



SERVICES DESIGN TECHNOLOGY International



Green Buildings  
and Sustainability





# SDT Green Buildings and Sustainability Professional Services

SDT is a leader in green building and sustainable services. Providing our clients sustainable environmental solutions to meet international compliance, business and operational needs.

Our environmental dynamic team is capable to cover several technical discipline, including:

- Environmental, health and safety management
- Impact assessments
- Governments permits
- LEED
- BREEAM
- QSAS – GSAS
- ESTIDAMA
- ARZ (Building Rating System)

We are the leaders in the industry with respect to alliance and other relationship-based contracting approaches due to our capability of collaborating effectively.





# Environmental Assessment and Management

One of the most significant issues that industries, businesses and governments encounter is the protection of our natural environment.

We are able to contribute to various kinds of projects through our knowledge and commitment to deal with, and solve environmental problems in a business-oriented manner.

## **Environment planning, approvals and auditing**

- Risk planning and analysis
- Options identification and evaluation
- Environment in design
- Permits and statutory approvals
- Permits and licensing
- Feasibility and due diligence assessment
- Environmental auditing







## **Environmental management**

- Environmental management systems
- Environmental management and monitoring plans
- Stakeholder and community engagement
- Construction environmental management

## **Environmental assessment**

- Environmental impact assessment and study
- Ecology
- Sustainability assessment





## Green Infrastructure

We focus on preserving today's natural resources and guarding them for future generations.

Our design and engineering specialists help to develop scalable solutions that meet both client needs and local or regional green infrastructure requirements.

SDT has extensive experience in the development of natural stormwater management solutions, providing regulatory compliance support, modeling impacted areas, creating Leadership in Energy and Environmental Design (LEED), Building Research Establishment Environmental Assessment Methodology (BREEAM) and Qatar Sustainability Assessment System (QSAS) certified designs and evaluating cost-benefit returns on various green vs. conventional options.







## LEED, BREEAM and QSAS/GSAS

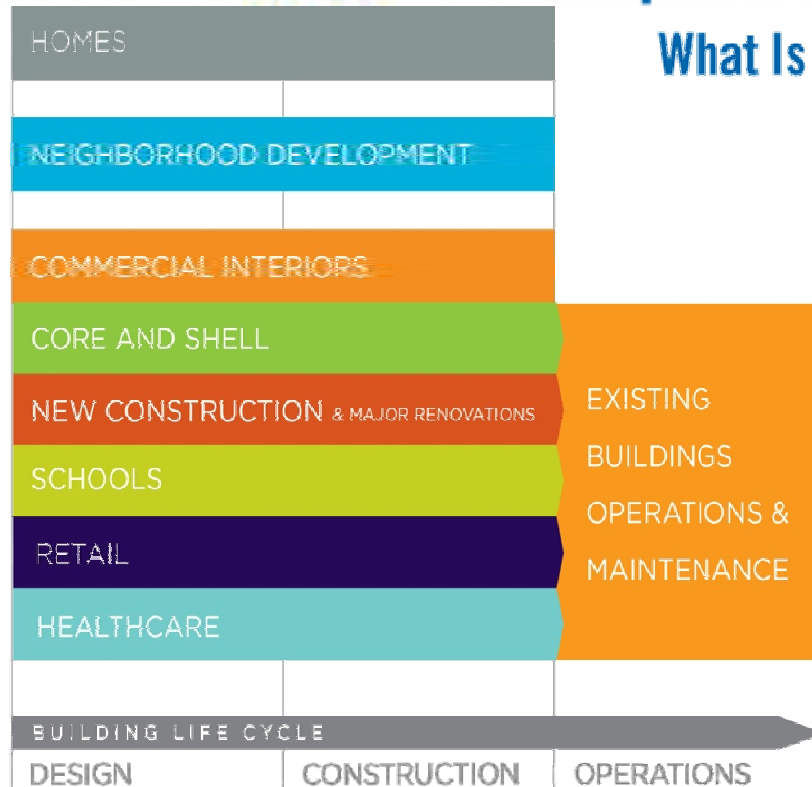
We provide integrated front-end sustainability solutions as input for corporate strategies, investment and asset management decisions. Being LEED certified (Leadership in Energy and Environmental Design), allows us to combine technology, innovation and our staff's experience to identify the most sustainable green building solutions. we are committed to provide superior sustainability services through developing efficient approaches to the supply of energy. our corporate and social responsibility policy outlines our four key environmental objectives:

- Commitment to provide environmentally sustainable design
- Reducing the company's carbon emissions
- Generating new energy efficient designs
- Industry collaboration to enhance sustainability strategy

### Our Major Sustainability Design Services:

- Master planning advice
- Natural ventilation
- Day-lighting studies
- Passive cooling thermal analysis
- Renewable energy advice
- Computational fluid dynamics (CFD) analysis
- Intelligent facade design
- Energy ratings systems
- Lifecycle costing
- Conform analysis
- Energy Audits

# LEED address the complete lifecycle of buildings:



## What Is Green Building?



LEED Certification is provided by USGBC in four levels: Certified, Silver, Gold, and Platinum, depending on the number of credits achieved in the project.

The credits are tailored for each type of development and project: New Construction, Core & Shell, Schools, retail, Healthcare, Commercial Interiors, Homes, and Neighborhood Development.

LEED Certification addresses 5 main sustainability disciplines: Site Selection & Planning, Water, Energy, Indoor Environmental Quality, and Material Use.





# BREEAM (Building Research Establishment Environmental Assessment Methodology),

First published by the **Building Research Establishment (BRE)** in 1990, is the world's longest established and most widely used method of assessing, rating, and certifying the sustainability of buildings. More than 250,000 buildings have been BREEAM certified and over a million are registered for certification – many in the UK and others in more than 50 countries around the world.

## Schemes

BREEAM can be used to assess the environmental performance of any type of building, new and existing, anywhere in the world.

BREEAM is used in a range of formats from country specific schemes, adapted for local conditions, to international schemes intended for the certification of individual projects anywhere in the world.

The MENA Region is generally treated with the **INTERNATIONAL SCHEME**, with standard criteria or with BESPOKE criteria depending on the development nature.



**BREEAM International  
New Construction (NC)**



**BREEAM International  
Refurbishment**



**BREEAM In-Use  
International**



**BREEAM Communities  
Bespoke International**

The ten BREEAM categories are:

- Management
- Health and Wellbeing
- Energy
- Transport
- Materials
- Waste
- Water
- Land Use and Ecology
- Pollution
- Innovation



# QSAS/GSAS The Global Sustainability Assessment System

(GSAS/QSAS) is the first of its kind performance-based sustainability rating system in the MENA region, developed by Gulf Organisation for R&D in collaboration with T.C. Chan Center at the University of Pennsylvania – USA, which aims at creating a sustainable urban environment to reduce the environmental impacts while satisfying local community needs.

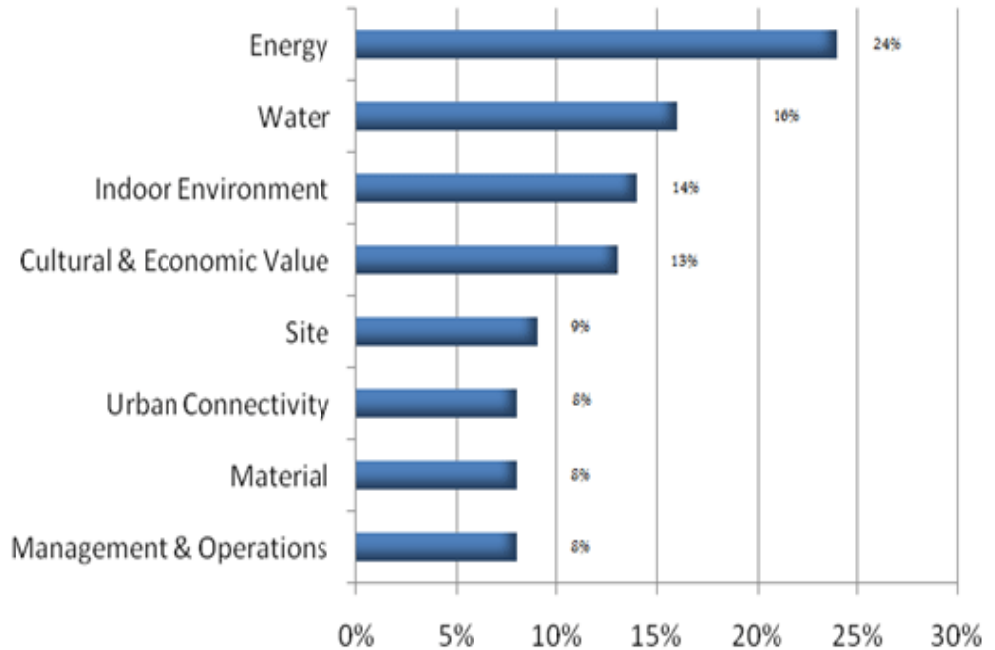


In addition to addressing all locally relevant aspects of sustainability, ecological impact, and green building design criteria, GSAS/QSAS developed a standalone building energy standard to support Qatar's building energy ratings.

The criteria of GSAS/QSAS are divided into eight categories (different weights), each with a direct impact on environmental stress mitigation and can measures a different aspect of the project's environmental impact.

## Future Adaptability

GSAS/QSAS allows complete flexibility in future expansions and modifications as well as for the seamless integration between specific requirements and sustainable goals. The system takes advantage of the best features of the rating systems available worldwide with a focus on the needs and impacts on Local and the surrounding regions.



## Environmental Benefits

- Enhance and conserve flora/fauna, biodiversity and ecosystems
- Conserve and restore natural and non-renewable resources
- Improve air, land and water quality
- Increase energy efficiency while reducing greenhouse gas emissions
- Reduce waste production

## Economic Benefits

- Reduce operating and maintenance costs
- Create new opportunities and markets for green products and services
- Improve occupant productivity
- Faster occupancy rate and lower turnover rate

## Social Benefits

- Enhance human comfort and health
- Reduce strain on local infrastructure
- Improve quality of life
- Preserve cultural identity





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## About SDT

SDT international was established in 1991 as an engineering consultancy company that provides comprehensive range of services in the Structural, Mechanical, Electrical, Infrastructure design, and Environmental studies.

For the past 22 years, we have been a pioneering force in the planning, design and implementation of development projects in the Middle East and UK.

With five offices in five countries, we employ high caliber specialized engineers capable to apply innovative approaches to design and deliver practical and cost effective solutions.

**UK . Lebanon . KSA . Qatar . Dubai**

[www.sdtconsultant.com](http://www.sdtconsultant.com)





## Appendix A – Our Previous Projects





Date: 2014

Location: Doha, Qatar

GSAS

MALL OF QATAR HOTEL

## The Project

The project is a Hotel located in Doha, Qatar and consists of 5 level luxury hotel operated by Hilton. Basement 1 has Car parks & Technical area, ground Floor has Banquets and restaurants, mezzanine Floor has meeting rooms and administrative area, on 1st to 5th Floors there are one and two bedrooms Suites and Open Green Courtyard, on roof level, there is a swimming Pool, gym, and plant room.

## Our Role

Our team at SDT performed a comprehensive GSAS Study of the development. All impacts of the project during construction, as well as during operation, were analysed in order to find the most effective mitigating measure. The GSAS requirements were taken into consideration when design the building and its services.

## Services

- GSAS
- Environmental Impact Assessment
- Sustainable Design Study
- Building Technologies
- Green Energy development

## The Results

This project has gained approvals from the authorities of Qatar. Our environmental design of the hotel helped to meet the GSAS requirements. Being energy efficiently was our main goal in our sustainable design of this project.



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Date: 2012

Location: Lusail, Marina District, Qatar

GSAS, Energy Efficient HVAC, Day Lighting Study

MARINA RESIDENTIAL TOWER 11

## The Project

The project is a Residential Tower located in Lusail Qatar and consists of 2 Basements : Car parks & Technical area, Ground : Car Park, Technical, Entrance, Coffee Shop and amenities, outside Pool Area, Podium 1 : Lounge, Gym, Courts, Multipurpose Room, 2nd till 5th Floor : 2 bedrooms Duplex Lofts 6th till 13th Floor : 1 Bedroom Apartments (7x8 floors = 56 Apartments), 14th till 21st Floor : 2 bedroom apartments ( 4x8 floors = 32 apartments )

## Our Role

From the lighting design, renewable energy technologies, day lighting simulation, and energy efficient HVAC systems, to the use of rapidly renewable material, regional material, low-VOC finishing, to various construction pro-environmental measures etc... we were able to attain the GSAS Certification to the standards of the Qatari government.

## Services

- GSAS
- Sustainable Design Study
- Energy Efficient HVAC
- Day Lighting Simulation
- Energy Saving lighting studies
- Building Technologies
- Solar panels design
- Green Energy development

## The Results

Our designs and intensive environmental studies integral to Residential 11 was serious approach to eco-friendly, energy-saving solutions. With an approved GSAS certification.



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Date: 2010  
Location: Lusail,  
Marina District, Qatar

GSAS

MARINA TOWER  
RESIDENTIAL 15

## The Project

The project is a Residential Tower located in Lusail Qatar and consists of 2 Basements, Car parks & Technical area, Ground Floor: Technical, Entrance, Lounges, Offices, Meeting and Multipurpose room, Business center, Apartments, Pool Services Area, First Floor : Gymnasium, SPA, 2nd till 12th Floor : One and Two bedrooms Apartments, 13th till 16th Floor : One, Two, Three bedrooms Apartments, 17th till 19th Floor : Three bedrooms apartments , 20th and 21st floor : Duplex.

## Our Role

A comprehensive GSAS Study of the development was performed. All impacts of the project during construction, as well as during operation, were analysed in order to find the most effective mitigating measure..

## Services

- GSAS
- Environmental Impact Assessment
- Sustainable Design Study
- Building Technologies
- Green Energy development

## The Results

This project was competed with a certified GSAS. Our green design has helped in creating an environmental feel in the area of Lusail which blended with the surrounding nature.



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Client: H.H Hamdan Bin Zayed Al Nahyan

Date: 2009-2010

Location: Jumeirah, Dubai

Design & LEED Consulting

AL BATEEN HOTEL  
AND RESIDENTIAL TOWER

## The Project

The project involves construction of 2 towers. Tower 1 comprises of 2 basement levels, a ground floor and 52 additional floors and Tower 2 comprises 2 basement levels, a ground floor and 25 additional floors offering 430 flats both connected by 2 podium levels. Amenities will include retail shops, a restaurant, coffee shops, health centre and 2 swimming pools.

## Our Role

The Al Bateen Residence & Hotel Tower is a project focused on sustainable practices established for the UAE by their Department of Environment, Health, and Safety.

SDT has provided the LEED rating system, in conjunction with the goals and ratings system established by the Emirates Green Building Council. We also suggested a framework of guidelines and options for various green building strategies.

SDT helped designing several state-of-the-art sustainable features: smartly engineered cooling system through shading and airflow, fritted glass with integrated solar cells and energy efficient solar screening.

## Services

- MEP Engineering
- Sustainable Design
- Building Technologies
- Energy Services
- Fire/Life Safety
- Lighting

## The Results

A high performance building envelope, thermal solar panels, occupancy sensor lighting controls, high efficiency HVAC systems and other sustainable strategies were utilized by our team.



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Client: HAR Properties

Date: 2013 - 2014

Location: Ashrafieh, Lebanon

LEED, Energy Efficient HVAC,  
Day Lighting Study

AYA TOWER

## The Project

Situated in Mar Mekhael, Beirut, this high-rise building development preserves and renovates the historical facade in order to preserve the heritage of the area, while simultaneously provides vertical high-rise residential development in order to accommodate a higher population in an urban area.

This basic sustainable concept is also accompanied with a wide environmental agenda including LEED Certification for the project, as well as passive and active energy and water saving features.

## Our Role

From the lighting design, bicycle facilities, parking preferences for the handicap and fuel-efficient vehicles, renewable energy technologies, day lighting simulation, and energy efficient HVAC systems, to the use of rapidly renewable material, regional material, low-VOC finishing, to various construction pro-environmental measures etc... over 40 green building credits and measures are being implemented to attain LEED New Construction Certification to the standards of the international U.S. Green Building Council.



**SERVICES DESIGN TECHNOLOGY INTERNATIONAL**

## Services

- LEED
- Sustainable Design Study
- Energy Efficient HVAC
- Day Lighting Simulation
- Energy Saving lighting studies
- Building Technologies
- Solar panels design
- Green Energy development

## The Results

Our designs and intensive environmental studies integral to AYA was serious approach to eco-friendly, energy-saving solutions.





Client: Socotec  
Date: 2010  
Location: Beirut, Lebanon

Green Design, LEED  
BCHAMOUN

## The Project

Bchamoun Residential Complex Project is a 29,200 sqm community development of 5 blocks containing 103 residential units of sizes ranging from 107 sqm to 408 sqm with landscaped areas, roads, and all supporting infrastructure, parking spaces, and facilities, Retail Shops and Shopping Centre.

## Our Role

A comprehensive Environmental Impact Assessment Study of the development was performed. All impacts of the project during construction, as well as during operation, were analysed in order to find the most effective mitigating measure. Also, the socio-economic and socio-cultural positive impacts of the project were emphasized in order to benefit the direct project surrounding and the area of Bchamoun as a whole.



## Services

- Environmental Impact Assessment
- Sustainable Design Study
- Building Technologies
- Green Energy development

## The Results

This project was completed with a certified environmental impact assessment. Our green design has helped in creating an environmental feel in the area of Bchamoun which blended with the surrounding nature.

Our proposed sustainable solutions helped in saving energy to the development and to the area.



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Client: Erga  
Date: 2010  
Location: Daroun, Lebanon

LEED, Sewage Treatment,  
Energy Saving Studies

BOUYOUT DAROUN

## The Project

Bouyout Daroun is a residential community that promotes a modern lifestyle within 23,000 sqm of green landscapes and invigorating surroundings with 149 residential units that are strategically positioned so that each unit benefits from an uninterrupted panoramic view over the green mountains and the Mediterranean Sea.

## Our Role

Environmental Impact Assessment Study, that analysed the project and its surrounding, investigated the impacts during construction and operation, and formulated an Environmental Management Plan with mitigating measures for all the negative impacts.

LEED Certification, seeking a "Good" rating for the development, and ensuring the implementation of sustainability and green building measures during design and execution.

Collaboration with Jouzour Loubnan Foundation, as well as the Ministry of Agriculture to encourage forestation and replace the existing trees. In a memorandum of understanding, every square meter sold, one square meter of forestry is created, and maintained for 3-years in order to ensure green development.

## Services

- LEED
- Agricultural Study and Assessment
- Sustainable Design Study
- Building Technologies
- Green Energy development

## The Results

- Sewage treatment for irrigation
- 50% green areas
- Rain water collection for irrigation
- Recyclable material and natural stone
- Energy-saving lighting
- Solar street lighting



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Client: DAMAC Properties Co. LLC

Date: 2010

Location: Beirut, Lebanon

## Environmental Impact Assessment

### DAMAC TOWER

#### The Project

The 28-storey DAMAC Tower is situated at the heart of Beirut Central District. It stands unrivalled, having won the world's most prestigious property award for 'Best High Rise Architecture.'

Designed to epitomise living in a luxury apartment through a unique partnership with world renowned Italian designer - VERSACE Home, each Beirut apartment boasts the finest fixtures and fittings with a choice of stunning contemporary design.

#### Our Role

SDT completed the Environmental Impact Assessment of DAMAC Towers, and investigated the construction and operation impacts of the project on the direct surrounding environment as well as Beirut Central District as a whole.

The study also presented a detailed Environmental Management Plan that ensured elimination and mitigation of the negative impacts, and magnification of the positive impacts, and It was granted approval by the Ministry of the Environment.

#### Services

- Environmental Impact Assessment
- Surrounding area study
- Sustainable Design
- Building Technologies
- Energy Services

#### The Results

Our environmental studies and assessment had a direct impact on the building sustainable solutions during the design and construction.

Our team also overcome the challenges with dealing with a sensitive heritage area in the great city of Beirut, as this project was built in an area thousands years old.



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Client: Socotec  
Date: 2010  
Location: Beirut, Lebanon

Green Design, LEED,  
Environmental Impact Assessment

## DISTRICT S

### The Project

With 22 buildings, 40,000 sqm of residential space and 10,000 sqm of retail space. District //S truly represents residential comfort co-existing with vibrant city and commercial life.

District //S has redefined the standards and norms of high quality development. It embraces not only architecture and design but also a complete urban plan that provide its clients and visitors and the public at large, with an array of amenities and facilities.

### Our Role

We proposed the Green design of the project incorporated Green Roofs, with indigenous plantation that minimize irrigation requirements, and rigorous water and energy efficiency and conservation measures.

The environmental impact assessment study was also performed by us to produce a comprehensive environmental management plan that efficiently mitigates all the project impacts on its surrounding environment.

Furthermore, the project site infrastructure and common areas incorporated passive and cost-efficient green measures, providing passive shading from the buildings and trees, as well as natural air circulation taking into consideration the prevailing wind directions.

### Services

- Environmental Impact Assessment
- LEED
- Sustainable Design Study
- Building Technologies
- Green Energy development
- Daylight & Shading studies
- Natural Air Circulation

### The Results

This Project was completed to be an environmental friendly construction, the development scores high on the LEED scale of environmental impact due our proposals of low-emissivity materials, reuse of water, trees along its wide pedestrian areas and many other refinements.



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Client: Antonios Development

Date: 2011 - 2012

Location: Ashrafieh, Lebanon

Geothermal Services

SAMA BEIRUT

## The Project

187 m high, the tallest building in Beirut, Sama Beirut is the most famous mixed-use development in Lebanon.

It comprises residential units, office spaces, and commercial spaces, and incorporates the latest technologies in design and construction.

## Our Role

The environmental study for Sama Beirut included the investigation of the technical and economic feasibility for using Geothermal Technology to help provide renewable energy for the building needs and significantly reduce the carbon footprint during the operation of this vertical city.

The study investigated the available geothermal resources in the project site, and simulated several scenarios for harnessing the available geothermal energy.

It also established a baseline for technical and economic comparison between several cases, to conclude a full technical and financial feasibility report

## Services

- Geothermal Assessment
- Sustainable Design
- Environmental study using Geothermal technology
- Building Technologies
- Green Energy development

## The Results

Energy and cost savings of geothermal heat pumps will vary by region and type of conventional system they're compared with. But the energy cost of geothermal versus conventional HVAC systems is always lower — and the geothermal system will always be greener. For this reason we have implemented this system in Sama Beirut.



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Client: Beirut Waterfront Development

Date: 2012 - 2014

Location: Beirut, Lebanon

Sea-Water Cooling

ZAYTOUNA BAY

## The Project

Located at the Beirut Marina, with 17 restaurants & cafes, 5 boutiques and 2 activity centers, and a Chalet Complex. Accessible to the general public, the upper and lower promenades form an intensely active area, where Lebanese, tourists and Beirut lovers enjoy a wide selection of menus, as well as spaces for events, cultural festivals, concerts, exhibitions and a variety of other celebrations.

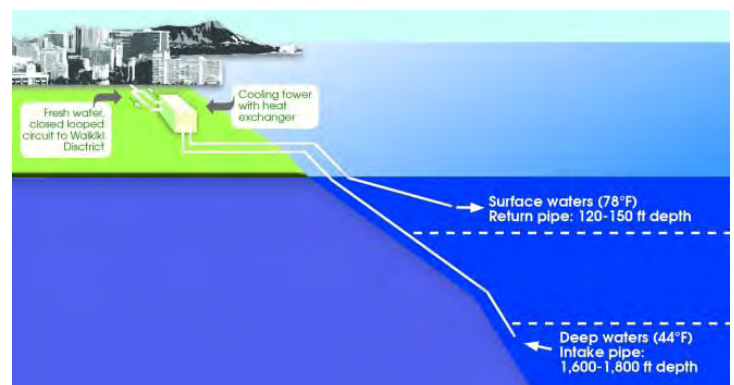
## Our Role

For the restaurants, as well as the Chalet Complex, high ventilation rates per LEED specifications impose a significant cooling load on the Chiller Plant. Our Environmental Design Approach incorporated the use of Sea Water for the cooling of the Chillers (condensing loop), utilizing for the first and unique time in Lebanese Construction Developments the Sea-Water Cooling, which is considered a renewable and sustainable source of energy.

Special Titanium Heat Exchangers were installed for sea-water circulation in order to resist the corrosive nature of the salty water.

## The Results

An effective Sea-Water cooling system was implemented successfully on site as proposed by our engineers at SDT.



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