned from permanent substance monitoring measurements are studied to then propose tailor-made improvement actions for the site.

Actions such as replacing certain active ingredients used in different activities and local treatment for identified confined sources are recommended as part of our global solution.

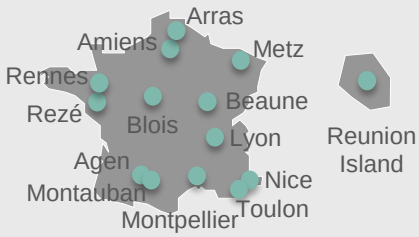
17
substances analyzed

+5,700
m^3 of water treated/year

+45,000
hectoliters of wine produced

Drinking water supply systems
Operational staff training
Veolia Water and Endetec

PROVIDING COMMUNICATING-SENSOR INSTALLATION CERTIFICATION



Muriel Albert,
OFIS Development Director

"Equipment installation quality is key to the efficiency and relevance of any device. A badly immersed probe, a wrongly plugged communication module or a poor radio network signal are examples of factors that can annihilate probe performance, regardless of how innovative they might be. It is therefore essential for operational staff to be trained in probe technology, installation, and maintenance."

Client's challenge

Providing drinking water is one of water suppliers' fundamental missions. This requires effective and rapid approaches in terms of monitoring water quality and identifying dysfunctions before a potential danger affects consumers.

Veolia Water provides its clients with KAPTA™ probes. These innovative, wireless sensors continuously and simultaneously measure several water quality settings to efficiently monitor, alert and react.

OFIS' solution

Endetec selected OFIS to train Veolia Water technicians in installing and activating KAPTA™ 3000-AC4 probes in France and abroad.

An initial two-day, theoretical training session, followed by a practical module several weeks later, enables technicians to become familiar with the new sensors and various monitoring, installation and activation kits. By the end of the training session, technicians are able to install and activate sensors on systems and carry out basic maintenance procedures.

Technicians follow a second one-day session around 12 to 18 months later. This session serves as a refresher course for essential sensor procedures.

+160
training hours

+90
trained technicians

14
regional Veolia Water France centers

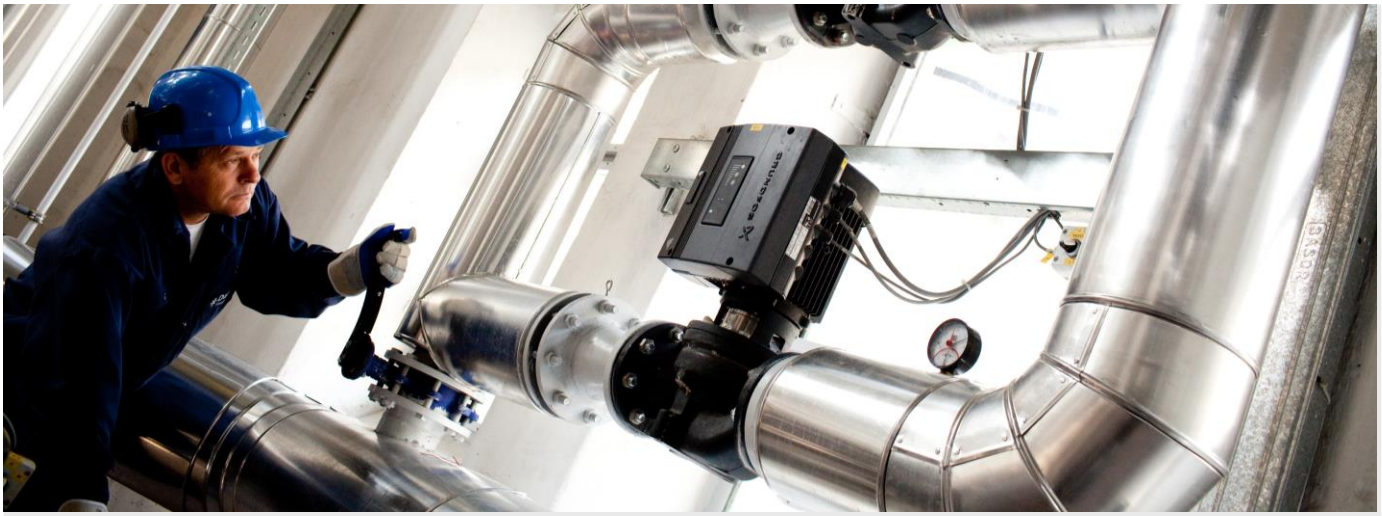
SEURECA VEOLIA

ENERGY

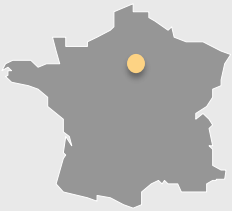
OFIS has developed its expertise in a range of technical system support services with the aim of combining energy savings, health, lifestyle quality and user comfort in buildings.

Upon operator request, OFIS provides complex heating and cooling installation services using proven methods and modeling tools to fine-tune operations.

Collective housing
Secondary heating system optimization
Promaiga for a residential building in Montesson



COLLECTIVE HEATING POWER SAVINGS



Montesson,
Ile-de-France

Denis Monteilliet,
OFIS IDF Center & Northern Region
Energy & Process Dev. Manager

"According to ADEME (the French Environment and Energy Management Agency) figures, decreasing the average temperature by 1°C saves 7% on heating costs. Balanced heating systems create uniform temperatures in apartments and reduce average temperatures. Our monitoring system also identifies the risk factors which may reduce balanced heating system efficiency. For example, continued lack of desludging treatment may lead to the adjusters becoming prematurely clogged and reduced heating unit performance."

Client's challenge

When it comes to collective housing, a potential source of energy savings resides in optimizing heating system efficiency. Following a full heating system overhaul in a residential building in Montesson, Promaiga SN wanted to provide its client with a detailed heating system balancing assessment which also takes user comfort into account.

OFIS' solution

The OFIS solution begins with on-site reviews of secondary heating production and distribution systems and determining the characteristics of the buildings and various accommodations (insulation, ventilation, etc.).

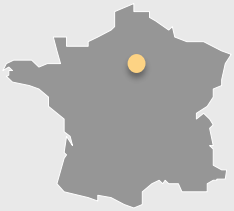
A hydraulic heating system simulation, including heat loss and flow calculations to be applied to the system, is then carried out. Horizontal system layout plans, which display adjuster locations, are created.

OFIS' expertise also provides clients with an installation heating curve and a theoretical-value comparison, according to installation type. We then fine-tune the on-site balancing devices, located at the base of the column, and provide a comprehensive report when the work is finished.

136	17	+190
apartments	columns	balancing devices

Office building
Chilled water system optimization
Dalkia for the Héliaque building

STABILIZING CHILLED WATER SYSTEM TEMPERATURES



Paris,
Ile-de-France

Jérémy Rayez,
Responsable de Pôle
OFIS IDF Centre Nord

"A correctly functioning cooling system is a key factor for all sectors of activity. For the tertiary sector, the concern is centered on user comfort. For health facilities, there is a sanitary concern as the temperature must be limited to control infection risks in operating rooms. For industrial facilities, the use is technical; the optimal utilization of processes often requires specific instructions, such as electronic component manufacturing or data centers."

Client's challenge

As part of its operating contract, Dalkia is in charge of temperature control for the Héliaque office building in Paris. Despite globally satisfactory regulation, temperatures were not correct on some floors and noise pollution was generated by balancing valve overflows. DALKIA mandated OFIS to identify the cause of the dysfunction and to make the necessary adjustments.

OFIS' solution

OFIS audited the site's cooling systems to determine the cause of the temperature discrepancies and noise pollution. Optimal pressure and flow distribution made it possible to balance the cooling system and this reduced both acoustic and thermal dysfunctions.

In this complex case of imbalanced cooling systems, the field method (floor-by-floor adjustments) was inadequate for a homogeneous distribution of chilled water. OFIS provided a comprehensive study of a hydraulic system simulation which sets flows for every valve on every floor and took all system characteristics into account. With this solution, dysfunctions can be rapidly fixed, excessive energy consumption limited, and maximum user comfort ensured.

320
m^3/h theoretical network flow

1,330
fan-coil units

2,760
refrigeration kW

AIR

SEURECA VEOLIA

Indoor air pollution is a major public health issue.

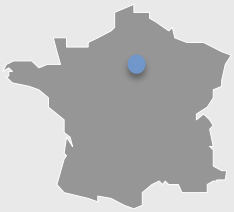
OFIS expertise in evaluating and optimizing indoor air quality aims to reduce occupant exposure to air pollutants, to protect our health and ensure that buildings are comfortable.

From 1 January 2018, measures to control indoor air quality (assess aeration, deploy an action plan and monitor pollutants) shall be taken in sites housing children aged under 6 and primary schools.

OFIS is one of the first companies to obtain the COFRAC accreditation for indoor air quality sampling/monitoring in public buildings.

Tertiary sector buildings
Indoor air quality audits
Société Générale

INDOOR AIR QUALITY DIAGNOSIS



Paris,
Ile-de-France

Jean-Charles Ponelle,
OFIS
Air Quality Expert

"Indoor air quality mainly depends on each building's design and how it is operated and used. It also depends on the outdoor environment. We can precisely identify pollution sources and associated risks by using a specific sampling strategy and applying the analyzed parameters. For example, we can assess filtration efficiency, air renewal rates and material emissivity, and offer our clients tailor-made optimization solutions."

Client's challenge

Société Générale has installed an indoor air quality monitoring system in its office buildings. As an independent company, OFIS was mandated to evaluate the ventilation systems' operative effectiveness.

OFIS' solution

OFIS carries out yearly measurement campaigns for physical parameters (temperature, relative humidity, particles, etc.), chemical parameters (formaldehyde, benzene, etc.), and microbiological parameters (bacterial flora, fungal flora, etc.) at various points of the ventilation systems (air-handling units, air outlets, air quality in offices).

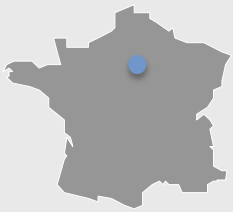
By inspecting all levels of the air treatment chain, OFIS is able to precisely locate potential dysfunctions. Adjustments can then be made to air handling units, by optimizing the fresh/recirculated air ratio, or by improving the effectiveness of filtration and its maintenance.

After each audit, OFIS issues a report that includes analytical results, graphs, comments, conclusions and action plans. Société Générale now has a comprehensive ventilation system overview and an assessment tool for dysfunction maintenance and prevention.

17	+200	7
monitored sites	analysis points/year	years of support OFIS

Tertiary building
HEQ™ operations certification
Sodexo Energie et Maintenance

HEQ™ operational guidelines compliance



Paris,
Ile-de-France

Sabine Conseil,
OFIS IDF Center & Northern Region
Air Quality Department Officer

"The HEQ™ certification is a voluntary action through which construction and building managers can prove their performance levels and meet environmental and health objectives. This action can be taken when construction begins, during renovations or once the building is operational. We assist our clients with the three Tertiary Building in Operation certification fields: Sustainable Building (owners), Sustainable Management (operators) and Sustainable Use (users)."

Client's challenge

With the aim of achieving environmental excellence in its buildings, Sodexo Energie et Maintenance is committed to proactively monitoring the indoor air quality of the Le Verdi office building in Suresnes. The client's objective is to comply with the various NF (collective certification brand) HEQ™ Tertiary Building targets in the Sustainable Use section, particularly for comfort and wellbeing.

OFIS' solution

In order to meet the air sanitary quality target (target 13) criteria, OFIS carried out an air quality measurement campaign to check the conformity of the indoor air chemical and microbiological parameters (bacterial flora, benzene, nitrogen dioxide) and to ensure that there were no dysfunctions in the ventilation system.

Furthermore, a digital internal aeraulics simulation was carried out to ensure that the ventilation system provided optimal indoor air in the offices. The simulation was performed in several selected offices within the building. This study aims to focus on air-flow distribution as per the provided ventilation data. This expertise enables the client to meet the HEQ™ olfactory comfort target criteria (target 11). The Le Verdi building was certified in 2009 and has now reached 'Excellence'.

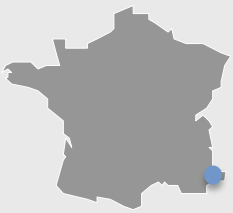
10 monitored areas

2 HQE™ targets

+500 m² audited

Public buildings
Innovative indoor air quality control
Veolia for Metropole Nice-Cote d'Azur

TESTING VENTILATION-IMPROVEMENT SENSORS



Nice Provence-Alpes-Côte d'Azur

Jean-Charles Ponelle,
OFIS
Air Quality Expert

"OFIS' initial audits were carried out in adherence to the latest air quality monitoring regulation changes and in application of the decree of 30 December 2015. The decree outlines ventilation assessment and pollutant measuring methods for indoor air quality monitoring in specific public buildings. Our actions ensure that facilities fully comply to current regulations and have access to concrete assessment and decision-making tools."

Client's challenge

Recent changes to air quality monitoring regulations in public buildings have incited local councils to engage in assessing aeration methods and indoor air pollutant measurements.

As part of the Nice-Côte d'Azur Monitoring Urbain demonstrator program, Veolia's Pôle Innovation 2EI commissioned OFIS to run an innovative indoor air quality test for buildings.

OFIS' solution

OFIS' mission is to carry out air quality measurement campaigns and continuous indoor pollution monitoring in day nurseries, schools and office buildings.

The first step is to assess the physical-chemical indoor air parameters (benzene, formaldehyde, CO_2) in order to target initial improvement areas and define a continuous monitoring strategy for the selected offices.

The continuous air quality monitoring will operate for one year using OFIS's multi-parameter compact probes. The effectiveness of the ventilation systems and use of suggested working practices can therefore be assessed and the local council will be supported in its aim to improve indoor air quality within its facilities.

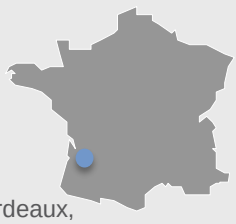
6 audited buildings

17 continuous-measurement probes

12 months of monitoring

Community building
Proactive indoor air quality monitoring
MTO Eurogem for Bordeaux

ENSURING USER COMFORT AND HEALTH



Bordeaux,
Aquitaine-Limousin-Poitou-Charentes

Carole Lucas,
OFIS Western Region
Operating Officer

"We provide support for city council technicians via continuous measurement probes and data recovery portal training. Following OFIS' support program, the on-site teams are able to install probes in strategic places, for example, during a move to other offices or community buildings."

Client's challenge

Indoor air quality monitoring is essential to identifying potential air treatment system dysfunctions and is key to their preventive maintenance. MTO Eurogem assists Bordeaux city council with its multi-technical building maintenance contract. OFIS was chosen to ensure air quality monitoring in Bordeaux's community building.

OFIS' solution

OFIS' continuous indoor air quality monitoring includes installing multi-parameter wellbeing (temperature, hygrometry, noise) and comfort (CO_2, dust and Volatile Organic Compounds - VOCs) indicator probes in buildings. Real-time indoor environment monitoring is possible as clients have permanent access to recovered data and information via a web portal.

The device's relevance is based on a site-adapted sampling strategy. The latter is carried out by OFIS prior to probe installation in the community building. In coherence with current rules and regulations, the data recovery portal settings were programmed to define alerts for each parameter.

OFIS provides a quarterly data report for each probe and assists the city council with its indoor air quality improvement action plan.

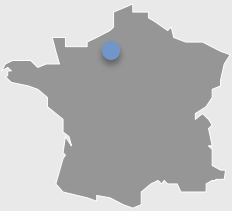
48	10	7
months of monitoring	probes installed	monitored parameters

Wastewater treatment plant Ventilation system efficiency

Veolia Water France

ASSESSING AIR RENEWAL EFFICIENCY IN WASTEWATER TREATMENT PLANTS

Louviers, Normandy



Alexis Aubignac,
OFIS
Water Cycle Manager

"Odor control is becoming increasingly problematic. This is mainly due to both increased urbanization and public awareness in terms of pollution from industrial facilities. It is for this reason that preventing odors, and even eradicating them, is a major issue for local communities and industrial plants. OFIS supports the latter by providing services that unite technical teams and local residents, ranging from pollution-source identification to site-improvement solutions."

Client's challenge

The procedures used in wastewater treatment plants create chemical and biological pollutants that must be prevented from spreading to protect plant employees. Preventive measures include adapted ventilation design. OFIS carried out an air extraction system assessment as part of the Veolia Water France mandate to regularly monitor Louviers wastewater treatment plant's ventilation systems.

OFIS' solution

OFIS developed an air extraction system cartography for the site which included the positions of all extract units. OFIS also carried out flow measurements for all extract units, and the general extract unit, to ensure that air renewal requirements were met for each specific activity zone within the plant (oil separator, dehydration, sludge storage, etc.). The checks enabled the network to be rebalanced, according to the renewal rates required by each activity zone.

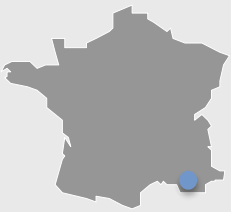
A risk analysis was also carried out on the air extraction system to identify any dysfunctions and to provide corrective measures if necessary.

The flows are measured yearly in order to ensure regular ventilation monitoring.

7	+250	+130,000
plants controlled	control points	m^3 of extracted air

Public pools
Chloramine and THM exposure measurements in air
Pays d'Aix

ASSESSING WORKER AND BATHER EXPOSURE



Aix-en-Provence,
Provence-Alpes-Côte d'Azur

Benjamin Midena,
OFIS Eastern Region
Operating Officer

"Indoor pools must face the growing concerns of workers and bathers, who are aware of sanitary and comfort conditions in the immediate environment. Indoor pool managers must regularly monitor air quality and check that standards are maintained. They must also bear in mind that air quality does not depend exclusively on air treatment, but also on effective water treatment and surface hygiene."

Our client's challenge

Regulatory requirements apply to pool buildings in terms of monitoring air quality. Pays d'Aix has evaluated the sanitary and health risks of the indoor pools it manages for many years, particularly exposure to chloramines and trihalomethanes (THM) in air.

OFIS' solution

OFIS monitored chloramines and THM in air for indoor pools in Pays d'Aix for a 2-year period, with four summer and winter campaigns.

Air samples were taken from various locations to ensure that the samples were representative of exposure for both workers and bathers: almost at floor level near to the pools and at eye height near to life guard stations.

OFIS checked that these measurements were taken during normal operation for air and water treatment systems and during typical occupancy periods. These precautions ensure that actual exposure to the concentration of chloramines and THM in the pool building atmosphere is evaluated.

After each measuring campaign, the results are interpreted and compared with regulatory exposure limits, and previous values, and actions plans are provided.

12	100+	24
pools tested	measurements recorded	months of OFIS monitoring

SEURECA VEOLIA

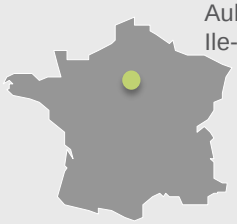
SMART BUILDING

Given its environmental and health performance expertise, OFIS offers a comprehensive range of consumption and usage optimization solutions for buildings.

OFIS is the preferred choice for building managers: we provide development plan support by identifying cost efficiencies and maintaining residents' health and comfort.

Tertiary building
Accepting and optimizing air and water system operation
Veolia head office - Le V

ACHIEVING ENVIRONMENTAL EXCELLENCE IN BUILDINGS



Sabine Conseil,
OFIS IDF Center & Northern Region
Air Quality Service Manager

"Many air and water quality issues arise in new buildings. With water, it is particularly important to check that networks are commissioned with no effect on water quality as it leaves the tap. With air, it is important to check, for example, that materials and furniture are not excessively emissive, and that air treatment units are effective. On this basis, air and water quality must be monitored from acceptance, and subsequently throughout building use."

Our client's challenge

"Le V", the new Veolia head office in Aubervilliers, provides employees and clients with a top quality workplace and reception area. The building is compliant with the requirements of European environmental certifications (HQE, Breeam), and aims to set the example in terms of construction and usage. Veolia Energie France, the building operator, decided to obtain support for this process.

OFIS' solution

OFIS was mandated to monitor indoor air and water quality from acceptance and throughout use of the building.

Measurements were taken during the initial months of building use. Water was analyzed at usage points (sanitary hot water and cold water). Air was tested in indoor spaces and in air treatment units.

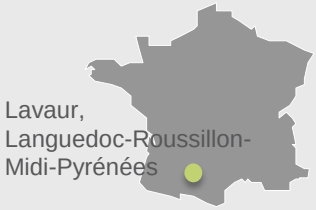
A series of measurements was taken after 6 months of building use to monitor changes to parameters and check that occupant health and comfort were guaranteed over time.

Thanks to regular monitoring by OFIS, Veolia Energie France was able to adapt its practices (maintenance, monitoring, water treatment, air treatment) to smart building management.

50+	11	40
check points	air quality parameters	water quality parameters

Health facility
6THEMIC© expertise
Lavaur Hospital - Pinel psychotherapy Center

MEETING THE HAS CERTIFICATION'S ENVIRONMENTAL REQUIREMENTS



Lavaur,
Languedoc-Roussillon-Midi-Pyrénées

Jean-Michel Mathiot,
OFIS
Engineering Consultant

"Optimizing a building's global performance is a complex task. Available data is often independently managed by separate teams, despite the fact that everything is connected. A decrease in air renewal (energy savings), for example, directly impacts air quality (health risk), while lower hot water temperatures (energy savings) increase Legionella development (health risk). 6THEMIC© highlights all these interacting issues in buildings and helps find the best compromise between results and resources."

Client's challenge

The Pinel Psychotherapy Center at Lavaur Hospital must adhere to the Haute Autorité Sanitaire (French National Authority for Health) certification. The 2010 version includes quality and environmental safety objectives. An environmental and sanitary building overview enables the facility, which has already launched a global environmental impact reduction project, to meet the environmental criteria as outlined in the HAS guidelines.

OFIS' solution

OFIS developed 6THEMIC© - an assessment tool for environmental and health performance inside buildings. This multi-parameter approach addresses the key issues in buildings: water, energy, air quality, comfort, health, and waste. It is an invaluable decision-making support tool to provide managers with a global and transversal vision of the major environmental and health issues that interact in buildings.

Each issue is assessed according to various criteria: consumption levels, design, maintenance, follow-up, awareness campaigns, communication, etc. The Pinel center now has access to relevant monitoring indicators, presented in a highly visual manner, and a coherent improvement program.

6	15	+150
analyzed themes	audited buildings	measurements taken into account

SEURECA VEOLIA

INTERNATIONAL

OFIS provides its expertise around the world by offering the best possible configurations to its clients.

Depending on the context of the requirement and the expected level of expertise, we either allocate our French experts directly or assign local teams with the necessary knowledge via a specific authorization.

Hospital
Indoor air quality and water quality
Médipôle de Koutio (New Caledonia)

SAFEGUARDING AIR AND WATER NETWORKS BEFORE THE FIRST PATIENT ARRIVES

Nouméa,
New Caledonia

Damien Page,
OFIS Western Region
Engineering Consultant

"We can easily allocate our teams to projects outside of mainland France. We systematically take action on-site and define the basis of a work plan with our clients. This work plan will then continue after returning to France. With the Nouméa project, after auditing the site, we assisted our client in controlling sanitary and health risks for air and water systems remotely for 10 months, until the arrival of the first patient."

Our client's challenge

The new hospital in Nouméa, the Médipôle de Koutio, is an unprecedented project in New Caledonia, and represents over half of the health services available in the region. Médipôle decided that it would be preferable for its technical and hygiene services to be supported throughout the trial operation phase for hydraulic and air systems, before its initial patients arrived, to prevent any risk of contamination at start-up.

OFIS' solution

The 1st stage for OFIS as part of its expertise involved evaluating the sanitary and technical compliance of the air and water networks, analyzing risks, taking series of measurements (temperature, flowrate), and proposing corrective and preventive actions.

OFIS prepared a strategy for monitoring and analyzing water quality (bacteriological and physico-chemical quality) and air quality (particulate content and bacterial air contamination) on this basis, to ensure that the sanitary conditions of the systems are maintained until the arrival of the first patient.

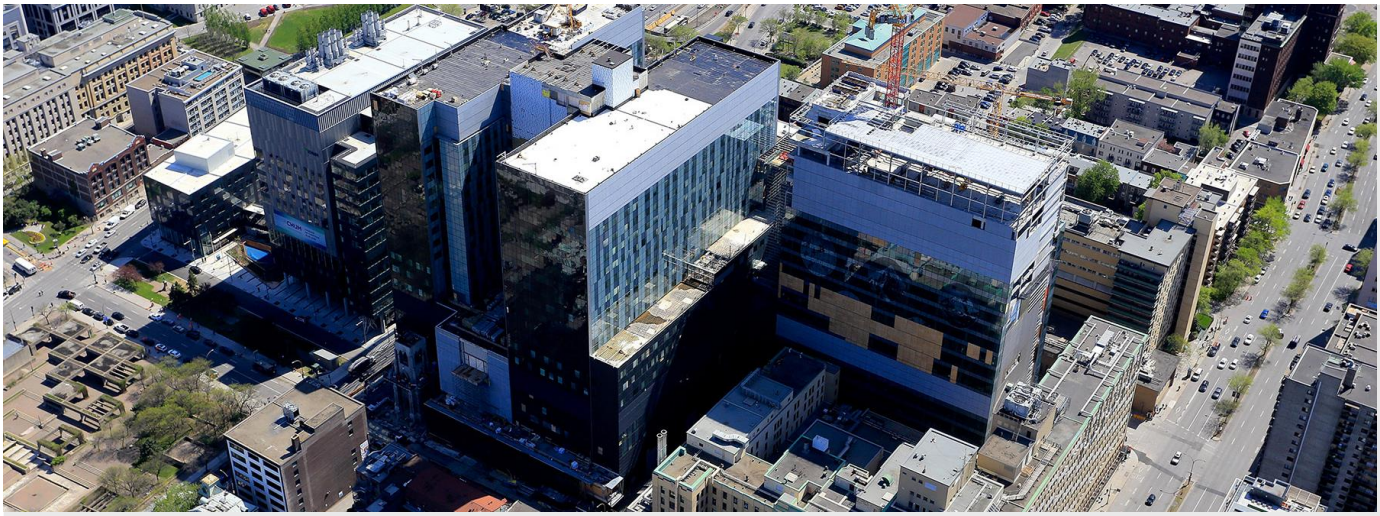
Finally, preventive maintenance and monitoring procedures suitable for each type of site use were developed, together with a safeguarding protocol for air and water networks in the event of a dysfunction, and if works are carried out in qualified areas.

10
months of OFIS monitoring

645
beds

100+
air treatment units

Teaching hospital
Indoor air and water quality
Veolia for Montreal UHC (Canada)



PREPARING FOR OPERATIONAL HEALTH RISKS DURING CONSTRUCTION

Muriel Albert,
OFIS Development Director

"Our overseas interventions comply with both current local and international standards and regulations and the Veolia Group's best practices and expertise, as detailed in the Group's guidelines. In the absence of a regulatory framework, take for example the heat recovery wheels for the hospital's air treatment system, we had to ensure that the technical solution chosen by the site was fully in line with health risk management."

Client's challenge

Veolia has been commissioned with operating Montreal's future hospital. The challenge is to ensure that, throughout the construction phase, the installation design specifications meet the objectives outlined in the operating contract, particularly concerning health risk management in the sanitary hot and cold water systems and air systems.

OFIS' solution

OFIS analyzed the hospital's sanitary water system design project plan in order to identify critical health issues. Based on this risk analysis, OFIS submitted a technical improvement draft and developed preventive and curative procedures specifically tailored to the hospital for *Legionella* risk management.

OFIS was also commissioned to assess air treatment risk factors and to establish a preventive maintenance program. A heat recovery air-handling unit system using wheels was researched.

OFIS' expertise enables Veolia to be fully prepared for any operating constraints within the hospital's water and air quality maintenance system.

+268,000
m² of surface area

39
operating theaters

+36
months of support OFIS

Health facility
Water savings
Siram for Trento Hospital (Italy)

TARGETING ACTIONS FOR WATER SAVINGS PERFORMANCE CONTRACTING

Benjamin Midena,
OFIS Eastern Region
Operating Officer

"OFIS' water-saving assessments have a dual objective: not only do they aim to reduce consumption and optimize long-term water usage, they also raise water-quality maintenance awareness for technicians. Some of our solutions are based solely on a facility's on-site staff (excluding equipment investments) and, as a rule, generate savings of at least 10% of a facility's total consumption. The savings may be even greater once the investments are included."

Client's challenge

Siram, a Veolia energy subsidiary, is the Italian leader for health sector energy services and provides comprehensive fluid and energy management for over 200 hospitals and health facilities. The renewal of the Santa Chiara Hospital (Trento) operating contract was the opportunity for Siram to offer its client a performance contract based on potential water savings.

OFIS' solution

OFIS carried out a water savings diagnosis in several selected hospital buildings. The assessment included a structural system study, site consumption data analysis and a hydraulic system performance assessment: flow and pressure measurements, overnight recordings and a leak-detection summary.

A sanitary hot water system balancing study was also carried out in one building in order to assess potential water savings in the event of improved flow distribution.

At the end of the assessment, OFIS established an action plan with several water-saving options, prioritized according to investment type and return time (Capex/Opex analysis).

6
audited buildings

+50
flow and pressure measurements

+35,000m³
potential water savings

REFERENCE MANUAL
LEGIONELLA RISK CONTROL
INDOOR AIR QUALITY
VEOLIA TECHNICAL & PERFORMANCE DIVISION

SAFEGUARDING AIR AND WATER SYSTEMS WORLDWIDE

World

Muriel Albert,
OFIS
Development Director

"We can boast over 20 years of references and tried and tested experience in preparing air quality and water quality management plans in indoor areas. Thanks to this unique know-how within the Group, we can offer real and innovative solutions, which ensure we stand out, both in France and worldwide. The tools and methods we develop can then be shared and deployed on all systems operated by Veolia around the world."

Our client's challenge

Health and safety are key requirements for Veolia, for its staff and clients worldwide.

The Group aims to set an example when it comes to safeguarding air and water systems around the world. On this basis, the Technical & Performance Division (DTP) mandated OFIS to update its Legionella risk management and good indoor air quality management reference materials.

OFIS' solution

OFIS prepared the Legionella risk management guide for the Group's domestic water systems and cooling systems (cooling towers).

Thanks to this tried and tested methodology, OFIS was then mandated to draft an indoor air quality reference manual for tertiary and health sites managed by Veolia worldwide.

OFIS helps to develop operating tools (best practices, audit matrices, sanitary logbooks, and training material for the Legionella committee) with the support of the Veolia network of international experts. These tools are designed to help operational units around the world to reduce their risks and improve the performance and safety of their systems for operators, clients and the population at large.

25
best practices created

270+
audit criteria

20+
Veolia experts involved

Industrial site
Corrosion management
Seureca for British Petroleum (Sultanate of Oman)

PREVENTING INDUSTRIAL CORROSION

Khazzan, Sultanate of Oman

Alexis Aubignac,
OFIS
Water Cycle Manager

"When we work on a site under construction, our challenge is to compare the project's technical specifications with existing on-site installations, even if they are only partially finished. The corrosion management guide for the Khazzan site was based not only on the available design and operational elements but also on OFIS' 20-year-long expertise in this sector."

Client's challenge

Veolia has been commissioned with operating British Petroleum's (BP) future raw water treatment plant in the Khazzan gas field in south-west Muscat, Sultanate of Oman.

Given the local water quality issue, the operator is of the opinion that there is a risk of corrosion on the installations, from project implementation to operations. OFIS' technical support is required to draw up corrosion prevention guidelines.

OFIS' solution

OFIS developed a corrosion management guide that provides guidelines and serves as a tool to safely prevent corrosion during the plant's operational phase.

OFIS' unique methodology is based on assessing current water system layout, identifying corrosion threats and factors, defining risk analysis criteria and assessing the associated risk level.

The prevention plan also includes defining actions to avoid critical situations, the identification of regulatory performance indicators and target values, as well as curative actions to implement should thresholds be exceeded.

+1,500
facilities assessed

+20
suggested target values

6,000
m^3/day max. capacity of treated water

Administrative building
Sanitary and technical system diagnosis
Veolia - Tour du Midi (Belgium)

LAUNCHING A PREVENTIVE RISK ASSESSMENT POLICY

Fabienne Lapierre,
OFIS Key Account Manager

"When we take action abroad, we adapt our tools and reference materials to the local technical and regulatory context. Our clients benefit from our operational experience and are also reassured that their local requirements will be met. We also refer to the Legionella risk safeguarding reference manual drafted by international Veolia experts when providing expert services on sites operated by the Group."

Our client's challenge

Veolia has supported the *Service Fédéral des Pensions Belge* (Belgium pension service) with operating the Tour du Midi office block in Brussels for half a century. Veolia constantly aims to set the example in terms of managing sanitary and health risks, and decided to launch a preventive sanitary and technical assessment program for sanitary and technical water networks (cooling towers).

OFIS' solution

OFIS uses a tried and tested reference manual for assessing design, maintenance, operation and monitoring rules for sanitary water systems (hot water and cold water), and cooling systems (cooling towers).

Thanks to a sanitary and technical diagnosis of the Tour du Midi systems, risk factors contributing to the proliferation and dispersal of Legionella in the environment were identified. The order of priority of the action plans provided is established based on local regulations, the requirements laid down in the Veolia Legionella reference manual and OFIS expertise.

A sanitary logbook was also assigned to each of the three cooling circuits and the two sanitary hot water networks, to help the system manager to apply good servicing and monitoring practices, and comply with the national regulations in force.

4
sanitary water networks

5
cooling towers

300+
audited elements

INDUSTRIAL SITE
LEGIONELLA RISK AND COOLING TOWERS
VEOLIA FOR ARCELORMITTAL (SOUTH AFRICA)

CONTROLLING CONTAMINATION RISKS IN COOLING TOWERS

Jean-Michel Mathiot,
OFIS
Engineering Consultant

"One of the ArcelorMittal Vanderbijlpark plant specificities is to adhere to a zero emissions mode. All the site's water is treated on site and redistributed. This water supply requires specific operating, maintenance and monitoring conditions, so that Legionella health risks are managed before it is used in cooling circuits. Adequate management of both treatment and deconcentration systems is, therefore, a must."

Client's challenge

As part of its operating contract for ArcelorMittal in Vanderbijlpark, South Africa, Veolia is responsible for supplying treatment products and operating more than 40 cooling circuits. Cooling towers must be designed, operated and maintained in adherence to rules and regulations; if this is not the case, they run a potential *Legionella* risk.

OFIS' solution

OFIS established a risk analysis for 11 water-cooling towers within the site's four most critical cooling circuits. The aim of this dual preventive and corrective approach is to ascertain the elements that encourage the spread of bacteria, especially *Legionella* development.

The installations are assessed on more than 80 key parameters within five main topics: design, maintenance, operation, water treatment and monitoring and traceability operations. Any technical and sanitary anomalies that pose a potential bacterial development risk are flagged up: backwater, critical corrosion zone, etc. A prioritized action plan, including structural or operational improvements, is defined.

In order to sustain this approach, OFIS provided *Legionella* risk and cooling installation assessment training for site advisors.

+80
audited elements

11
cooling towers

+10
monitored follow-up parameters

Collective housing
Secondary heating network optimization
Seureca for Termoelectrica (Moldavia)

TARGETING ENERGY SAVINGS AND USER COMFORT

Chisinau, Moldavia

Denis Monteilliet,
OFIS IDF Center & Northern Region Energy & Process Dev. Manager

"Training our employees or clients during our missions outside of France, wherever we may be in the world, is one of our strengths. We pass our knowledge on to the local teams, ensuring that they can carry on with our actions independently. We can also provide remote assistance and technical validation. This combination of local involvement and responsiveness is definitely a key strength."

Our client's challenge

Optimizing heating systems in collective housing can lead to potential energy savings, but is also decisive in improving the comfort of occupants. Seureca was contacted to provide technical assistance to Termoelectrica, the urban heating firm from Chisinau in Moldavia, as part of a World Bank contract. This contract included an optimization study focusing on the balancing of collective housing heating networks.

OFIS' solution

The balancing optimization approach for heating networks proposed by OFIS was broken down into two phases.

To begin with, the aim was to identify all balancing components and networks, and the characteristics of the building structure. Based on this data, the balancing study included calculating heat loss, measuring network flowrates and defining the pre-settings required for balancing components.

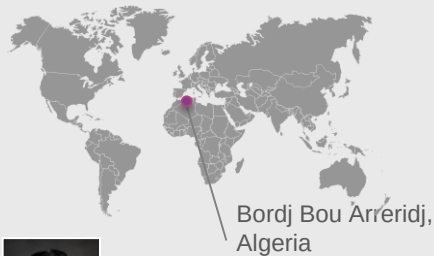
OFIS then returned to the site to develop and adjust the balancing components fitted at the base of the heating network column.

An OFIS coach passed on his skills in how to use measuring equipment, meaning that the operator is now able to monitor the heating networks in its buildings and ensure proper operation on a long-term basis.

6	120+	8
audited buildings	controlled valves	% energy savings

Drinking water supply systems
Water system efficiency
Seureca for Bordj Bou Arreridj (Algeria)

Optimizing drinking water systems in water-stress zones



Denis Monteilliet,
OFIS IDF Center & Northern Region
Energy & Process Dev. Manager

"International projects require a high level of adaptability and responsiveness in order to meet challenges within a local context. We have to be able to deal with the unexpected. We are familiar with the equipment that we install but are unfamiliar with the measurement point and its connection (different diameters, poor connections, valve leaks, etc.). We have been able to handle the most complex situations thanks to the assistance, most especially in terms of installation experience, of local technicians."

Client's challenge

In partnership with the national Algerian Water and Environmental Research department (NEE), Sureca was selected by the Algerian Water Company (ADE) to assist the Algerian town of Bordj Bou Arreridj with a drinking water conveyance and distribution rehabilitation project. The water tanks are filled every other night in this region that is unable to meet human and environmental water needs. The network empties throughout the day according to consumption needs and leaks.

OFIS' solution

In order to gain a global vision of the drinking water distribution system within a water stress zone and to optimize operations, OFIS carried out an essential hydraulic parameter measurement campaign (flows, pressure, reservoir levels) on various parts of the system.

The measurements were recorded day and night in real-time using ultrasound flow-meters. Continuous measurements were also taken using pressure probes, piezometer sensors and electromagnetic flow-meters connected to recording devices.

Thanks to this campaign, the water distribution system in two main town zones (north and south) was assessed and drinking water conveyance network losses were established.

+180,000 inhabitants

+50 measurement points

+47,000 collected and processed data

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